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Wendy Morton MP
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Department for Transport
Great Minster House
33 Horseferry Road
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(By email)

8 July 2022

Dear Minister

ORR's first supplementary advice to the UK Government on the development of its High-Level Output Specification (HLOS) and Statement of Funds Available (SoFA)

This letter, and attached annexes, supplements the advice we provided on 26 May 2022 on Network Rail's outputs and funding for Control Period 7 (or CP7). This was based on our scrutiny of Network Rail's initial CP7 submission which Network Rail provided to us and the Department for Transport (DfT) on 31 March 2022.

In our initial advice provided on 26 May, we were unable to comment on the performance implications of Network Rail's spending proposals for CP7, reflecting that the information provided by Network Rail (including as part of its initial CP7 submission) was high-level. Since then, Network Rail has provided us with the relevant information.

We were also unable to provide views in our initial advice on Network Rail's position on the relationship between network usage and cost as its analysis was not complete at this stage. However, since then, we have also received this information.

As such, we discuss below our key observations on both these areas and set out, respectively, in Annex 1 and Annex 2 our further views on Network Rail's performance analysis and cost variability work.

While Network Rail's analysis in both areas has been undertaken in tight timescales and in response to the relevant commissions, it is worth noting that some assumptions (e.g. the impact on maintenance expenditure and cost avoided) are not fully consistent and do not consider the impacts of each other. As such, Network Rail's analysis and our associated findings should be interpreted with caution and seen as indicative.

Impact of reduced funding on train performance

In our initial advice, we stated that it was difficult to determine with any certainty what the implications of the 'reduced cost' options are for operators, passengers and freight customers. This was due to limitations in Network Rail's information in this area in its initial submission.

We received Network Rail's advice regarding the implications of CP7 renewal funding constraints on 26 May 2022. This assessed the impact of four funding scenarios: first, a 'steady state' baseline core asset renewal funding scenario of £20bn and then reductions in renewals funding compared with the 'steady state' level of £3.6bn, £4.6bn and £5.6bn.

Network Rail estimated that a £5.6bn decrease in renewals funding, compared with its 'steady state' submission, would reduce CP7 On-Time train performance by up to one percentage point, with smaller reductions in funding having a lesser impact on performance.

In summary, we consider that Network Rail is likely to have underestimated the implications of reduced funding scenarios on train performance as its assumptions are generally optimistic. If the UK Government chooses a reduced funding scenario for CP7, the risk to future train performance and to passenger and freight customers is higher than Network Rail has presented. For example, Network Rail's analysis does not fully reflect the uncertainty that is inherent in train performance forecasts and the mitigations (such as speed restrictions) that may be employed to manage a deteriorating asset base.

We agree with Network Rail's assessment that, in the reduced funding scenarios, the long-term cost of maintaining and renewing the network (from CP7 to CP9) would be higher. We consider that these scenarios also present considerable deliverability risks and would increase safety management risks as assets are allowed to deteriorate. If the reduced funding scenarios are progressed, further work would also be needed to consider prioritisation across asset types. For example, we consider that a greater focus on vegetation management is needed now, and any reduction in renewal volume may have a significant impact on train performance, weather resilience and safety.

Interaction between network usage and cost

Driven by recent changes in rail use, and in the context of its initial CP7 submission, Network Rail has undertaken work to consider the potential cost impacts of reduced network usage.

Assuming train service levels of 88% of pre-Coronavirus (COVID-19) pandemic levels and freight traffic up 2.7% in CP6 (from a CP6 end position 7.7% higher compared than pre-pandemic levels), Network Rail's analysis suggests that gross longer-term potential savings in operations, support, maintenance, and renewals

(OSMR) could amount to £181-384m. This should be considered in the context of a 'reduced cost' options scenario expenditure of £35.4 bn, meaning that the cost reductions represent 0.5-1.1% of OSMR expenditure. (However, it is worth noting that these cost reductions have not been included in the baseline expenditure proposals included in the initial CP7 submission). Network Rail estimates that there would be a 5% reduction in the combined passenger and freight tonnage (as measured by the Equivalent Million Gross Tonnes Per Annum).

To deliver these cost reductions, Network Rail needs to be confident that the train service reductions will not be reversed. Network Rail has also identified a number of factors that could reduce that forecast including that: there could be an adjustment needed to take account of some of the studies, including cost reductions that may not be achievable in CP7; there will be costs incurred in generating the cost reductions (e.g. redundancies); and it must ensure that there is no double-counting with its CP7 efficiency proposals.

Our view is that the way Network Rail has combined the effects of the different studies could be improved upon and the analysis needs to be interpreted with caution. It will need to refine this estimate of the impact of reduced services on costs as it develops its CP7 business plan.

It is worth noting that there are considerable difficulties in trying to estimate accurately the effects on CP7 of the decline in passenger services. There is a lot of uncertainty about the relationship between cost and train services and it is rare for such a sudden change in train services to happen. However, what is clear is that a high proportion of Network Rail's costs are fixed and do not vary very much with a change in usage, at least over the short to medium-term.

Next steps

We will continue to engage closely with your team to help inform the development of the UK Government's forthcoming decisions on the HLOS and SoFA.

As part of this, and as set out in our 26 May advice, we will provide a second set of supplementary advice on 16 September. This will provide further views on Network Rail's central costs, digital signalling plans and HS2 readiness costs, as well as a view on Network Rail's analysis on the impact of maintenance activities under the 'reduced cost' option.

We intend to publish this letter at an appropriate time, likely to be after your HLOS and SoFA are published. This reflects the need for transparency in how periodic review decisions are made as well as ORR's role in contributing to these.



Yours sincerely

Will Godfrey

Director, Economics, Finance and Markets

cc. Andrew Haines, Chief Executive, Network Rail

Annex 1: Supplementary advice on train performance implications of reduced funding scenarios

Summary

Network Rail has estimated that a £5.6bn decrease in core asset renewals funding, compared with its 'steady state' funding, would reduce CP7 [On Time](#) train performance by up to one percentage point. It has also assessed the impact of two other reduced funding scenarios, as described later in this note.

In its March 2022 initial CP7 submission, Network Rail included around £20bn for 'core asset' renewal costs. (This £20bn refers to pre-efficient spend, rather than post-efficient spend (£19.5bn, which we quoted in our initial advice). Network Rail also separately identified 'other renewals' costs). Its work (and our associated analysis) has focused on the impact of reductions to the £20bn 'core asset' renewals costs.

Our views in this note are based on Network Rail's analysis (dated 26 May 2022), as well as additional information it sent to us (on 27 June and 5 July 2022) in response to queries we raised. Network Rail used a 2021-22 price base compared with 2023-24 used in its initial CP submission. As such, there are inconsistencies in the costs presented compared with the initial submission, though these do not change our views as set out below. We will provide more detailed supplementary advice in September on the approach Network Rail has taken to calculating the maintenance impact of deferred renewals.

ORR's views on Network Rail's analysis

- Network Rail is likely to have underestimated the implications of reduced funding scenarios on train performance, as its underlying assumptions in this area are optimistic. If the UK Government chooses a reduced funding scenario, the risk to future passenger and freight customer train performance is higher than Network Rail has presented in its analysis.
- Network Rail has presented a high and low figure for On Time train performance in each funding scenario. The difference between each high and low forecast is 0.6 percentage points or lower. This range is likely to be too narrow compared with the uncertainty that is inherent in train performance forecasts and the mitigations (such as speed restrictions) that may be employed to manage a deteriorating asset base.
- Network Rail's analysis is centrally modelled and does not take account of any regional variation in train performance that may result. It does not analyse the impact on freight performance.
- These reduced funding scenarios are not the minimum whole-life cost plans. If the UK Government chooses a reduced cost scenario for CP7, it will lead to

greater costs in the long term. For example, in the £5.6bn reduced funding scenario, Network Rail has estimated total additional costs over CP7, CP8 and CP9 of approximately £1.6bn. This includes additional maintenance and train performance costs and additional costs associated with delivering deferred renewals (such as costs of restoring supply chain capability). However, there is not adequate assurance that the increased maintenance and deferred renewals work that would be required is deliverable. [Redacted].

- We agree with Network Rail's approach of applying reduced funding scenarios differently across its asset types, including protecting earthworks and drainage renewal volumes to maintain safety. If these scenarios are progressed, further work will be needed to consider prioritisation across asset types. For example, we consider that a greater focus on vegetation management is needed now, and any reduction in renewal volume may have a big impact on train performance, weather resilience and safety. An increased number of asset failures would put more pressure on managing the consequences. This means it becomes harder to protect minimum levels of safety as assets are allowed to deteriorate.

We set out below our original advice on this subject, a summary of Network Rail's recent information and our supplementary advice.

ORR initial advice to the UK Government (26 May 2022)

In our 26 May advice to the UK Government, we stated it was difficult to determine with any certainty what the implications of the 'reduced cost' options are for operators, passengers and freight customers. This was due to the limitations in Network Rail's information in this area in its initial submission. Therefore, we asked Network Rail to accelerate its analysis of train performance that will be delivered in CP7. We also highlighted the impact on long-term costs and risks to deliverability. An extract of our letter can be found in Appendix A.

Network Rail submission

We received Network Rail's further information regarding the implications of CP7 renewal funding constraints on 26 May 2022. This included an assessment of the impact of four different funding scenarios on train performance using the On Time measure. These funding scenarios and the key results of Network Rail's analysis are summarised in Table 1 below. As noted above, the analysis is high-level and centrally modelled; it does not take account of any regional variation in train performance that may result; and the impact on freight performance was not included in the analysis.

Table 1: Network Rail’s analysis on the performance implications of different funding levels

CP7 Funding Scenario	On Time performance	
	Low	High
‘Steady state’ baseline renewals funding = £20bn	73.0%	
Reduce core asset renewals funding by £3.6bn, to £16.4bn	72.5%	72.8%
Reduce core asset renewals funding by £4.6bn, to £15.4bn	72.3%	72.7%
Reduce core asset renewals funding by £5.6bn, to £14.4bn	72.0%	72.6%

Network Rail has set out further details, including the steps it took to provide this additional analysis, to DfT (in a document entitled ‘Advice on further £1bn and £2bn renewal constraints in CP7, Infrastructure Impacts on train services and additional maintenance costs (Technical Authority, 26 May 2022)’). It also submitted and presented additional information (on 27 June and 5 July 2022) in response to queries we raised. This additional information is also considered in the following sections of our advice.

Network Rail has stated the impact on train performance measures in [Cancellations](#) and [severely disrupted days](#) would show only a small impact.

ORR supplementary advice

Network Rail’s methodology for assessing the impact of reduced funding on train performance

To complete the work in a limited timescale, Network Rail has taken a central top-down approach with minimal input from its regions. It has also made several assumptions that have had an impact on the result of its analysis.

The assumptions made by Network Rail have in general been optimistic. **This is the primary reason we consider its forecast impact on train performance is understated.** For example, the baseline for its train disruption calculations was 2021-22, when the number of planned train services was below pre-pandemic levels and On Time performance was 73%. As Network Rail recognises in its own analysis, the impact of asset failures could double if services return to previous levels.

The use of a 2021-22 baseline is also inconsistent with Network Rail’s initial CP7 submission, which assumed growth in train services up to CP7 and a maintaining of the CP6 exit point of 70% to 72% On Time. If Network Rail had used these CP6 exit points as baselines for its analysis of the impact of funding reductions, then the range of high and low forecasts for On Time performance would have been larger.

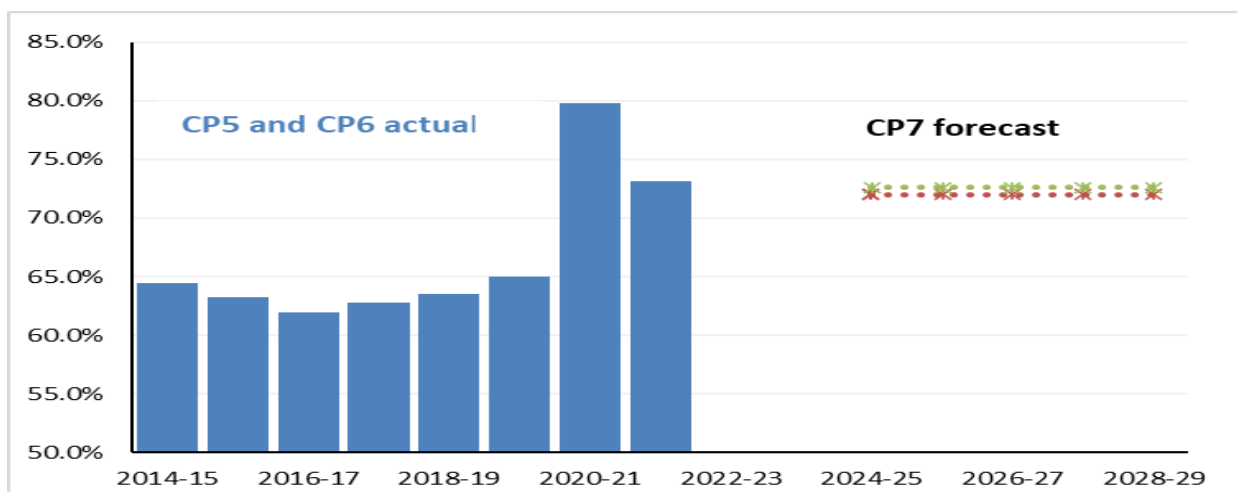
The On Time measure of performance does not include train cancellations. Therefore, we asked Network Rail to present its findings using Cancellations and the [Public Performance Measure \(PPM\)](#). Additional information provided by Network Rail estimated that On Time performance may be reduced by up to 1.3 percentage points under the £5.6bn reduction option. It estimated that the impact on Cancellations and PPM would be likely to remain small. This additional information does not change our advice. Definitions of train performance metrics are set out in Appendix B.

To consider whole-system costs, and based on its analysis of train performance, Network Rail also estimated the additional disruption costs, using current Schedule 8 arrangements. In the £5.6bn reduction option, additional disruption costs are estimated at £450m (cumulative) over CP7, CP8 and CP9.

Train performance impact – Network Rail presented range

Network Rail has presented a high and low estimate of train performance (measured in On Time) for each funding scenario. In the original submission, the widest range between high and low is 0.6 percentage points. This range is too narrow and does not represent typical uncertainty in train performance estimates. We understand the reason for this narrow range is the approach Network Rail has taken to several assumptions, such as the use of a 2021-22 baseline described above. Figure 1 below illustrates the variation in On Time performance that is impacted by changes in planned trains and passenger numbers. As can be seen, historical year on year variation has exceeded 0.6 percentage points for all years since 2014/15.

Figure 1: Percentage of trains On Time (actual and forecast) – Great Britain



Other impacts of reduced renewals funding considered in Network Rail’s analysis

In Network Rail’s analysis, it considered the impact of reduced funding on safety, maintenance and renewals. Our views on these areas are set out below.

It should be noted that there may be implications for other aspects of the end-user experience that have not been considered in Network Rail’s analysis, such as major station condition.

Safety

Network Rail has applied reduced funding scenarios differently across its asset types. We agree with this approach, including protecting critical activities (e.g. drainage and earthworks). If these scenarios are progressed, further work will be needed to consider prioritisation across asset types. For example, we consider that a greater focus on vegetation management is needed now. Furthermore, any reduction in renewal volume may have a big impact on train performance, weather resilience and safety (for example, from trees on the line, blocked drainage, impact on inspections and reduced visibility/sighting distances). We will review other impacts of funding levels on safety as part of our review of Network Rail's Strategic Business Plan (SBP) in 2023.

Network Rail has assumed that safety impacts of asset degradation can be mitigated with additional operational or maintenance activities. This assumption is optimistic. If asset failures increase, management of the consequences may not be fully effective. This would make it harder to protect minimal levels of safety as assets degrade. One of the key mitigations that we would expect Network Rail to apply is speed restrictions, which would increase the overall impact on train performance.

Maintenance

Network Rail has estimated increased maintenance costs, due to the reduction in renewals. This is summarised in Table 2 below.

Table 2: Network Rail's analysis on the impact of maintenance costs due to reduced funding

CP7 Funding Scenario	Estimated increase in cumulative maintenance costs across CP7,8,9
Reduce core asset renewals funding by £3.6bn, to £16.4bn	£250m
Reduce core asset renewals funding by £4.6bn, to £15.4bn	£450m
Reduce core asset renewals funding by £5.6bn, to £14.4bn	£700m

The additional £250m is aligned to Network Rail's 'reduced cost' option we reviewed as part of our advice to the UK Government on 26 May 2022. However, it is worth noting that the renewals funding scenarios described above only cover 'core asset' renewals, meaning the reduced cost option figures are lower than what was reflected in our May advice, which included 'other' renewals. (The total level of renewals expenditure included in the 'reduced cost' options was £19.2bn).

Network Rail has assumed this additional maintenance can be delivered. In the scenario where core asset renewal funding has been reduced by £5.6bn, it has also identified an additional £45m operational spend for initiatives to address increased risks. Currently, there is not adequate assurance that the total increase in maintenance is deliverable [Redacted]. We will provide further advice on the impact on maintenance costs of 'reduced cost' options as part of our second supplementary advice on 16 September 2022.

Future renewals

Network Rail has assumed the cost of reduced renewals can be transferred to future control periods. In the scenario where CP7 core asset renewal funding has been reduced by £5.6bn, it has assumed additional (cumulative) capital costs of reinstating the renewals across CP7, CP8 and CP9 of approximately £350m (in addition to the £5.6bn). This includes costs to restore market capability and initiatives to increase capability to address additional risks. It has also assumed the renewals can be delivered in future control periods. These assumptions are optimistic.

In our advice letter we stated that, "compared with the 'steady state' proposals, there is likely to be less scope under the 'reduced cost' options for Network Rail to take advantage of the portfolio effects of increased spend in one asset area benefitting another asset area. There is also likely to be less scope to 'carve out' risk funding from the renewals spend. Furthermore, if Network Rail were to be funded to this level, we would expect to put particular focus on how it would intend to recover asset condition over CP8 and CP9".

We also highlighted the deliverability risk associated with the large increase in renewals expenditure between CP7 and CP8 under the 'reduced cost' option and stated, "*Network Rail would also need to provide robust evidence that this is deliverable and what the consequences would be on train performance and asset management if it was not deliverable*".

The above issues would be exacerbated in scenarios where CP7 renewals funding would be reduced by a further £1bn or £2bn. For example, fluctuating demand on the supply chain in future control periods will have an impact on its ability to plan efficiently and will therefore have an impact on cost.



Appendix A – Extract from ORR’s advice to the UK Government (letter from John Larkinson to Wendy Morton MP, 26 May 2022)

It is difficult to determine with any certainty what the implications of the ‘reduced cost’ options are for operators, passengers and freight customers given the limitations in Network Rail’s information in this area at this stage.

Network Rail has said that, under the ‘reduced cost’ options, there would be an increased risk to train performance in CP7 and into CP8 and that Network Rail would look to use mitigating measures to reduce the impact to passengers.

Recovery of train service levels post-pandemic will also have a significant impact on future train performance. We asked Network Rail to provide analysis of the impact of different traffic levels on performance forecasts, but it said that it does not have the underlying data to provide these forecasts at this stage in the development of its plans.

As discussed above, we appreciate that the initial submission is high-level and that further detail will be provided as the plan develops. However, in order for the UK Government to make informed decisions in its HLOS and SoFA, we have asked Network Rail to accelerate its analysis of train performance that will be delivered in CP7.

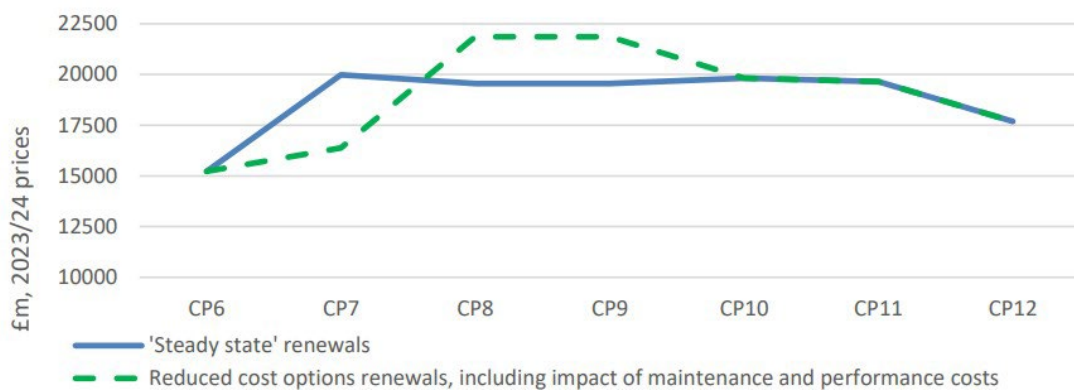
If the ‘reduced cost’ options were adopted, Network Rail has estimated there would be an overall increased cost of £1bn elsewhere (pre-efficient) compared with ‘steady state’ spending levels over CP7, CP8 and CP9. This is in addition to the c.£5bn of additional spend that Network Rail estimates to be required over CP8 and CP9 to recover asset condition.

Under the ‘reduced cost’ options, Network Rail would do less renewal volumes in CP7. This would increase the number of performance-related faults on the network over CP7. This would adversely impact maintenance costs and train performance. Currently, Network Rail estimates the net increased maintenance costs and financial consequences of poorer train performance over CP7, CP8 and CP9 to be £1bn. However, this is based on current top-down plans and requires further consideration as Network Rail develops its business plan.

Network Rail would do the equivalent of £3.4bn less renewals work under the ‘reduced cost’ options. To recover asset condition to CP6 levels, Network Rail has estimated that it would require an additional c.£5bn over CP8 and CP9 compared with spending levels over CP7 under the ‘reduced cost’ options. It has focused recovery over two control periods given, it says, the scale of the volumes required and the deliverability constraints. This is illustrated in Figure 1, which also shows suggested spend under ‘steady state’ proposals.

Reflecting the size of the proposed uplift in renewals spend, Network Rail would also need to provide robust evidence that this is deliverable and what the consequences would be on train performance and asset management if it was not deliverable.

Figure 1: Comparison of longer-term renewals expenditure under 'steady state' and 'reduced cost' options



Appendix B – Definitions of train performance measures

- **On Time** measures the percentage of recorded station stops arrived at early or less than one minute after the scheduled time (as per timetable). Early trains are classified as 'on time'. *A higher On Time score indicates better punctuality.*
- **Public Performance Measure (PPM)** is the proportion of trains arriving at their final destination early or less than five minutes after the scheduled time for London and South East, Regional and Scotland operators, or less than ten minutes for Long-Distance operators. Where a train fails to stop at one or more booked calling points on the journey, the train is considered to have failed PPM. *A higher score indicates better punctuality.*
- **Cancellations** measures the amount of trains that are cancelled as a percentage of trains planned. This would include trains missing stations and/or not reaching their destination. The cancellations measure is a score which weights full cancellations as one and part cancellations as half. *A lower cancellations score indicates better reliability.*
- A **Severely disrupted day** at a national (GB) level is defined when the cancellations score is 5% or more. At a sub-operator level, a severely disrupted day is defined when the cancellations score for any sub-operator is 20% or more.

Annex 2: Supplementary advice on Network Rail's cost variability work

Background / context

There have been significant changes in the level and composition of traffic on the rail network since the beginning of the pandemic. This includes a marked fall in the volume of passenger train services, which is currently expected to be at 88% of pre-pandemic levels for the duration of CP7. This has raised questions around how much network costs could fall due to this decline and its implications for funding. This annex only covers Network Rail's costs, not whole industry costs.

Assessing the implications for funding of the changed traffic levels is subject to considerable uncertainty. Future service levels are uncertain, as is their mix (e.g. passenger and freight traffic). Even if service levels could be forecast with confidence, the implications for costs is difficult to predict.

In this context, Network Rail has provided information on what cost reductions it might expect from the decline in train services. Network Rail commissioned studies and produced a summary paper on cost variability that considered the relationship between network usage and cost. These studies used different methods and examined different cost categories.

In Network Rail's initial CP7 business plan submission (which it provided to us and DfT on 31 March 2022), it set out initial and potential cost estimates that were generated using its engineering cost model. (Note that Network Rail's Vehicle Track Interaction Strategic Model (VTISM) is an engineering model that links inputs such as track and vehicle characteristics to outputs such as whole-life costs. It is used to set the Variable Usage Charge (VUC). This model is the current means through which we and Network Rail assess Network Rail's Short Run Marginal Cost (SRMC)).

Assuming passenger services at 88% of pre-pandemic levels throughout CP7 and freight traffic 2.7% above the end of CP6 level (the end of CP6 level is 7.7% above pre-pandemic levels), the gross cost reductions in maintenance and renewals in CP7 were estimated by Network Rail as £120-190m (2023-24 prices). However, this forecast was not included in the baseline calculation of Network Rail's forecast expenditure. The combined impact of passenger and freight traffic changes represents a reduction in Equivalent Million Gross Tonnes Per Annum (EMGTPA, which refers to the total combined tonnage of passenger and freight services) of 5%.

That analysis has since been supplemented by further studies: Steer's 'cost escapability to traffic levels' and [Redacted].

This annex provides ORR's view on Network Rail's methodology, assumptions and analysis relating to the relationship between network usage and costs.

Method

The three main assumptions that underly Network Rail's estimate of the gross cost savings are:

- Rail network costs are mainly fixed rather than variable. For example, a tunnel must be maintained to the same standard regardless of whether a train travels through it once every hour or day.
- While passenger traffic has declined since the onset of the pandemic, freight traffic has increased and freight tonne miles in CP7 are expected to be higher than the forecast end of CP6. Heavy trains cause relatively more line 'wear and tear' than light ones. Maintenance and repair costs are therefore disproportionately driven by changes in levels of freight compared with passenger traffic.
- Much of the savings flowing from reduced passenger traffic will not be realised within the next control period (CP7). For example, less traffic on a line may extend track life from 20 to 25 years. However, some of the resulting savings will not be achieved until later control periods.

We consider that these assumptions of the interaction between traffic and the costs of the rail network to be reasonable because they reflect the underlying properties of the network assets and how they affect the relationship between traffic changes and cost changes.

We also need to bear in mind that although costs will reduce after a reduction in train services it will take time to achieve the full cost reduction. The numbers shown below are theoretical, and 'real world' and local effects will have an impact. Furthermore, in order to deliver these savings Network Rail needs confidence that the changes will not be reversed for a reasonable amount of time.

The projected cost reductions are all based on the network maintaining its existing capabilities. The UK Government may choose to change the capability of the network in its HLOS but Network Rail has not been asked to consider this at the moment.

Studies

Network Rail and its consultants have considered several studies on cost variability, including ones commissioned by Network Rail specifically to inform this advice. These studies use different methods to examine different cost categories to reveal the expected change in costs from a decline in passenger traffic. They have different strengths and weaknesses.

The studies examined are:

- Domestic and International Statistical Approaches [Redacted]
- ORR's statistical approach; and
- The Steer report.

Network Rail appointed [Redacted] to peer review our statistical analysis of Network Rail's maintenance costs and consider other statistical studies (both domestic and international). [Redacted] determined that SRMC was the appropriate measure to use to identify cost changes flowing from a decline in passenger traffic. This is because, by using SRMC, we can isolate the consequences of the decline in passenger traffic, holding other things constant (e.g. asset capability, input costs, engineering and management practices, etc.). These statistical studies are based on networks experiencing normal traffic levels (in the sense that they are based on a network taking account of all cost drivers, not just traffic). They have the advantage of using the actual costs experienced by networks with different traffic volumes. However, the costs are for networks which have evolved along with their traffic levels over decades and will have adapted their infrastructure and activities accordingly. However, in reality, Network Rail is today operating a network that is rapidly adjusting to a significantly different level of traffic since the pandemic. As such, interpreting the results from the model and studies requires us to recognise their limits.

Benchmarking studies are generally designed to compare different areas, regions or countries; they are generally not designed to inform the effect on costs of changes in traffic. Network Rail has experienced a significant change in train service levels, not a minor change. As such, it may be difficult to try and use benchmarking models to understand the change in costs for different traffic levels. Our study suffers from some of the limitations applicable to other statistical approaches, although it has the advantage of being based on Network Rail's costs rather than studies of other networks (e.g. overseas rail networks).

The Steer study complemented ORR and [Redacted] findings by considering the effect on OSMR costs of a change to service levels. It did this by holding specialist workshops, where they analysed activities to find out which ones are affected by passenger traffic volumes, and estimated how costs would fall for a 10% decline in passenger traffic and constant freight volumes. This has the advantage of being based on Network Rail's actual network. However, it was very reliant on engineering opinion rather than empirical data and explicit specification of cost-volume relationships.

Network Rail also ran its engineering cost model to estimate the effect of a 12% decline in passenger service levels and an increase in freight service levels of 2.7% above the end of CP6 level (the end of CP6 level is 7.7% above pre pandemic levels). This model takes an engineering-based 'bottom-up' approach as opposed to a statistical top-down approach. It is also a model which has been in use, and regularly refined, for a considerable time. As such, it may provide a reasonable starting point for the track, civil and signalling cost changes that might be expected. However, it is unlikely to capture cost changes which arise from the network adapting over time to the new patterns of traffic and, like any model, is a dependent on the underlying assumptions.

Application of study findings

The studies used different methodologies and considered different cost categories. To make the numbers more comparable, Network Rail adjusted its findings to reflect the actual forecast changes in freight and passenger service levels which equated to a 5% decline in EMGTPA. They also include the Steer assumptions for cost variability for operations (mid-point £58m) and support (mid-point £13m) for studies which did not incorporate these elements.

Network Rail has said that its estimate of £120m-£190m, with a mid-point of £155m based on its 'steady state' expenditure proposals, probably underestimated the potential gross savings over CP7 given the evidence from the studies.

After considering the studies, **Network Rail has increased its estimate of the gross cost savings of reduced traffic levels to £282m (mid-point)** with a range of £181m to £384m. This is relative to Network Rail's 'reduced cost' expenditure scenario for OSMR of £35.4bn (note the difference in numbers (Network Rail cited £35.5bn in its analysis) is due to rounding). This would imply an underestimate of around £127m from Network Rail's initial estimate (based on the mid-point values).

However, Network Rail considered that half of the potential long-term, gross savings identified in the statistical studies would occur after CP7 and, furthermore, that adjustments were required for capacity or capability of the network. Network Rail currently considers that, after accounting for these effects, the underestimate could be around £62m rather than £127m. However, our view is that the way Network Rail has combined the effects of the different studies could be improved upon and the analysis needs to be interpreted with caution. It will need to refine this estimate of the impact of reduced services on costs as it develops its CP7 business plan.

Other factors

The savings Network Rail has identified are the gross savings. There are also other factors to be considered:

- Network Rail would need to identify how it will deliver these savings and make sure that there is no double counting between these savings and the ones Network Rail has already identified.
- There are likely to be costs involved in generating the savings (e.g. redundancy costs).

Conclusion

There are considerable difficulties in trying to estimate accurately the cost effects in CP7 of the decline in passenger train services as there is a lot of uncertainty about the relationship between cost and train services. This is further complicated by the projected growth in freight traffic in CP7 and, beyond CP7, whether there might also be a recovery in passenger train services. Because of the long-lived nature of rail network assets, the life-time cost optimised response may involve limited cost reductions, even if CP7 traffic were below pre-pandemic levels.



However, what is clear is that a high proportion of Network Rail's costs are fixed and do not vary very much with a change in usage, at least over the short to medium-term. Based on Network Rail's model, it estimates that there may be a potential reduction of £155m compared to c. £35.4bn (under the 'reduced cost' scenario). However, factoring in the evidence from the wider studies considered, the gross cost savings could be approximately twice that amount (e.g. the mid-point of the range considered suggests gross savings of c.£282m over CP7). While Network Rail argues that this represents an overstatement of the potential gross savings in CP7, this remains a small proportion of the baseline OMR costs (of £35.4bn).

Either way, Network Rail will need to incorporate more fully the effect of the lower levels of traffic projected in CP7 as it develops its plans.