2019 periodic review of HS1 Ltd (PR19)

Draft determination – decision document

30 September 2019

Contents

1. Executive summary

1.1. The 2019 periodic review (PR19) is the process through which HS1 Ltd concludes its Five Year Asset Management Statement (5YAMS) for the next control period (CP3), which runs from 1 April 2020 until 31 March 2025. It is a requirement of the concession that HS1 Ltd holds to operate, maintain and renew the route.

1.2. As well as establishing outputs and costs, the final 5YAMS determines HS1 Ltd's regulatory framework, its charging structure and the level of regulated access charges that its customers must pay.

1.3. Our role in the process is to scrutinise the final 5YAMS and provide independent challenge. We have examined HS1 Ltd's proposals to make sure that they are in accordance with the obligations set out in the company's Concession Agreement with the Secretary of State, who owns the infrastructure.

1.4. An important factor in our analysis was the views of both HS1 Ltd and stakeholders in response to our specific challenges. We thank HS1 Ltd for being open and constructive throughout the process and would also like to thank other stakeholders for engaging constructively.

1.5. This document summarises our draft conclusions on the final 5YAMS that was submitted to us on 31 May 2019. It is the culmination of the first phase of our examination and draws from detailed analysis that is explained in a number of supplementary documents published alongside it. Together these form the draft determination.

1.6. We propose to accept the majority of the company's proposals, subject to some further evidence being provided. However, there are a number of aspects to the plan that we do not accept at this stage, which are:

(a) deficiencies in the approach to asset management – such as how further sensitivity analysis could be done and how costs could be benchmarked;

(b) the proposed classification of the planned implementation of a new signalling system as a renewal;

(c) assumptions for efficiency and productivity;

(d) interest rate assumptions; and

(e) how to address underfunding of the escrow account in Control Period 1 (CP1, which ran from 1 April 2010 to 31 March 2015) and Control Period 2 (CP2, which runs from 1 April 2015 to 31 March 2020).

1.7. We estimate that addressing these would reduce HS1 Ltd’s proposed annual renewals annuity charge from **£38.2m** to **£26.1m**, which in turn would reduce the proposed increase in the charges paid by train operators.

1.8. We have also identified one aspect of the charging structure that may not be compliant with relevant legislation – the levying of **direct costs** on a per train minute basis rather than on a train km basis. We are inviting views on this but we understand that changing from train minute to train km does not affect either the overall level of charges or how charges are apportioned to individual operators.

1.9. We are seeking comments from stakeholders on our draft conclusions, which we will take into account as we conclude our scrutiny and publish our final determination in early 2020.

2. Introduction and background

Periodic Review 2019 (PR19)

2.1. We initiated the second periodic review of HS1 Ltd on 31 January 2018 with the publication of our Approach to PR19. The scope of the review is principally determined by the Concession Agreement between HS1 Ltd and the Secretary of State for Transport. This is explained more fully in our Approach document along with the context of the route, our role in regulating HS1 Ltd and the purpose of a periodic review – particularly in relation to HS1 Ltd's General Duty and the timeline.

2.2. HS1 Ltd's General Duty requires the company "*to secure in respect of the HS1 Railway Infrastructure: its operation and maintenance; its renewal and replacement; and the planning and carrying out of any Specified Upgrades and other upgrades, in each case:*

(a) in accordance with Best Practice;

(b) in a timely, efficient and economical manner; and

(c) save in the case of the EdF Assets, as if HS1 Ltd were responsible for the stewardship of the HS1 Ltd Railway Infrastructure for the period of 40 years following the date that any such activities are planned or carried out,

subject to:

(i) the Safety Authorisation for HS1; and

(ii) the Capability Requirements."

2.3. It is against this duty that we have scrutinised HS1 Ltd's plans for CP3, as set out in its 5YAMS, and determined the consistency of those plans with that duty.

2.4. The Approach document explains what is excluded from the scope of this review[1], in particular, station funding and the investment recovery charge (levied by HS1 Ltd with the purpose of recovering the long-term construction costs of the network) – which are reserved to the Secretary of State. It also explains the role of Network Rail (High Speed) Ltd (NR(HS)), which operates and maintains the route on behalf of HS1 Ltd under an Operator Agreement (OA).

[1] The purpose, process and scope of the periodic review is set out in Section 2 of Schedule 10 to the Concession Agreement.

Timeline

2.5. The agreed timeline can be broadly summarised in three stages:

(a) a consultation and development stage, which ran from September 2017 through to January 2019, culminating in the production of a draft 5YAMS by HS1 Ltd;

(b) a consideration stage from February 2019 until January 2020, which includes the submission of the final 5YAMS by HS1 Ltd to the ORR and culminates in ORR's final determination; and

(c) an implementation stage from February 2020 until March 2020, where HS1 Ltd submits, if necessary, a revised final 5YAMS and ORR issues implementation notices to make the necessary contractual changes.

2.6. The consultation and development stage has now concluded and the key documents (including stakeholder responses to the draft 5YAMS) can be found on HS1 Ltd's website. HS1 Ltd published its draft 5YAMS on 28 February 2019 and submitted its final 5YAMS to the ORR on 31 May 2019.

2.7. Shortly before the draft 5YAMS was published in February 2019, Eurostar International Limited (EIL) wrote to us to express its difficulty in engaging with the periodic review process while working to mitigate the expected impacts of the United Kingdom leaving the European Union, at that time due to occur on 31 March 2019.

2.8. Having consulted stakeholders, we decided to add an additional step to the published timeline in order to allow EIL to respond on HS1's Ltd's draft 5YAMS at a later date[2]. EIL's response was received by both HS1 Ltd and ORR on 17 May 2019. HS1 Ltd then submitted an updated final 5YAMS to the ORR on 12 July 2019, responding to the views of EIL.

PR19 draft determination

2.9. The draft determination is the culmination of the first phase of the consideration stage. It sets out our preliminary findings and conclusions from our review of the final 5YAMS and commences the consultation with HS1 Ltd and other stakeholders to enable us to make our final determination in January 2020.

2.10. In accordance with paragraph 8.5 of Schedule 10 to the Concession Agreement, the draft determination sets out:

[2] This decision was challenged by EIL by way of judicial review, which was unsuccessful.

(a) our determination of whether the final 5YAMS submitted by HS1 Ltd is consistent with its General Duty;

(b) an explanation of the grounds on which we have made that determination; and

(c) where we reasonably determine that the final 5YAMS is not consistent with HS1 Ltd's General Duty, details of the deficiencies to be remedied by HS1 Ltd in order for the final 5YAMS to be consistent with its General Duty.

2.11. The draft determination is comprised of this decision document, and three supplementary documents setting out our asset management findings; our findings on the financial framework; and our views on charging and incentives for CP3. The proposed contractual amendments to the Passenger Access Terms, Freight Access Terms and the framework agreements for Eurostar International Limited (EIL) and London and Southeastern Railway (LSER) are also published alongside the draft determination.

3. Overview of ORR approach

3.1. We sought to understand HS1 Ltd's approach to formulating its plans through a programme of progressive assurance. This involved a series of meetings as the plans were being drawn up.

3.2. In June 2017 HS1 Ltd started to engage with stakeholders who were invited to comment on the company's approach at a series of ongoing quarterly workshops. We noted that stakeholders were broadly supportive at these events, although we observed that many stakeholders were waiting until they understood the final level of anticipated charges before fully commenting.

3.3. We held a workshop on 10 June 2019 to identify the areas that we would focus on, inviting comments on our approach. Minutes of that meeting are published alongside this document. We have continued to meet with stakeholders on a bilateral basis and in wider groups to understand their views on HS1 Ltd's plans and in particular, the impact of the proposed plans on their businesses. This has been an important factor in our assessment and where relevant we reference stakeholder views in the remaining chapters.

3.4. We examined all aspects of the submitted final 5YAMS to make sure it was consistent with HS1 Ltd's General Duty but the principal focus of our draft conclusions is renewals (which is a key driver of the charges that operators ultimately pay). We have summarised our findings in the following areas:

(a) **Health and safety** – where we principally examined plans in the context of compliance with health and safety legislation, in conjunction with our scrutiny of asset management;

(b) **Asset management** – where we examined the plans in the context of compliance with best practice and, where we found deficiencies, quantified the impact addressing these would have on the annual renewals annuity charge;

(c) **Financial framework** – where we examined the financial aspects of the renewals annuity and considered what changes are required to be consistent with the company's General Duty; and

(d) **Charging and incentives** – where we checked whether the proposed charging regime was consistent with relevant legislation and whether the incentive framework was appropriate.

3.5. The remaining chapters explain the approach we took for each of these areas and set out our specific findings. The price base in this document is February 2018 unless otherwise stated.

3.6. We have a number of statutory duties which we must balance when exercising our economic functions. Our statutory duties are mostly set out in Section 4 of the Railways Act 1993. Our duties are not in any order of priority and it is for us to decide how to weigh these when reaching our decisions. In reaching the recommendations and draft conclusions outlined in the draft determination, we have carefully balanced our statutory duties, including considering the scale of the impact of charges on operators against a range of other outputs of the periodic review, in particular the need to ensure HS1 Ltd can recover its efficient costs and meet its asset stewardship commitments under the Concession Agreement.

4. Health and safety

4.1. Many of the functions which HS1 Ltd has as infrastructure manager are contracted out to NR(HS) through an Operator Agreement. This means that both parties have health and safety obligations, but NR(HS) is the duty holder for the purposes of the Railways and Other Guided Transport Systems (Safety) Regulations 2006 (as amended).

4.2. Health and safety should be a key aspect running through all of HS1 Ltd's and NR(HS)'s plans. It is important that plans for CP3 are sufficient to allow both parties to ensure the continued safety of the railway and to make the most of all reasonably practicable opportunities for improvement.

4.3. From what we have seen through our regular inspections to date, we consider that HS1 Ltd and NR(HS) have demonstrated a positive commitment to achieving zero harm through the effective management of health and safety and striving for continuous improvement.

4.4. The continued safe operation of the HS1 network relies on both the effective implementation of new ways of working and also on the delivery of an ongoing assurance regime. Key to this is how HS1 Ltd and NR(HS) will adapt their current approaches as the railway ages and requires more renewals work as a result.

4.5. In terms of the plans for CP3, in addition to the final 5YAMS, we undertook a detailed desk top review of the following documents:

(a) NR(HS) - Safety Strategy;

(b) NR(HS) - Specific Asset Strategy, Track;

(c) NR (HS) - Operations Strategy; and

(d) Vertex Systems Engineering - Review of CP3 Plan initial report.

4.6. Overall, we found a clear recognition from both NR(HS) and HS1 Ltd of their respective duties under the Concession Agreement to meet all relevant safety requirements as well as their duties under health and safety legislation. In addition, both parties have committed to a Joint Vision 2020 initiative to ensure that safety remains integral to their partnership.

4.7. More specifically, we examined how HS1 Ltd intends to assure itself that the maintenance and renewals work NR(HS) undertakes is carried out safely and is effective in maintaining the safety of the railway. We were looking for proactive engagement and risk-based but proportionate assurance activity. We found a commitment from HS1 Ltd to continuous improvement and plans to measure safety performance through leading and lagging indicators, including the industry-wide modelling technique – Railway Management Maturity Model (RM3) – as well as precursor monitoring.

4.8. From our analysis we have concluded that the submitted plans are sufficient to maintain legal compliance and are therefore consistent with HS1 Ltd's General Duty.

4.9. However, we would wish to see HS1 Ltd and NR(HS) address the challenges we have identified, during CP3. As part of our regular monitoring and reporting duties, as well as our safety inspection obligations, we will continue to monitor HS1 Ltd's progress. In particular, the following findings of our review of NR(HS)'s CP3 Safety Strategy should be considered by HS1 Ltd and NR(HS) with a view to targeting excellence in health and safety management:

(a) the strategy is largely aspirational, which shows ambition, but practical implementation will need specific, measurable, realistic and time-bound milestones so that progress can be monitored – while these are not yet fully formed they need to be as the plans are finalised;

(b) the headline safety scorecard measures and targets focussed on reducing the Lost Time Injury Frequency Rate and close calls. While these lagging measures are appropriate, there could be other ones that are more forward-looking and could include other ways of measuring management maturity, safety culture and asset safety;

(c) NR(HS) has set out positive and valuable improvements in broad terms. HS1 Ltd should ensure that these improvements are linked to key risks and adequately resourced. Further analysis needs to be undertaken by applying the test of gross disproportion (rather than cost-benefit analysis) to assess whether improvements are reasonably practicable and therefore legally required;

(d) we endorse HS1 Ltd's and NR(HS)'s adoption of the RM3 model. This will give both parties the opportunity to assess health and safety management maturity in the remainder of CP2 and in CP3. Doing so will enhance NR(HS)'s ability to achieve its safety vision and objectives and demonstrate progress along the way. More fully embracing RM3 will help both organisations demonstrate progress against their key objectives;

(e) in terms of health and wellbeing we found that there was no distinction made between activity required for legal compliance and that which would be above these requirements. This distinction needs to be made and priority given to legal requirements;

(f) the strategy included activity to build safety into design stages of renewals work, with the intention of getting work right first time. We agree with this intent. However, more work is needed to ensure that actions and milestones are put in place to make it happen and that this area is appropriately resourced (funding and competent staff or contractors) with suitable management of any sub-contractors;

(g) a consideration for CP3 is the impact and consequential risks of increasing passenger volumes, increasing volumes of work and changes to ways of working. The associated risks are identified as slips, trips and falls and manual handling. It was not clear in the strategy whether other risks, such as fatigue, stress, being struck by on-track machines/plant, management of contractors and (for the assets) work not being completed have been considered. The mitigations identified by NR(HS) appear to be primarily through the delivery of training to staff and ensuring timely and informative communications about changes to safety processes and procedures. While these are important elements of the hierarchy of risk control, we expect to see plans in CP3 for avoiding or eliminating risk, aiming for technical solutions to reduce risk and the need for active monitoring and review to check whether the mitigations are working as intended or whether they need to be revised.

5. Asset management

5.1. A significant part of our review concentrated on the asset management elements of HS1 Ltd's plans. Our team of in-house specialist engineers with support from our railway safety team examined the plans through a combination of desk top reviews, challenge meetings and site visits. Our approach is detailed in the supplementary document setting out our asset management findings that accompanies this document.

5.2. We examined all the components that make up asset management in the plan, including: management capability; approach to stewardship; application of standards; whole life costing; approach to risk; and importantly operating, maintenance and renewal costings. An aspect we previously raised in our approach document was that we would look specifically at how HS1 Ltd was dealing with an asset that was ageing.

5.3. In doing this, we focussed on both the planned works for CP3, and the forecast of works for control periods 4-10 (CP4-10, comprising 1 April 2025 – 31 March 2060). The assumption of HS1 Ltd's expenditure in CP3 forms part of the 40-year calculation, but even more importantly, it will also form the baseline for our monitoring and reporting of HS1 Ltd's performance in CP3.

Consistency with the General Duty

5.4. Our preliminary view is that the majority of the final 5YAMS asset management content is in line with best practice. But there are a number of areas where we require further evidence to be provided in advance of the final determination, in order for us to be able to determine that the final 5YAMS is consistent with HS1 Ltd's General Duty.

5.5. We also found aspects of the plan that we do not consider to be in line with best practice and HS1 Ltd must revise its final 5YAMS to address these deficiencies before the final determination. We have assessed the possible impact that rectifying these deficiencies would have on the proposed renewals costs. These are outlined in Table 5.1 and form an input into our assessment of the financial framework, explained in the next chapter.

Table 5.1 List of asset management deficiencies identified by ORR

Area of deficiency	Recommendation	Estimated impact on renewals annuity (£m)
An error in the pricing of an inverter fan	Correction - £160k reduction in total renewals costs	Rounds to 0.0 over 40 years
Delivery uncertainty of some proposed CP3 renewals	Re-profile some work to next control period – with £12.9m reduction in total CP3 renewals costs	-0.1
Current estimating strategy does not fully incentivise risk mitigation	Consider alternative approach – with likely 1.8% reduction in renewals costs for CP3	No significant impact
Project management costs higher than benchmarks for other UK rail projects	Reduction in project management overlay to bring in line with benchmarks (from 15% to 10%)	-0.1
Very high level of risk allocation compared to benchmarks	Reduce risk overlay based on ORR analysis for CP3 (from 26.6% to 13%) and CP4-10 (from 30% to 13%)	-3.4
Lack of sensitivity analysis around critical design lives for track assets	Undertake sensitivity analysis and consider extended lifes - with likely 10% reduction in renewals costs for CP4-10	-1.4
Lack of clarity on how research and development will be undertaken	Clarification on the process for undertaking R&D	No change
Delivery integrator costs higher than benchmarks	Delivery integrator to be 20% of CP4-10 renewals costs rather than a fixed price	-2.3
Total proposed adjustments to the renewals annuity		**-7.3**

Classification of ETCS

5.6. Another aspect of our asset management review was to consider HS1 Ltd's proposal to reclassify the planned implementation of a new signalling system (European Train Control System (ETCS) Level 3) as a renewal rather than a Specified Upgrade (enhancement). The specific classification affects the level of the annual renewals annuity charge (explained in the next chapter) because if it is classified as a renewal then it is included in the renewals annuity, whereas if it is classified as a Specified Upgrade then it is funded separately.

5.7. The definitions of the two options are contained in the Concession Agreement:

(a) "Renewal and Replacement": means the substitution or replacement of an asset comprised in the HS1 Railway Infrastructure with an asset or part of an asset of the same type or equivalent to the asset comprised in the HS1 Railway Infrastructure from time to time consistent with HS1 [Ltd]'s General Duty, and excludes Specified Upgrades and any other upgrades;

(b) "Specified Upgrades"[3]: means major upgrades of the signalling system, control systems or trackform for:

(i) HS1 [Ltd] comprised in the HS1 Railway Infrastructure, including any such upgrades required in connection with the implementation of a TSI [Technical Specification for Interoperability] requirement; and/or

(ii) the NRIL [Network Rail Infrastructure Limited] Network, where such upgrades are a consequence of the implementation of a TSI requirement and are required to be undertaken pursuant to a Maintenance Contract with Network Rail [Infrastructure Limited].

5.8. As explained more fully in our supplementary document on asset management findings, we consider that the proposed new system would be a major upgrade of the signalling system. As a major upgrade, we considered whether the project should fall within the definition of Specified Upgrade in the Concession Agreement.

5.9. The final 5YAMS stated that the existing system is supported until 2035-2040. As ETCS is proposed to be installed in 2032, up to 8 years earlier than necessary, HS1 Ltd would be choosing to upgrade the signalling system, rather than being required to do because the existing system has become obsolete. In addition, HS1 Ltd said that it is unlikely that an option other than ETCS would be commercially available, but gave no reasoning or evidence to support this.

5.10. HS1 Ltd also noted that its intention was to renew the signalling system, rather than to undertake an upgrade and that ETCS will not provide significant additional capacity for the network. We were not persuaded by these points. We consider that it is the capability of the new system which is relevant in determining whether it is an

[3] Concession Agreement, Schedule 10 Paragraph 1.1

upgrade, not whether it is intended to be an upgrade or whether it will (alone) be used to provide additional capacity.

5.11. We also note operator responses to HS1 Ltd's draft 5YAMS stating that the project should be treated as a Specified Upgrade.

5.12. In light of the above, we consider that ETCS should be considered a Specified Upgrade, as HS1 Ltd expected in the last periodic review and the cost should not be included as a renewal.

6. Financial framework

6.1. The financial framework is wide ranging and sets the rules and guidelines for a range of financial issues that determine how HS1 Ltd is funded to operate, maintain and renew the route. It is therefore key to ensuring that HS1 Ltd complies with its General Duty. Our in-house specialists have experience in this area on the wider GB rail network as well as on the HS1 route.

6.2. Our approach is explained in a supplementary document setting out our financial framework draft findings, accompanying this document. They are primarily based on HS1 Ltd's final 5YAMS, but where appropriate we have taken account of further evidence provided by HS1 Ltd and other stakeholders.

6.3. We examined all aspects of the framework but the area where we are recommending that changes need to be made (to enable us to conclude that the final 5YAMS is consistent with the General Duty) is the renewals annuity calculation, which is the key driver of the charges individual train operators will pay.

Renewals annuity

6.4. An important element of the financial framework is that an escrow account was set up in accordance with the Concession Agreement to provide sufficient funds to pay for renewals expenditure across a rolling 40-year period. It is based on the principle that payments of the annual renewals annuity into the account equal the forecast average costs over time. This means that during low renewal expenditure periods the balance should grow to provide funds for when renewals expenditure is higher than the average level. Pre-funding renewals expenditure through the escrow account smooths payments and avoids step changes in the charges to operators.

HS1 Ltd's proposed Base Case

6.5. The main focus of our financial assessment was on the proposed renewals annuity[4]. In the final 5YAMS, HS1 Ltd's Base Case forecast was that the renewals annuity would be **£38.2m** per annum (in February 2018 prices for CP3, including the cost of a new signalling system (ETCS)).

6.6. This compared to:

[4] There is an investment recovery charge that is used to recover the cost of the initial capital investment and is outside the scope of PR19, which is primarily concerned with the level of Operations, Maintenance and Renewals Charges (OMRCs). HS1 Ltd also charges for the use of station services. This is regulated separately by the DfT and therefore does not form part of this determination, although we have considered factors raised in that review.

(a) in CP1, the renewals annuity was set at **£5.9m** per annum in 2012-13 prices; and

(b) in our previous Periodic Review of HS1 Ltd in 2014 (PR14) we said that the renewals annuity was not set at a level to adequately fund the escrow account. So, we increased the renewals annuity to **£11.2m** per annum for CP2 and said that further increases were expected, for CP3 to **£16.4m**, and to **£17.4m** for CP4 (all in 2012-13 prices), based on underfunding in CP1 and the renewals profile proposed in HS1 Ltd's asset management strategy at the time.

6.7. HS1 Ltd's proposed renewals annuity of £38.2m per year (HS1 Ltd's Base Case) is around twice the CP3 renewals annuity anticipated by ORR in PR14[5] (the figure excluding ETCS is £35.3m per annum). The main driver for the increase in the renewals annuity are the different approach taken by HS1 Ltd for risk and contingency, and the inclusion of 'delivery integrator' costs[6].

6.8. We have assessed the inputs into the renewals annuity calculation and proposed some adjustments to exclude ETCS (£2.9m) and address the asset management deficiencies we identified in the previous chapter (£7.3m)[7].

6.9. We reviewed assumptions relating to efficiency and productivity, and our preliminary conclusion is that they were not sufficient (that is, expenditure was too high). We consider that an additional 0.5% per year should be assumed which would reduce the renewals annuity by £2.6m.

6.10. We consider HS1 Ltd's interest rate assumptions are too conservative and need to be more forward-looking, which would reduce the renewals annuity by £0.9m.

6.11. Finally, our draft conclusion is that the renewals annuity should address the underfunding of the escrow account in CP1 and CP2 and avoid the escrow account not having enough funds in it to pay for renewals expenditure in CP9 and CP10. This increases the renewals annuity by £1.6m.

6.12. Overall, most of our proposed adjustments reflect a different, usually less conservative, view of the inputs into HS1 Ltd's financial model. It is only the adjustments for underfunding in CP1 and CP2, and to avoid the escrow account not

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5 PR14 final determination

6 For CP4 onwards, HS1 Ltd proposes using a delivery integrator to undertake operations, maintenance and renewals. This arrangement would replace the agreement it has with NR(HS) for CP3.

7 This includes the proposed risk and contingency adjustment.

having enough funds in it to pay for renewals expenditure in CP9 and CP10 that reflect a different methodology.

Table 6.1 Summary of ORR's proposed adjustments to the renewals annuity (February 2018 prices)

	Proposed adjustments (£m)	Renewals Annuity (£m)
HS1 Ltd's final 5YAMS Base Case		**38.2**
Reclassifying ETCS as a Specified Upgrade	-2.9	
ORR input adjustments from asset management review (including risk and contingency)	-7.3	
Additional efficiency overlay for CP4-10 of 0.5% per annum	-2.6	
Interest rate assumption of 2.5%	-0.9	
Escrow balance adjustments for underfunding in CP1 and CP2 and to avoid the escrow account not having enough funds in it to pay for renewals expenditure in CP9 and CP10	+1.6	
Impact of proposed ORR adjustments		**26.1**

6.13. We have not adjusted the renewals annuity for costs that HS1 Ltd has omitted from its forecasts, such as some enabling works on additional depots and sidings, and clean-up costs, as HS1 Ltd does not have a forecast of them. This would increase the renewals annuity. In addition, we note that our interest rates forecast is likely to be conservative, especially after 20 years, as interest rates are historically low at the moment. Having a less conservative assumption would reduce the renewals annuity.

6.14. We consider these adjustments are required to remedy the deficiencies we have identified and to ensure that the final 5YAMS is consistent with HS1 Ltd's General Duty. The proposed adjustments result in a revised forecast renewals annuity of £26.1m for CP3, with an escrow balance of £146m at the end of CP3, £148m at the end of the Concession Agreement (end of CP6) and £64m at the end of CP10 (all in

February 2018 prices). We note that the level of the renewals annuity is similar to the alternative levels proposed by HS1 Ltd and EIL as shown in Table 6.3[8].

6.15. We have considered the impact of our recommended renewals annuity on operators in our assessment of charges (see our supplementary document setting out our charging and incentives findings). Based on the evidence provided to us at present we do not consider that there will be an undue impact on operators as a result of our recommendation. In reaching this draft recommendation, we have taken into account the requirements of the Concession Agreement and our Section 4 duties.

6.16. Adjustments to the renewals annuity must then be converted by HS1 Ltd into revised OMRCs on international and domestic passenger operators and freight operators. For the purposes of illustrating how our preliminary conclusions could translate in practice we have provided a view based on our own estimates – presented in the following table.

Table 6.2 Illustrative OMRCs (Feb 2018 prices)

	International passenger £ per train-minute		Domestic passenger £ per train-minute		Freight £ per train-km	
CP2	54.07		40.79		7.54	
	CP3	*Change*	*CP3*	*change*	*CP3*	*change*
HS1 Ltd Base Case	**77.18**	**+43%**	**50.88**	**+25%**	**13.10**	**+74%**
ORR adjustments	**63.90**	**+18%**	**47.42**	**+17%**	**8.35**	**+11%**
HS1 Ltd '20-year' approach	63.02	+17%	46.90	+15%	8.19	+9%
HS1 Ltd 'Buffer' approach	61.80	+14%	46.18	+13%	7.97	+6%
EIL 'Ratchet' approach	61.21	+13%	45.83	+12%	7.86	+4%

Alternative approaches

6.17. In its final 5YAMS, HS1 Ltd set out two alternative approaches in response to stakeholder concerns about the impact that the proposed increase in charges would have on them. These included calculating the renewals annuity for CP3 on a '20-

[8] We also note that converting our PR14 expected renewals annuities for CP3 and CP4 of £16.4 and £17.4m (in 2012-23 prices) into 2018-19 prices would provide renewals annuities of approximately £18.9m in CP3 and £20.0m in CP4.

year'[9] approach that gave a charge of **£25.1m** per annum, and a 40-year 'Buffer'[10] approach that gave a charge of **£23.9m** per annum (both excluding ETCS).

6.18. Also, EIL submitted an alternative proposal for the renewals annuity calculation called the 'Ratchet', which gave a charge of **£22.5m**. This calculates the renewals annuity on a 15-year basis and has some other differences to HS1 Ltd's Base Case.

6.19. The Concession Agreement requires HS1 Ltd to take a 40-year approach to renewals. So, in our opinion, HS1 Ltd's '20-year' approach and EIL's 'Ratchet' approach are not consistent with the Concession Agreement and HS1 Ltd should calculate the renewals annuity on a 40-year basis. Using a 40-year period better covers the life of the entire asset base and better smooths the peaks and troughs in expenditure over time, than a shorter time span does. This means the financial impact on operators will also be better smoothed over time.

6.20. HS1 Ltd's 'Buffer' approach and EIL's 'Ratchet' approach have the disadvantage of excluding costs that will occur in the future and need to be funded. Some of these cost are the result of operating trains now and in the past. Reducing the period over which these costs are paid for will mean increases in the renewals annuity in the future, which may worsen the impact on operators. We do not consider excluding known categories of costs to be an appropriate approach to calculating the renewals annuity.

6.21. None of the three alternative approaches are consistent with the principle that users should pay for the use of the asset and support inter-generational equity, as some renewals will not take place until after year 20, but the operators are using the assets now and the full costs of renewals should be funded not just the direct costs.

6.22. For these reasons, we do not consider either HS1 Ltd's '20-year' approach or its 'Buffer' approach, or EIL's 'Ratchet' approach are appropriate alternatives to HS1 Ltd's Base Case. Instead, the recommended renewals annuity using our approach is £26.1m.

6.23. A comparison of our view of the forecast renewals annuity compared to HS1 Ltd's and Eurostar's views is shown in the table below.

[9] The '20 year' approach (this is also called Option 1 by HS1 Ltd) considers all costs but only over the next 20 years.

[10] The 'Buffer' approach (this is also called Option 2 by HS1 Ltd) uses direct costs over the 40-year period but non-direct costs (e.g. risk and contingency) are not funded after CP6.

Table 6.3 Alternative approaches for the renewals annuity

	Renewals annuity (excluding ETCS) £m per year, Feb 2018 prices	Is the approach consistent with the Concession?	Does the approach include all categories of costs?
HS1 Ltd Base Case	**35.3**	**Yes**	**Yes**
ORR adjustments	**26.1**	**Yes**	**Yes**
HS1 Ltd '20-year' approach	25.1	No	Yes
HS1 Ltd 'Buffer' approach	23.9	Yes	No
EIL 'Ratchet' approach	22.5	No	No

CP3 reporting

6.24. The incentives surrounding the financial framework require strengthening to encourage greater ownership of risk and delivery by HS1 Ltd. In light of this, we expect the monitoring and reporting in CP3 for HS1 Ltd in relation to its cost base, delivery of efficiency, and the resulting impact on the escrow balances to be strengthened.

Ripple Lane exchange sidings

6.25. HS1 Ltd's final 5YAMs explains that in CP2, freight-specific costs for NR(HS) reduced due to reduced train activity forecasts and revised mothballing costs. It then explains that NR(HS) freight-specific costs for CP3 are based on number of trains, train weights and equivalent track-km. The lower NR(HS) costs in CP3 are not explained beyond that, so further clarity on the reduction is necessary.

6.26. We recognise that freight customers and HS1 Ltd agree that the Ripple Lane assets should be transferred to Network Rail Infrastructure Limited. We have also asked Network Rail Infrastructure Limited for its view on the issue.

6.27. We have been informed by the Department for Transport that it is considering whether the Ripple Lane assets should be transferred. In the event that a transfer of these assets occurs during CP3, we will consider whether this change would trigger an Interim Review under Schedule 10 of the Concession Agreement.

Outperformance mechanisms

6.28. In 2012, HS1 Ltd renegotiated the OA with NR(HS) to include an outperformance framework for operations and maintenance, whereby operators will receive 30%, NR(HS) 50%, and HS1 Ltd 20%, of any outperformance in the last three years of CP2 and CP3. HS1 Ltd and NR(HS) have told us that no outperformance was payable for the two applicable years so far (1 April 2017 – 31 March 2018 and 1 April 2018 – 31 March 2019). Although, HS1 Ltd is still finalising with NR(HS) that this is the case for the year ending in March 2019.

6.29. In addition to this, the Concession Agreement contains an outperformance mechanism for sharing renewals efficiencies. Outperformance on renewals can be assigned 70% towards future renewals (that is, retained in the escrow account) and 30% to HS1 Ltd. Whether any payments arise in accordance with this mechanism, is dependent on us determining that HS1 Ltd has outperformed against plans set out in its 5YAMS (in this case the approved PR14 final 5YAMS) and the escrow account balance being at the level necessary for HS1 Ltd to comply with its General Duty in so far as it relates to renewals.

6.30. In its final 5YAMS, HS1 Ltd did not identify any renewals outperformance from CP2 for us to consider and we consider the escrow account to be underfunded. As a result, there is no sharing of efficiencies to be applied in the draft determination.

Cost of capital

6.31. In PR19, the importance of the cost of capital for the renewals annuity calculation has been reduced as our modelling recognises that it is not efficient for the escrow account to not have enough funds in it to pay for renewals expenditure in some years, so we do not use the cost of capital in the modelling of the renewals annuity. However, it is still important as it is taken into consideration in the assumptions for financing Specified Upgrades.

6.32. HS1 Ltd has assumed a weighted average cost of capital (WACC) of 5.1% on a nominal vanilla basis[11]. Based on the information available to us at this time, we do not consider that there is sufficient evidence and analysis provided by HS1 Ltd to demonstrate that 5.1% represents a reasonable estimate of the WACC to be used for PR19. Although we note that the 5.1% assumption is similar to some of the WACCs set by other regulators, after converting it to real prices (2.3% in real prices).

[11] The vanilla WACC is calculated using a pre-tax cost of debt and post-tax cost of equity, weighted by gearing.

6.33. The WACC assumption used in previous control periods and proposed by HS1 Ltd for CP3 is the general WACC of the company. However, given the materiality of the ETCS project we would need to consider the specific circumstances of the project and the risks involved. For example, how HS1 Ltd is intending to finance the project and whether it has an efficient capital structure.

6.34. We expect HS1 Ltd in due course to propose how it will determine the WACC for Specified Upgrades, such as ETCS, which we will consider in reaching our opinion of whether HS1 Ltd's submission is reasonable. This process will include consideration of the appropriate cost of capital.

Revenue and expenditure for CP3

6.35. We expect HS1 Ltd to receive revenue of £594m and incur expenditure of £532m in CP3[12]. The difference between revenue and expenditure is because the renewals annuity (£131m) is higher than the CP3 forecast renewals (£68m). The renewals annuity calculation averages renewals costs over a 40-year time period and is higher than the forecast renewals costs in CP3 largely because the assets in CP3 are still relatively young.

[12] HS1 Ltd's revenue is summarised in the charges and incentives supplementary document.

7. Charging and incentives

HS1 Ltd's charging structure

7.1. A key aspect of the final 5YAMS is the regulated access charges that HS1 Ltd proposes to levy on passenger and freight operators for operating on its network. In general terms infrastructure charges are usually designed to reflect the costs that they are intended to recover. In this way charges can significantly influence the provision and use of the infrastructure. This in turn should drive efficient use of resources both in terms of existing infrastructure and the provision of new capacity, and provide incentives to reduce costs where possible.

7.2. In considering whether the final 5YAMS is consistent with HS1 Ltd's General Duty under the Concession Agreement, we have assessed whether the proposed charging structure is consistent with the relevant legislation. We also reviewed HS1 Ltd's proposals for the capacity reservation charge and carbon costs. Finally, we considered HS1 Ltd's traffic forecast and proposals for volume re-opener provisions.

7.3. In reaching our draft determination, we have sought to ensure that charges are cost reflective and send the right signals to users to ensure the appropriate use of the network and at the same time enable HS1 Ltd to recover its full costs.

7.4. As part of our assessment, we have considered the arguments put forward by HS1 Ltd and operators. In making our final determination, we will take into account any representations made by stakeholders in relation to the issues set out in this document, including those submitted by EIL on 18 September 2019.

7.5. Our detailed assessment is included in a supplementary document on the charging and incentive framework that accompanies this document, which also explains the legal framework and the current structure of charges.

Directly-incurred costs

7.6. We consider that there is one aspect of HS1 Ltd's charging structure which may not be consistent with the relevant legislation. HS1 Ltd noted in its final 5YAMS that there is some uncertainty about whether per train-minute charges are permitted under the Commission Implementing Regulation (EU) 2015/909 (the Implementing Regulation), although it concluded that it could continue to charge direct costs on that basis, as a result of a derogation set out in that legislation.

7.7. However, as explained more fully in our supplementary document on charging and incentives, we consider that the Implementing Regulation should be interpreted as requiring direct costs for passenger operators to be levied on a per train-km basis[13] (as they are for freight operators) rather than on a per train-minute basis as HS1 Ltd currently charges. We understand that this change does not affect the overall level of direct charges paid for by existing individual operators because HS1 Ltd calculates them in a way that makes them equivalent to the charge they would pay on per train-km basis. We invite further representations from stakeholders on this issue.

7.8. We note that HS1 Ltd also charges non-direct costs on a per train-minute basis but (unlike direct costs) there is no requirement in the legislation necessitating a change to charging on a per-train km basis. Both HS1 Ltd and EIL have argued that this method of apportioning costs acts as an incentive to run faster trains (leading to increased capacity) and therefore aligns with the purpose of the network as set out in the Concession Agreement, that is, to provide high speed rail transportation.

7.9. However, apportioning non-direct costs in this way does not appear to satisfy the economic principle that charges should be cost reflective. This is because it results in operators who cause higher costs (that is, those that run faster trains, that cause more wear and tear) paying a lower proportion of total non-direct costs than those that run slower trains. The effect of increased capacity is also marginal when there is already surplus capacity, as there is currently on the network.

7.10. HS1 Ltd has said that it will review its structure of charges in CP3 and it recognises that changing how it recovers non-direct costs could have an impact on operators. Our view is that the basis on which it charges non-direct costs should form part of that review.

7.11. There was one aspect that many stakeholders objected to during HS1 Ltd's consultation – the use of the long-term cost exception. We had previously considered this as part of PR14 where we found that it was permissible for it to recover all of its non-direct costs under that exception. However, in light of HS1 Ltd's proposed changes to the charging structure and in view of the objections raised by stakeholders, we have considered this further. In particular, operators argued that HS1 Ltd should instead rely on the first exception to the charging principles, which allows an infrastructure manager to levy a mark-up. This would require HS1 Ltd to assess the ability of each market segment to bear a mark-up (that is, undertake a 'market can bear test').

7.12. EIL challenged whether the long-term cost exception allows HS1 Ltd to recover ongoing operating, maintenance and renewals costs. It stated that the long-term cost exception was limited to recovery of the capital costs of the project only.

[13] Or on a vehicle-km or gross tonne-km of a train basis.

7.13. Freight operators said in their responses that HS1 Ltd should assess higher charges for freight services under the first exception requiring a ‘market can bear test’, before higher charges can be levied. Deutsche Bahn Cargo UK, known as DB Cargo UK, contended that the long-term cost exception cannot be applicable to conventional rail freight as it has seen no evidence to suggest that the construction of HS1 would not have been undertaken if HS1 Ltd was not allowed to levy higher charges on the very small number of conventional speed rail freight services that have operated on the line.

7.14. As we have explained in more detail in our supplementary document on charging and incentives, while the legislation is not explicit about what costs may be included as the long-term costs of the project, we remain of the view that it is permitted for HS1 Ltd to recover both the capital costs of constructing the project and the resulting operational costs under this exception. We invite any further representations from stakeholders on this issue.

Capacity reservation charge

7.15. In responding to concerns from operators HS1 Ltd proposed suspending the capacity reservation charge, reflecting the fact that there is currently spare capacity on the network. This proposal responds to operators’ concerns but includes scope to re-activate the charge as a result of changes to capacity during the control period.

7.16. We accept this proposal. This change is reflected in the proposed amendments to the track access contract documentation annexed to the draft determination.

Carbon costs

7.17. We accept HS1 Ltd’s proposal to continue to recover around £10,000 per year in relation to the Carbon Reduction Commitment energy efficiency scheme.

Traffic forecasts and volume re-opener

7.18. HS1 Ltd’s traffic forecasts are an important consideration as they drive HS1 Ltd’s revenue and influence its asset management strategy and approach. For CP3 HS1 Ltd has assumed no increase in passenger train paths as growth is expected to be accommodated by existing service levels. It has also assumed no increase in freight services. Beyond CP3 it has assumed a 1% increase per annum in traffic volumes.

7.19. We accept the traffic forecasts, and the retention of the +/-4% traffic change trigger (for passenger operators) and +/-12.5% traffic change trigger (for freight operators) for a re-opener. The proposed volume reopener provisions are triggered where there is a significant change from this forecast, including as a result of the introduction of services run by a new operator.

Performance and possessions regimes

7.20. The performance regime is part of the charges and incentives system designed to encourage all parties to minimise disruption and improve the performance of the HS1 network. Through the regime, operators and HS1 Ltd bear the financial impact of the unplanned service delays and cancellations. The regime is designed to incentivise all parties to minimise performance-disrupting incidents, and to contain their impact when they occur. The regime includes:

(a) payment thresholds (the point at which performance is sufficiently good or bad to trigger payments from operators to HS1 Ltd, or from HS1 Ltd to operators); and

(b) payment rates (the amount, per minute delay, that one organisation pays another where its performance is above/ below threshold performance).

7.21. In response to our initial consultation on PR19, operators told us that they were broadly content with the way the regime was operating with no need for major changes beyond recalibration. HS1 Ltd has undertaken a recalibration exercise and the resulting rates have been agreed with train operators.

7.22. The possessions regime compensates operators for disruption to their services due to engineering works and acts as an incentive on HS1 Ltd to plan possessions efficiently and minimise disruption.

7.23. In its final 5YAMS HS1 Ltd proposed retention of the existing regime saying that it worked well for the relatively small number of disruptive possessions expected in CP3. Operators also agreed to retain the existing system.

7.24. We accept HS1 Ltd’s proposals for its performance and possessions regimes.

8. Next steps

8.1. Prior to the implementation of an access review, we are required to consult on:

(a) any draft decision pursuant to paragraph 8.4 of Schedule 10 of the Concession Agreement; and

(b) our draft conclusions, including the details of any proposed changes to the Review Provisions.

8.2. In addition to seeking views from stakeholders on our draft conclusions, as set out in the draft determination, we are also seeking your views on those aspects of HS1 Ltd's contractual documentation which HS1 Ltd is proposing to modify as a result of its 5YAMS and which will be necessary to implement PR19 (e.g. the track access agreements). The proposed contractual amendments to the Passenger Access Terms, Freight Access Terms and framework agreements for EIL and LSER are published alongside the draft determination.

8.3. We are seeking views from stakeholders on all the issues raised in the draft determination, as well as any comments on the proposed revisions to the contractual documents, by **11 November 2019** by e-mail to PR19@orr.gov.uk.

8.4. In addition, and in accordance with paragraph 8.7 of Schedule 10 to the Concession Agreement, HS1 Ltd may now make revisions to the final 5YAMS, by no later than **30 November 2019**. These revisions may include:

(a) changes to address the deficiencies identified by us in the draft determination;

(b) submission of additional information to us in connection with its periodic review that was previously not apparent to HS1 Ltd; and

(c) updates to any previously submitted information.

8.5. Taking into account consultee views on the draft determination, and revisions to the final 5YAMS, we will then publish our final determination by 7 January 2020, in accordance with paragraph 8 of Schedule 10 to the Concession Agreement. That determination will establish whether we consider that the revised final 5YAMS is consistent with HS1 Ltd's General Duty (or require minor revisions to be so) or not.

8.6. If we determine that the revised final 5YAMS is still not consistent with HS1 Ltd's General Duty, we are required to determine:

(a) the operating, maintenance and renewals charges (OMRCs) and any associated changes to the Track Access OMRC Charging Provisions, the Track

Access Possessions Regime and the Track Access Performance Regime[14]; and

(b) those other elements of the revised final 5YAMS which we consider to be inconsistent with HS1 Ltd's General Duty.

[14] As defined in the Concession Agreement