Periodic review of HS1 Ltd 2024 (PR24)

Final Determination

06 January 2025

Contents

1. Executive Summary

1.1 Our 2024 periodic review (PR24) assesses HS1 Ltd's plans for the fourth control period under its Concession Agreement and station leases (CP4, from 1 April 2025 to 31 March 2030). This is our third periodic review for the HS1 route infrastructure; and it is our first review of the four HS1 stations.

1.2 Since our last periodic review (PR19), the COVID-19 pandemic and other events have resulted in significant fluctuations in traffic levels, as well as cost pressures for operators. There has been uncertainty about future traffic levels and costs in the HS1 system.

1.3 Our approach to PR24, which we published in January 2023, acknowledged this uncertainty and the need to look for ways to make the system (that is, HS1 Ltd and stakeholders it has contracts with) more resilient to the risks arising from this uncertainty. HS1 Ltd and stakeholders have engaged with us during PR24 to consider the processes and legal mechanisms available. This approach has resulted in plans for the network which we consider manage uncertainty more efficiently than in previous reviews. Improvements include HS1 Ltd's cost policy for forecasting renewals costs over 40 years; and setting charges to account for expected traffic volumes. HS1 Ltd's approach has reduced the renewals charges significantly, compared to its initial estimates using the previous models.

1.4 We have reviewed HS1 Ltd's route plans to confirm that they are consistent with its duties under the Concession Agreement, as we did in previous periodic reviews. This included reviewing asset management plans and charging models. We have also applied a similar approach to review asset management and charges for stations renewals. We have also looked more widely for opportunities to make the HS1 network more efficient and more resilient to change.

1.5 On 30 September 2024 we published our Draft Determination. We then carried out a six-week consultation, allowing stakeholders to provide feedback on our draft conclusions; and inviting them to submit any additional evidence they wished us to consider before making our Final Determination. We received 12 responses to our consultation, non-confidential versions of which are published alongside this Final Determination. In accordance with the periodic review process set out in the Concession Agreement, HS1 Ltd also provided revisions to its plans, following our Draft Determination.

1.6 The key themes of our Draft Determination conclusions were:

(a) HS1 Ltd's plans were generally of good quality and the management of long-term uncertainty had improved significantly since PR19, notably through the introduction of HS1 Ltd's Cost Policy;

(b) the maturity of HS1 Ltd's asset management varies significantly between asset groups. We concluded that the best practice asset groups had made significant improvements in a short time in CP3 and that equivalent improvements were achievable in the other asset groups in CP4. However, we concluded that HS1 Ltd was not sufficiently prioritising these improvements early in CP4, instead relying on a gradual evolution of maturity over several control periods. This impacts efficiency and resilience in CP4;

(c) we identified opportunities for HS1 Ltd to make its cost estimates for renewals and operations & maintenance more efficient. These opportunities came from asset management maturity as noted above and also by addressing inefficiencies in costs HS1 Ltd is passing on from its supply chain;

(d) we identified further opportunities to improve the calculation of charges, including traffic growth weighting for station renewals, removal of common costs from freight charges, and more challenging assumptions about investment returns;

(e) we presented our minded-to position on proposals by HS1 Ltd and operators for changes to their Access Terms contracts.

1.7 The majority of consultation responses were supportive of our Draft Determination. In particular, passenger operators supported our conclusions, but argued that we had not gone far enough on opportunities for efficiency. Freight operators supported our proposals on charges and highlighted other challenges facing the international freight sector. The Department for Transport (DfT) was supportive of our assessment and gave its position on reasonable assumptions for investment returns.

1.8 HS1 Ltd's main supplier Network Rail (High Speed) Ltd (NR(HS)) and its parent company, Network Rail Infrastructure Ltd (NRIL), strongly challenged the opportunities we identified to make operations and maintenance (O&M) costs more efficient. NR(HS) provided new evidence and clarifications to support its arguments.

1.9 HS1 Ltd's response and its revised plans were generally supportive of our Draft Determination. HS1 Ltd made some changes to its plans on the modelling of charges and some of the Access Terms proposals. HS1 Ltd also made new commitments to address issues raised in our Draft Determination, for example to lead system-wide workshops on environmental sustainability and incentives.

1.10 However, HS1 Ltd disagreed with some of our conclusions and provided new evidence and appropriate justification to support its plans. This included assumptions on escrow investment returns, our challenge to the scope of three specific station renewals, and specific Access Terms changes. After careful review of the evidence, we have accepted HS1 Ltd's position on these.

1.11 Escrow returns are currently lower than wider market returns and demonstrate poor value for money, and we wish to facilitate an investment strategy that enables better returns. However, for the Final Determination we have accepted HS1 Ltd's investment returns assumption used in the May 5YAMS.

1.12 HS1 Ltd was concerned about removing the annuity underfunding adjustment, and that allowing negative balances would increase the risk of underfunding renewals. We agree that it should commit to no negative balances in the first two control periods of the 40-year forecast.

1.13 HS1 Ltd has also introduced some new costs (notably for changes in employers' National Insurance Contributions) which we have assessed. Where HS1 Ltd has presented sufficient evidence to support these increases, we have accepted those which we found reasonable, or proposed adjustments to those which we did not.

1.14 HS1 Ltd did not, however, update its plans to take account of all of our Draft Determination conclusions on the efficient costs for renewals and O&M.

1.15 For renewals, HS1 Ltd's position was that there were no opportunities to further improve its asset management maturity; or to improve the application of its new Cost Policy for 40-year forecasting.

1.16 HS1 Ltd also supported its main supplier's (NR(HS)'s) response that there were no opportunities for further efficiencies in operations and maintenance. Subsequently HS1 Ltd wrote to us with a proposal from its supplier to increase efficiency targets by a further three percent at the end of CP4. However, the proposed phasing of this efficiency and the total impact on the NR(HS) costs were not clear.

1.17 We have reviewed all evidence on costs provided by HS1 Ltd and its stakeholders. We have concluded that operations and maintenance costs presented by HS1 Ltd are not efficient and hence do not meet its General Duty. We have determined a lower operations and maintenance charge (£11.5m lower over five years) and we require HS1 Ltd to update its plans to reflect this. On the basis of new evidence provided since our Draft Determination we have reduced the magnitude of this adjustment, from £14.7m in our Draft Determination.

1.18 Similarly, we have concluded that HS1 Ltd's costs for renewals are not efficient and hence do not meet its General Duty. This is because its cost estimates do not account for the current lack of asset management maturity and lack of good-quality base cost data. We have determined a lower charge (£9.5m lower for route and £4.4m lower for stations, over five years) and we require HS1 Ltd to update its plans to reflect this. The magnitude of this adjustment is based on the analysis in our Draft Determination, because HS1 Ltd has not provided any alternative proposals.

1.19 Where we concluded that HS1 Ltd's plans did not meet its General Duty, we were required to carry out an additional consultation on these specific issues. We held a consultation from 12 to 19 December 2024 and we have considered all the new evidence provided by responders before reaching our Final Determination.

1.20 We have also determined two minor adjustments to charges, to reflect detailed discussions with HS1 Ltd and stakeholders on CP4 traffic forecasts and costs associated with changes to the Access Terms, following our Draft Determination. We require HS1 Ltd to update its plans to reflect these.

1.21 Adjustments to the charges based on our Final Determination are shown in Table 1.1. HS1 Ltd's revenue from charges is shown in Table 1.2 and the charges for each operator are shown in Table 1.3. The effect of the changes has been to raise the charges relative to our Draft Determination, but they are still lower than the charges in HS1 Ltd's May 5YAMS and lower than the costs at the end of CP3.

1.22 Our determination assumes there will be no freight traffic on HS1 in this control period, based on information provided by HS1 Ltd and Freight Operators. As a result, the income from freight charges in Table 1.3 is zero. However, we have determined the charges which would apply if freight returns to HS1 at any point during the control period. These charges are significantly lower than in previous control periods, which we expect to support the growth of freight. Our determination assumes long-term growth in passenger traffic, including the introduction of new operators and we hope that our determination of lower charges will support this growth.

Table 1.1. ORR adjustments to HS1 Ltd's November 5YAMS/LCRs proposals for charges in CP4

£m / year (February 2023 prices)	Route renewals	Stations renewals	Route Operations & Maintenance
Asset management efficiencies, including asset management maturity and data	(9.5)	(4.4)	(11.5)
Net impact of Access Terms changes (inclusion of fixed cost wash up costs, removal of Escrow Investment Project costs)	-	-	(0.1)
Revised passenger traffic forecasts, impacting future traffic weighting in renewals calculation	0.7	0.1	-

Table 1.2. Movements in annuities from our Draft Determination to Final Determination

£m / year (February 2023 prices)	Draft Determination	Final Determination	Change from Draft Determination
Route annuity	27.8	28.1	1.1%
Total stations annuities	8.2	8.5	3.0%

Table 1.3 Components of HS1 Ltd's income from regulated charges in CP4 per year

£m / year (February 2023 prices)	CP3	HS1 Ltd November 5YAMS/Life Cycle Reports (LCRs)	Final Determination	Change from November 5YAMS/LCRs
Route Operations & Maintenance	95.8	92.4	90.1	(2.5%)
Route renewals annuity	34.0	29.9	28.1	(5.9%)
Stations renewals annuity	11.6	9.3	8.5	(9.2%)
Total regulated income	**141.4**	**131.6**	**126.7**	**(3.8%)**
By operator:				
Eurostar International Ltd (EIL)		49.5	48.0	(2.9%)
Southeastern		81.0	77.6	(4.1%)
East Midlands Railway (EMR)		1.2	1.1	(9.7%)
Freight		0.0	0.0	-
Total	**141.4**	**131.6**	**126.7**	**(3.8%)**

1.23 Under the Concession Agreement and stations leases, HS1 Ltd is now required to finalise its final 5YAMS and LCRs to reflect our Final Determination. The 5YAMS and Life Cycle Reports (LCRs) must be finalised by 3 February 2025. HS1 Ltd is required to update the legal drafting of its access terms, to implement any changes before the start of CP4 on 1 April 2025.

2. Background

The HS1 network

2.1 The HS1 network is a 109km high-speed rail line that connects London St Pancras through Kent to the Channel Tunnel.

2.2 There are four stations on the line: London St Pancras, Stratford International, Ebbsfleet International and Ashford International.

2.3 The network is used by domestic services between London and Kent and within Kent; and international passenger and freight operations through the Channel Tunnel.

HS1 Ltd

2.4 HS1 Ltd holds a 30-year concession of the HS1 network until 30 December 2040, and concurrent leases for the four stations on the line. Some of its revenue comes from regulated access charges which are paid by train operators to use HS1 Ltd's track and stations. The company also receives further income, which is not regulated by ORR, to recover the long-term costs of the project; and from the provision of retail facilities and car parking at stations. Unlike Network Rail Infrastructure Ltd (NRIL), HS1 Ltd does not receive any UK Government network grants.

2.5 Many of the functions which HS1 Ltd must perform as infrastructure manager under the Railways (Access, Management and Licensing of Railway Undertakings) Regulations 2016 ("Access and Management Regulations"), such as operation, maintenance, renewal, signalling and timetabling, are contracted out to third parties.

2.6 HS1 Ltd also manages contracts for the provision of certain services, the costs of which are passed directly through to operators as part of their charges. For example, this includes electrical power supplied by UK Power Network Services.

Our role

2.7 We regulate the safety of the HS1 network under the Railways and Other Guided Transport Systems (Safety) Regulations 2006. HS1 Ltd also has safety obligations set out under the Concession Agreement and stations leases. Network Rail (High Speed) Ltd (NR(HS)) and ABM Facility Servies (ABM) also have safety obligations as the safety duty holders for the railway, holding safety authorisations for the route and three stations, and Ashford International Station respectively.

2.8 We also have responsibilities to regulate HS1 Ltd's charging of operators under the Access and Management Regulations. These functions include: a pre-approval role for new and amended framework agreements; ensuring that charges for use of the assets comply with the requirements of the Access and Management Regulations; and ensuring that HS1 Ltd is provided with incentives to reduce the costs of provision of infrastructure and access charges.

2.9 In addition, the Concession Agreement assigns duties to us in regulating HS1 Ltd to ensure that it is meeting its General Duty to meet its asset stewardship purpose. Similarly, the stations leases assign regulatory duties to us, to ensure HS1 Ltd's plans for each of its four stations meet the life cycle purpose for that station. This is of particular importance for the periodic review.

2.10 We have entered into a Memorandum of Understanding with the Secretary of State in respect of the performance of our roles on the HS1 network. Our overall approach to our economic regulation of the HS1 network is outlined in two regulatory statements published in 2009 and 2022. In particular, we are required by the Concession Agreement and stations leases to undertake periodic reviews of the asset management plans and the charges for using the network. Our 2024 Periodic Review of HS1 Ltd (PR24) covers the fourth control period of HS1 Ltd's concession and lease periods (referred to as "CP4"), covering 1 April 2025 – 31 March 2030. Table 2.1 below shows charges regulated by our periodic review.

Table 2.1 Charges regulated by ORR

Access to:	Regulated	Unregulated
Route	Operations, maintenance and renewals charges	Investment recovery charge
Stations	Renewals charge	Operations and maintenance charge (QX)

3. Final Determination Methodology

3.1 Following the start of the PR24 process with the publishing of our approach and process document in January 2023, we undertook a programme of due diligence which built the breadth and depth of understanding which underpins this Final Determination. This complements the knowledge we have built up monitoring the performance of HS1 Ltd over 15 years. In reaching the decisions outlined in this Final Determination, we have carefully balanced our statutory duties under section 4 of the Railways Act 1993 and made decisions that are consistent with the Access and Management Regulations.

3.2 During 2023, in parallel with HS1 Ltd assuring NR(HS) and ABM's plans, we conducted extensive early engagement. We held around 50 meetings with stakeholders to understand positions, develop ideas and inform ourselves of the basis of the plans, as well as numerous site-visits. As it is our first review of HS1 stations we commissioned consultants to clarify and report on the contractual arrangements for the allocation of costs in the stations. Benchmarking studies on route and stations costs and NR(HS)'s Operations & Maintenance management fee were carried out by consultants hired by HS1 Ltd and NR(HS) respectively.

3.3 In February 2024, we received HS1 Ltd's draft Five Year Asset Management Statement (5YAMS) for its route, and a Life Cycle Report (LCR) for each station. We carried out a detailed review of these documents, along with the accompanying supporting documents, in particular NR(HS)'s plans as the operator of the network. We then provided feedback to HS1 Ltd and NR(HS) through detailed meetings on the individual areas.

3.4 After taking account of our feedback and that of other stakeholders through a consultation, HS1 Ltd submitted its final 5YAMS and LCRs to us in May 2024 and we continued our process of analysis and challenge.

3.5 In total our scrutiny of the draft and final 5YAMS and LCRs comprised three days of site visits, eight deep dives into Specific Asset Strategy (SAS) areas during their development, eight further challenge sessions for each SAS; and five further deep dives into cross-asset programmes and subjects. Over 250 technical questions have been posed and responded to which form the basis of our evaluation. Queries were raised and answered as part of the progressive assurance of both the next control period's proposals and the 40-year asset plans. As such, our review has considered both top-down assessments (comparing total costs and high-level trends against best practice) and bottom-up assessments (considering whether a sample of individual elements in the plans demonstrate best practice and efficient cost estimating).

3.6 Around 15 further deep-dive sessions and other follow-ups were then carried out with NR(HS) to ensure a detailed technical understanding of the issues. Final requests for evidence and clarification were also sent to HS1 Ltd over that time.

3.7 We published our Draft Determination on HS1 Ltd's plans on 30 September 2024. In response, we received 12 representations from interested parties. Non-confidential versions of their responses are published alongside this Final Determination.

3.8 Further to the periodic review process set out in the Concession Agreement, HS1 Ltd revised its 5YAMS and life cycle reports where it agreed with our Draft Determination findings, or submitted additional information where it did not.

3.9 We have reviewed all responses and revised documentation, and taken any additional information into account in developing this Final Determination. In relation to each of HS1 Ltd's life cycle reports, we have taken a decision whether it can be approved; provisionally approved pending minor revisions; or rejected. For the HS1 route, in respect of each of our conclusions, we have considered whether HS1 Ltd's 5YAMS is consistent with its General Duty; would be consistent with its General Duty subject to minor revisions; or is not consistent with its General Duty.

3.10 Under HS1 Ltd's passenger access terms, any areas where we find that HS1 Ltd's revised 5YAMS is not consistent with its General Duty requires a further consultation of the parties to the terms, and other interested parties.

3.11 We found HS1 Ltd's revised 5YAMS to be inconsistent with its General Duty in two areas. We consulted on these matters in the period of 12-19 December 2024, and received six responses, non-confidential versions of which are published alongside this document. We have taken these responses into account when taking the decisions set out in this Final Determination.

3.12 Over the course of 2024 we also received stakeholder proposals for access terms changes where the HS1 system was unable to unanimously agree on a way forward. Further to our Draft Determination minded-to positions, and stakeholder workshops for interested parties to discuss these matters, we have presented our final decisions on these matters as part of this Final Determination. We request HS1 Ltd to provide revised legal drafting reflecting these positions, for our review, following the publication of this document.

3.13 The production of this Final Determination marks the culmination of the Consideration Stage of the PR24 process. We look forward to HS1 Ltd's revised 5YAMS and LCRs, by 3 February 2025 for our review, following which we will issue implementation notices to enable the necessary changes to be made to the access arrangements for the network.

4. Asset Management Activity

Asset Management Strategies

Stakeholder consultation responses

4.1 Our Draft Determination concluded that the structure of the Asset Management documents was in line with best practice, as it included all the components set out in best practice guidance (notably the ISO55000 series).

4.2 Our Draft Determination concluded that there were significant differences in the level of asset management maturity between the different asset groups. There were valid reasons for these differences. Some asset groups had not experienced many renewals because assets were still within their first life cycles (for example route Civils, which includes structures and earthworks). Also, in PR19 we had agreed with HS1 Ltd to prioritise maturity improvements for Track, as this asset group makes up the majority of the total renewals costs. Our Draft Determination concluded that Track and Electrification asset groups were the most mature and represented best practice, for other asset groups to emulate.

4.3 We recognised that HS1 Ltd's strategies discuss some initiatives to improve maturity in the less mature asset groups (route Civils; Signalling; station Mechanical, Electrical and Plumbing; and Lifts, Escalators and Travelators). HS1 Ltd's strategies mentioned improvements in the management of data, obsolescence, technology, weather resilience and upskilling staff, which are the right areas to improve. However, we concluded that the timelines for improving these areas were not sufficiently challenging and did not address the immediate needs of the HS1 railway, around resilience to extreme weather and changing traffic levels; nor the efficiency impacts of a lack of maturity on O&M and renewals cost estimates.

4.4 We note the following examples, which highlight a lack of asset management maturity in specific assets:

(a) In drainage (within the route Civils asset group), HS1 Ltd's approach does not reflect important improvements in the wider GB rail industry:

(i) over the last control period NRIL on the mainline railway has moved away from 'defect inspections' (reactively spotting defective drainage, then fixing it) to 'condition inspections' (monitoring how well drainage is managing water flows); and proactively fixing it before there is an impact on operations or damage to other assets. This change has been widely publicised following the fatal accident at Carmont. Both NRIL and the expert reviewer Lord Robert Mair concluded that complete, up-to-date data on drainage condition needs is a top priority, for safety and performance; and

(ii) HS1 Ltd's plans mention improvements in data and asset inventories, but we have challenged HS1 Ltd on these and confirmed they only relate to defect inspections and managing reactive works. HS1 Ltd does not have a plan or timeline to introduce condition inspections across the HS1 assets. HS1 Ltd noted an aspiration to consider condition data for bridges only, but it does not have a time-bound plan for this.

(b) During PR24 HS1 Ltd has indicated that drainage presents a low risk to the HS1 railway, because of the high specification of the HS1 design. However, there was a major flooding incident at the Thames Tunnel in CP3, as well as drainage issues identified at the Ashford box. We expect HS1 Ltd to bring further focus to drainage, for example; in mitigation of climate change, changes to water management by neighbours and impact of storm water on ageing assets. In Lifts, Escalators and Travelators in CP3, the absence of a data-led understanding of assets has resulted in a number of challenges including:

(i) increased costs and down-time for repairs, where asset condition was found to be worse than expected once work had started;

(ii) availability targets have not been met for Lifts, Escalators and Travelators over the last two years (as highlighted in our Annual Reports);

(iii) over the last two years there have been continued issues with the timely delivery and cost of works through HS1 Ltd's supply contracts; and

(iv) other asset management organisations such as NRIL face similar challenges with similar assets and have developed different contractual models, there appears to be other practices HS1 Ltd could look to at the start of CP4, to address the issues it is currently facing.

4.5 In our Draft Determination, our conclusions about asset management maturity fed into our other conclusions, including material reductions to charges for operations, maintenance and renewals.

4.6 Eurostar International Limited (EIL) and Southeastern welcomed our draft determination conclusion, that the differing levels of maturity present opportunities for improving asset management and accelerating benefits, on both route and station assets. EIL provided examples of issues in CP3 which highlighted a lack of maturity in asset management, particularly around stations. However, EIL and Southeastern both suggested that there were opportunities for greater and faster improvements than those set out in our Draft Determination.

4.7 HS1 Ltd and NR(HS) acknowledged the need to improve maturity in specific asset groups, but indicated that the level of ambition outlined in our Draft Determination was already included in their plans. HS1 Ltd and NR(HS) highlighted their digital road map and Enterprise Asset Management System (EAMS) programmes, which aim to improve how HS1 Ltd gathers and uses asset data. However, HS1 Ltd and NR(HS) clarified that they do not intend to implement a step change in the less mature asset groups in CP4, to the same extent as the step change in Track modelling in CP3.

HS1 Ltd revisions to its plans

4.8 HS1 Ltd disagreed with our conclusion, stating that there are no opportunities to improve asset management maturity beyond what was set out in its 5YAMS and LCRs. As a result, HS1 Ltd has not added any new commitments, or made any adjustments to charges in relation to our Draft Determination conclusions on asset management maturity.

4.9 HS1 Ltd's response to our Draft Determination reiterated parts of its strategies and plans which it felt demonstrated mature asset management. It did not present any new, or materially different evidence to address our conclusion that HS1 Ltd is capable of step changes in maturity in these assets in CP4 (which we based on evidence from successes in CP3 and the sufficiency of R&D funding); and that these step changes are needed to provide resilience against climate change and other external factors (such as significant changes to traffic levels if new operators enter the market).

Our conclusion

4.10 We recognise that HS1 is still a relatively new railway and asset management policy develops with the age of the asset. We recognise that HS1 Ltd has mentioned relevant areas of improvement in its strategies. However, we have not seen evidence to change our conclusion from the Draft Determination, that HS1 Ltd's plans are not sufficiently challenging in terms of timelines or prioritising improvements in asset management maturity, at the start of CP4.

Our Final Determination

4.11 Our Draft Determination concluded that the structure of HS1 Ltd's asset management documents (Specific Asset Strategies, Strategic Asset Management Plan and other strategies) were in line with best practice. For the reasons set out in our Draft Determination and in this document, taking into account stakeholder responses to our Draft Determination, we have determined that HS1 Ltd's plans meet its General Duty, with regard to the structure of its asset management documentation.

4.12 However, HS1 Ltd has failed to address our conclusions about the timelines and priority of improvements in asset management maturity. We have concluded that faster maturity improvements are achievable in CP4 and are needed to ensure assets are managed efficiently, including efficient planning of maintenance and renewals; but also avoidance and efficient mitigation of risks. Based on a lack of any changes to HS1 Ltd's plans, or any materially different evidence, we have concluded that HS1 Ltd's proposed charges for CP4 and subsequent control periods are not efficient and hence do not meet its General Duty under the Concession Agreement. Our determination of efficient charges is discussed in sections 4.48, 5.20 and 5.93.

Renewals

Stakeholder consultation responses

Renewals in CP4 - Route

4.13 Our Draft Determination supported HS1 Ltd's route renewals plans for CP4. However, we noted there are significant risks to the delivery of the CP4 ballast programme. We concluded that HS1 Ltd should review the risks and the potential impact on escrow balances and access plans if there is slippage on this programme.

4.14 Southeastern suggested that the unit rate for the CP4 ballast renewal is excessive and comes with no certainty and asked for assurance that we had reviewed this.

4.15 We reviewed the unit rate ahead of our Draft Determination and we were satisfied with HS1 Ltd's approach to estimating the cost, which included appropriate allowances for the high level of risk. The renewal is not due to start until Year 4 of CP4 and the unit rate is likely to evolve as the programme develops. We expect HS1 Ltd to keep us and operators informed of the unit rate through the renewals governance process.

Renewals in CP4 - Stations

4.16 Our Draft Determination supported HS1 Ltd's stations renewals plans for CP4. However, our Draft Determination stated that we expect a commitment by HS1 Ltd to improve the governance of station renewals projects.

4.17 Because this is our first periodic review including stations, our Draft Determination set out our interpretation of the contractual frameworks for funding station renewals. This included consideration of interactions between station areas and third-party areas.

4.18 Our Draft Determination highlighted three specific projects in St Pancras in CP4 (uninterruptible power supply units; heat pumps; and toilets) which had complex interactions with third-party areas. We proposed a 5% efficiency challenge on these projects, until HS1 Ltd could demonstrate satisfactorily that the scope is not excessive for the needs of the railway station; and that the renewal is not providing material benefits to third parties without their contribution.

4.19 No stakeholders objected to our conclusion about the need for improved governance of station renewals. Southeastern and EIL both recognised our position on the contractual obligations for third parties (including retailers and Govia Thameslink Railway) to contribute towards station renewals. However, both suggested that third parties should be made to contribute more towards renewals in common areas, based on the recognition that these third parties must contribute to some operations and maintenance costs (through qualified expenditure, as set out in condition 102 of the Station Access Conditions) and a general principle that the beneficiary of renewed assets should pay its costs.

4.20 Southeastern and EIL welcomed our conclusion to apply a 5% efficiency challenge to three station projects, to reflect the possibility that third parties would receive benefits from the scope of these projects without contributing to costs. Both Southeastern and EIL requested further clarification on how we would hold HS1 Ltd to account for efficient scope and costs on these projects.

4.21 NR(HS)'s response set out details of how third-party interactions on these three projects had already been accounted for. NR(HS) stated that it will support HS1 Ltd on future station renewals projects, to provide clear evidence where third-party interactions have been considered in the project scope.

Renewals in CP5-CP11 – Route and Stations

4.22 Our Draft Determination concluded that planning for renewals over 40 years had improved significantly since PR19, notably due to the introduction of HS1 Ltd's new 'cost policy'.

4.23 As discussed in the previous section, our Draft Determination concluded that there were opportunities for HS1 Ltd to improve its asset management maturity in specific asset groups in CP4, beyond what was set out in its plans. We concluded that improvements in asset management maturity would lead to better understanding of opportunities and better mitigations for risks, which would reduce cost estimates for the 40-year plan.

4.24 In our Draft Determination, we quantified the opportunity to reduce costs based on evidence from PR19 and CP3. In PR19 we set HS1 Ltd an efficiency challenge on long-term track renewals; in CP3 HS1 Ltd rapidly improved its asset management maturity for track; and by PR24, HS1 Ltd had achieved cost reductions through better asset knowledge, totalling 9% of its whole plan for renewals spending. We concluded that it was reasonable to assume HS1 Ltd could achieve similar 9% reductions in CP4 in each of the less mature asset groups (route Civils; Signalling; station Mechanical, Electrical & Plumbing; and Lifts, Escalators and Travelators).

4.25 EIL welcomed improvements in 40-year renewal planning, through the introduction of HS1 Ltd's Cost Policy and our endorsement of it. EIL agreed with our observation that there was a tendency in HS1 Ltd's application of the cost policy to find more risk in the short term and more opportunity in the longer term. EIL supported our conclusion that mature application of the Cost Policy for all time horizons should be expected to result in net opportunities.

4.26 EIL and Southeastern supported our proposed efficiency adjustments of 9% in specific asset groups, to account for improvements in asset management maturity which we expect before PR29. However, both EIL and Southeastern presented arguments for why our adjustments did not go far enough. Southeastern challenged that adjustments relating to asset management maturity should have been greater, given the ease with which NR(HS) outperformed its O&M efficiency targets in CP3.

HS1 Ltd revisions to its plans

Renewals in CP4 - Route

4.27 HS1 Ltd has not changed its plans with regard to route renewals activities in CP4.

4.28 HS1 Ltd has added a new appendix in its revised 5YAMS, with additional details of risk assessments for the CP4 ballast renewal.

4.29 HS1 Ltd has added a commitment to provide increased stakeholder engagement for the ballast renewal programme, throughout CP4 (discussed in more detail in paragraphs 4.70-4.71).

Our conclusions

4.30 We have concluded that HS1 Ltd's revised plans address our Draft Determination conclusions for route renewals in CP4. We will follow up on commitments through our business-as-usual regulation in CP4.

Renewals in CP4 - Stations

4.31 HS1 Ltd has not changed its plans with regard to stations renewals activities in CP4.

4.32 HS1 Ltd has included a commitment to improve station governance in CP4. We are satisfied that this addresses our Draft Determination conclusion and we will follow-up through our business as usual regulation in CP4.

4.33 HS1 Ltd has provided additional details for third-party interactions on the three stations projects where we proposed a 5% efficiency challenge. Full details are provided in HS1 Ltd's response to our consultation. In summary:

(a) Uninterruptible Power Supply (UPS): HS1 Ltd has confirmed that the UPS systems only provide power security locally and there is no control, support or reliance between neighbours. Therefore, third-party units (including retail and the Thameslink box) pay in full for UPS systems within their areas and do not receive any benefits from UPS in common areas;

(b) Heat pumps, to replace boilers and chillers: HS1 Ltd has confirmed that this project will not renew any assets physically within third-party areas (although there are short stub connections up to the boundaries). Third parties will pay in full for renewal of assets within their areas. The scope of the project (that is, the design of the new heat pumps) is such that third-party areas may actually experience a disbenefit (lower temperatures, slower heat transfer and greater pumping pressures) and they will need to pay in full for any improvements required in their areas to deliver their agreed operating temperatures; and

(c) Toilets and toilet vacuum pumps: HS1 Ltd has confirmed that all food and retail outlets wholly fund their own fit-outs including where they require vacuum systems to meet their own service requirements. All third-party toilets within the station are connected to station sewerage which comprises designed gravity or vacuum systems. Station capacity for waste is not exceeded and where there is further demand retailers fund their own independent systems.

4.34 HS1 Ltd has committed to include details of third-party interactions as part of the renewals governance process in CP4. We are satisfied that this addresses our Draft Determination conclusion and we will follow-up through our business as usual regulation in CP4.

Our conclusions

4.35 We have reviewed the new information provided, along with evidence we obtained from our deep-dive sessions in PR24 and during the previous control period. We are satisfied that, for these three projects, the scope is not excessive for the needs of the railway station and is not providing material benefits to third parties without their contribution. As such, we are satisfied with HS1 Ltd not applying our 5% efficiency challenge on these three projects.

4.36 However, before it can remove funds from the escrow account, the renewals governance process requires HS1 Ltd to present its finalised cost estimate for each project, along with the finalised scope and reasonable supporting evidence. We will be involved in the review and approval process to assess the scope and estimate at that stage. During CP4 we will expect all station renewals projects to include an explicit description of any interactions with third-party areas. If the project scope is excessive for the needs of the station, we will expect HS1 Ltd to seek appropriate contributions from third-party beneficiaries, or to revisit the project scope.

Renewals in CP5-CP11

4.37 HS1 Ltd has not made any changes to its plans or added any commitments, to address our Draft Determination conclusion on a 9% reduction to long term renewals in less mature asset groups.

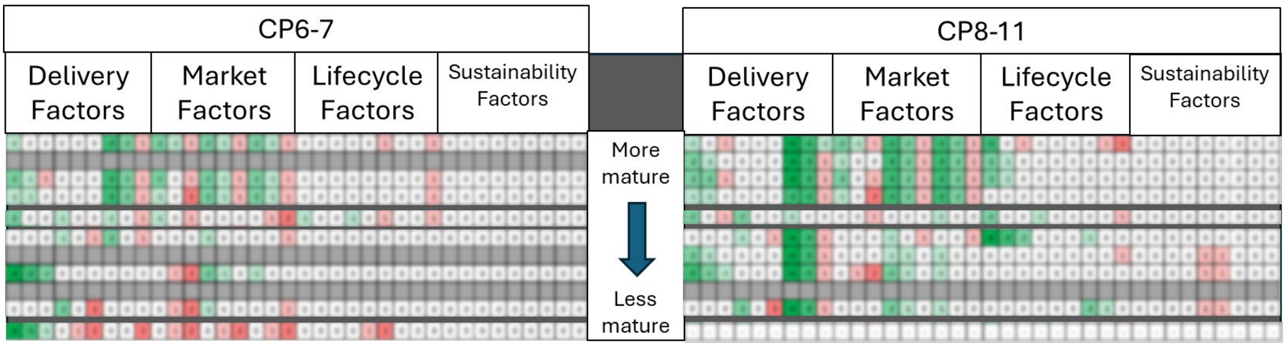
4.38 HS1 Ltd's response to our Draft Determination reiterated the 'levers' it had already applied in its Cost Policy, which account for Lifecycle Factors (the potential for better understanding of deterioration, novelty of design and ability to source like-for-like assets) and Delivery Factors (the potential for standards to affect constructability and associated complexity of construction and confidence in volumes).

Our conclusions

4.39 We recognise that HS1 Ltd's Cost Policy includes some levers which are relevant to our conclusion, for example a lever for 'better understanding of deterioration' later in the 40 years. However, the evidence does not demonstrate that HS1 Ltd has applied its Cost Policy levers to account for the current lack of asset management maturity in certain assets. Our conclusion was that some asset groups were not sufficiently mature to identify opportunities and risks and hence they have not applied the Cost Policy efficiently. This is evidenced in Figure 4.1.

4.40 In Figure 4.1 we present HS1 Ltd's application of its Cost Policy levers for route renewals. We have re-ordered the asset groups based on our assessment of their maturity as set out in our Draft Determination. The figure demonstrates that for the more mature assets (Track and Electrification) HS1 Ltd was able to identify opportunities and risks in most areas (there are fewer white cells); in these asset groups the company was able to identify more opportunities than risks (more green than red); and risks tended to be mitigated effectively (reds tend to be paler).

Figure 4.1 HS1 Ltd Cost Policy levers application to route renewals



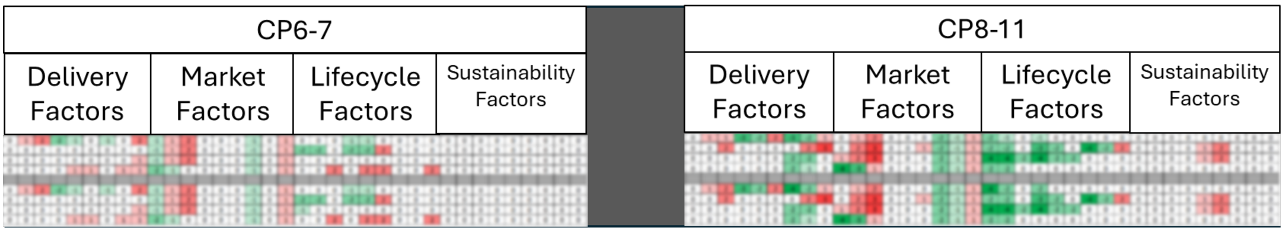
Source: Adapted from figures in HS1 40-year cost levers scoring report, May 2024

4.41 We recognise that there will be different opportunities and risks in different asset groups but, by PR29, we expect the Cost Policy applications to look far more similar across the asset groups, as the less mature asset groups improve. This will result in more efficient renewals costs.

4.42 We also note that the far-right area on Figure 4.1 (relating to environmental and weather resilience factors) is predominantly white, where we expect more opportunities (and some risks) to be identified in PR29, as a result of greater maturity in these areas.

4.43 For stations, all asset groups are managed by one team. As a result, the Cost Policy applications look similar between the asset groups, as shown in Figure 4.2. This highlights how the detailed application of the Cost Policy is dependent on the team applying it.

Figure 4.2 HS1 Ltd Cost Policy levers application to station renewals



Source: Adapted from figures in HS1 40-year plan cost levers report (stations), May 2024

4.44 Figure 4.2 shows a large number of risks which are not yet mitigated, especially in Lifts, Escalators & Travelators in CP6 & CP7; and Mechanical Electrical & Plumbing in CPs 8-11. We expect many of these to be mitigated and more opportunities to be identified by PR29, as maturity in these asset groups improves. This will result in more efficient renewals costs.

4.45 HS1 Ltd's response also noted the risk that, if the efficiencies we identified in our Draft Determination do not materialise when the Cost Policy is reapplied at PR29, then charges will need to increase. HS1 Ltd also argued that the timing of this increase could have significant, negative impacts on the system, at a time when it is likely to be negotiating specified upgrades, the end of the current concession and potentially the introduction of new operators.

4.46 We acknowledge the inherent uncertainty around planning for future efficiencies. However, the risk of cost fluctuation will always exist. Current operators (who fund these charges) have all supported our conclusion and the periodic review process exists to manage changes in cost assumptions – including those that are revealed as new information emerges over the next five years. Hedging against this risk now would not be efficient given the evidence available.

Our Final Determination

Renewals in CP4 – Route and Stations

4.47 For the reasons set out in our Draft Determination and in this document, taking into account stakeholder responses to our Draft Determination, we have determined that HS1 Ltd's plans meet its General Duty in relation to renewals plans for CP4.

Renewals in CP5-CP11

4.48 We have concluded that HS1 Ltd's revised plans do not meet its General Duty in relation to renewals for CP5-CP11, because its proposed charges for renewals are not efficient.

4.49 Our Draft Determination concluded that HS1 Ltd's Cost Policy had been applied based on the current understanding of its assets, but we identified a lack of asset management maturity which limits HS1 Ltd's understanding of its assets. We concluded that applying the Cost Policy with improved asset management maturity would result in lower charges. HS1 Ltd has failed to address this conclusion.

4.50 In the absence of any new evidence, or any attempt by HS1 Ltd to quantify the magnitude of this opportunity, we are determining a reduction of 9% based on the analysis presented in our Draft Determination. This 9% reduction applies to the less mature asset groups (route Civils; Signalling; Lifts, Escalators and Travelators; and station Mechanical Electrical and Plumbing), for renewals in the period CP5-CP11.

4.51 In accordance with HS1's passenger access terms, any areas where we find that HS1 Ltd's revised 5YAMS is not consistent with its General Duty requires a further consultation of the parties to the terms, and other interested parties. We therefore consulted further on this matter in December 2024 and we received the following responses.

4.52 Operators, DfT and Rail Partners remained supportive of our adjustment to renewals costs (9% reduction in specific asset groups, for renewals in CP5-CP11), to account for asset management maturity. Rail Partners highlighted the importance of challenging efficiency targets in CP4, because lower charges will help to support business cases for growth in freight and passenger traffic.

4.53 HS1 Ltd accepted our conclusion, on the basis that we had acknowledged the uncertainty around long-term renewals estimates and the risk that charges will need to increase in PR29.

4.54 NR(HS) noted our conclusion and our approach to addressing uncertainty in renewals costs through the five-yearly periodic review process.

4.55 We have taken due consideration of these responses and our determination remains as above (a 9% reduction, in specific asset groups, for renewals in CP5-CP11).

Maintenance

Stakeholder consultation responses

4.56 Our Draft Determination supported HS1 Ltd's plans for maintenance activity in CP4 (noting efficiency opportunities around risk and markups, discussed in the Cost Assessment chapter). We concluded that there had been agile changes in the way maintenance was delivered in some asset groups in CP3 and that these represented best practice. We concluded that there were opportunities to apply similar, agile changes to optimise maintenance in the less mature asset groups (route Civils and Signalling) in CP4.

4.57 EIL's response suggested that all the recommendations from the Rebel benchmarking study (commissioned by HS1 Ltd) should have been taken forward, which included 'resizing' the Signalling asset management team to reduce costs.

4.58 On this point, our Draft Determination identified Signalling as one of the less mature asset groups and we identified opportunities for efficiency under both O&M and Renewals charges in this and other less mature asset groups. This remains our conclusion in our Final Determination (opportunities for efficiency are discussed in Chapter 5).

4.59 No other stakeholders raised objections about the volume or scope of maintenance activity. Operators and DfT were supportive of our conclusion around seeking improvements in less mature asset groups.

4.60 Many stakeholders provided detailed responses about the costs and charges for O&M. These are discussed later, in the Chapter 5.

HS1 Ltd revisions to its plans

4.61 HS1 Ltd has not made any changes to its plans or added any new commitments in relation to the volume and scope of maintenance activity.

Our Final Determination

4.62 For the reasons set out in our Draft Determination and in this document, taking into account stakeholder responses to our Draft Determination, we have determined that HS1 Ltd's plans meet its General Duty in relation to the volume and scope of maintenance activity.

4.63 Our determination on costs and charges for O&M is discussed separately, in the Chapters 5 and 6.

Engineering access

Stakeholder consultation responses

4.64 Our Draft Determination supported HS1 Ltd's CP4 access plans. However, we concluded that there were significant risks to the delivery of the CP4 ballast renewal programme, which were likely to impact the number of possessions required in the later years of CP4. Our Draft Determination stated that we expect HS1 Ltd to review the risks to the ballast programme and engage with operators on any risks to the access plans.

4.65 Southeastern had no material objection to our conclusion but noted that it is concerned about the ability to roll over the Extended Possession Allowance, which could make access requests in later years unmanageable.

4.66 Southeastern supported our conclusion that further work is required to understand the risk and uncertainty in the ballast renewal programme. It sought greater stakeholder communication by HS1 Ltd to ensure demand for access is manageable.

4.67 EIL supported HS1 Ltd's direction of travel for delivering renewal activity and is engaging in discission on proposed changes to the access regime needed to deliver higher volumes of work. EIL considered that more detail is required to justify the extended possession windows for renewals.

4.68 We have concluded that there will continue to be uncertainty in the amount of access required for CP4 ballast renewals until the programme becomes more defined. As such, continued risk assessment and stakeholder engagement in the early years of CP4 are critical.

HS1 Ltd revisions to its plans

4.69 HS1 Ltd's response stated that the current plan for ballast renewals is still deliverable. Therefore, no possession numbers have been changed in HS1 Ltd's revised 5YAMS.

4.70 HS1 Ltd has provided additional details of its risk assessment for the ballast renewal programme. We held a workshop with HS1 Ltd and NR(HS) to review this risk assessment. We have concluded that an appropriate level of risk analysis has been undertaken for this stage in the project's development. However significant risks to delivery still remain and it is critical that HS1 Ltd continues to update this risk assessment and engage operators on the resulting access requirements, ahead of when the work is undertaken and funded.

4.71 HS1 Ltd has added a commitment in its 5YAMS to engage with operators regularly in CP4, to discuss optimisation of the access plans as the ballast renewal programme progresses.

Our Final Determination

4.72 We have concluded that HS1 Ltd’s revised plans meet its General Duty, in this area.

Research and Development (R&D)

Stakeholder consultation responses

4.73 Our Draft Determination supported HS1 Ltd’s proposed £4m of funding for R&D. We supported the new funding mechanism (funds will be held by NR(HS) but will not be subject to the outperformance mechanism and can be rolled over if unspent at the end of CP4). At the time of the Draft Determination, discussions were ongoing between HS1 Ltd, NR(HS) and operators to confirm the governance mechanism for R&D, but we supported HS1 Ltd’s proposals.

4.74 Our Draft Determination concluded that there was an opportunity to review the priorities for R&D funding in CP4, to ensure that R&D was supporting the acceleration of improvements in asset management maturity early in CP4.

4.75 No stakeholders raised material concerns with our conclusions. EIL agreed in principle with our conclusions but noted that the CP3 governance had not been effective. Both EIL and Southeastern requested a commitment from HS1 Ltd to provide operators with greater transparency of business cases for R&D projects.

4.76 EIL also requested clarifications on how unspent R&D funds would be rolled over between control periods.

4.77 Since the Draft Determination, we have held workshops with operators, HS1 Ltd and NR(HS) to discuss more effective governance arrangements and definitions for the R&D portfolio in CP4.

HS1 Ltd revisions to its plans

4.78 HS1 Ltd has addressed our conclusions and stakeholder responses by making the following changes, in its revised plans:

(a) HS1 Ltd has provided a revised definition of R&D as: "*Research, trialling, developing and introducing technologies, processes, or ways of working, for technologies which are entirely new or where application on the High Speed 1 System is materially different. The specific activities (e.g. trialling, creating processes etc) which are eligible for R&D funding will vary for each technology*". During our consultation process we have discussed this definition with HS1 Ltd, NR(HS) and operators. We are satisfied that this addresses our Draft Determination conclusion by allowing R&D funding to support acceleration of asset management maturity, while still ensuring funds are only used for legitimate R&D activities.

(b) HS1 Ltd's revised 5YAMS also sets out our role in the governance of R&D. We are satisfied that this will allow us to provide greater transparency to operators, while making R&D governance more efficient.

Our Final Determination

4.79 We have concluded that HS1 Ltd's revised plans meet its General Duty, in relation to R&D, and have reflected the planned R&D expenditure in the regulated charges for operators.

Operations & Train Performance

Stakeholder consultation responses

4.80 Our Draft Determination supported HS1 Ltd's operations plans for CP4. We concluded that, based on experience from our regulation of the mainline railway, it would be challenging to deliver and embed the proposed improvements to operational recovery. Our Draft Determination stated that we expect a commitment by HS1 Ltd to demonstrate improvements in operations in its annual reporting to us.

4.81 NR(HS)'s response stated that it has made significant progress since its 5YAMS submission in May 2024, with the successful appointment of all proposed Service Delivery Managers. However, NR(HS) also noted that the opportunities for efficiencies through enablers in our Draft Determination could impact less critical investments, such as operational resilience, for the benefit of all system stakeholders.

4.82 No stakeholders raised any objections to HS1 Ltd's plans or our Draft Determination conclusions, in relation to operations.

HS1 Ltd revisions to its plans

4.83 HS1 Ltd agreed with our conclusion for a commitment to demonstrate improvements in operations. HS1 Ltd noted that it expects NR(HS) to demonstrate that changes for managing the recovery of train services have been made and benefits are on track to be realised by the end of the first year of CP4. HS1 Ltd added a commitment in its revised 5YAMS, to report on this progress in its first CP4 Asset Management Annual Statement. We will monitor this and report on the benefits and how they were achieved through our annual reports in CP4.

Our Final Determination

4.84 For the reasons set out in our Draft Determination and in this document, taking into account stakeholder responses to our Draft Determination, we have determined that HS1 Ltd's plans meet its General Duty in relation to operations and train performance.

Safety

Stakeholder consultation responses

4.85 Our Draft Determination supported HS1 Ltd's safety strategy for CP4. We concluded that there was an opportunity for HS1 Ltd to clarify its strategy for 'safety by design' and to ensure more emphasis is placed on this. We noted that there has been limited design work required to date in CP1 to CP3, but this will change in CP4 as the volume of renewals increases.

4.86 NR(HS) was supportive of our conclusion and noted that it had an existing commitment in its 5YAMS for the improvement of safety by design through use of technology and innovation to reduce the need for physical on-site intervention and working at height.

4.87 Southeastern raised the question of whether there was a requirement for HS1 Ltd to align its safety strategy to the industry wide "Rail Health and Safety Strategy" developed by RSSB.

4.88 On this point, we have concluded that it is for HS1 Ltd to determine the extent with which to align its safety strategy with cross-industry initiatives, but we encourage it to consider alignment to wider industry safety objectives.

HS1 Ltd revisions to its plans

4.89 HS1 Ltd agreed with our conclusion, on increasing the emphasis on safety by design. It has recognised the need to mature its approach to safety by design, reflecting the potential for increased design work in CP4. HS1 Ltd has added a commitment in its revised 5YAMS, to provide regular updates on safety by design in its Asset Management Annual Statements throughout CP4.

Our Final Determination

4.90 For the reasons set out in our Draft Determination and in this document, taking into account stakeholder responses to our Draft Determination, we have determined that HS1 Ltd's plans meet its General Duty in relation to HS1 Ltd's safety strategy for CP4.

Environmental sustainability

Stakeholder consultation responses

4.91 Our Draft Determination supported HS1 Ltd's priorities on environmental sustainability, which covered the key areas of decarbonisation, biodiversity and circular economy. However, our Draft Determination highlighted barriers to improvements in several areas, including zero emissions vehicles, renewable energy, circular economy and biodiversity. We noted that if these barriers are not addressed, it is unlikely that HS1 Ltd's plans will deliver the levels of ambition set out in HS1 Ltd's corporate environmental strategy.

4.92 Our Draft Determination stated that we expect a commitment by HS1 Ltd to lead a working group with stakeholders, to address barriers to environmental sustainability.

4.93 Consultation responses indicated broad support for the conclusions of our Draft Determination, in particular that HS1 Ltd should lead a working group with stakeholders in year one of CP4.

4.94 Southeastern and EIL both indicated that the remit of this working group could be usefully extended to include climate change resilience and adaptation. Southeastern also suggested that the working group should provide reporting on outputs, including return on investment and an annual statement of carbon impacts attributed to rail operations.

4.95 NR(HS)'s response supported setting up a working group and agreed with our Draft Determination identification of specific barriers and opportunities for improvement including: charging infrastructure at Singlewell Infrastructure Maintenance Depot, third party funding for solar panels at stations, options to expand its circular economy plan and supporting HS1 Ltd in its commitments for biodiversity.

HS1 Ltd revisions to its plans

4.96 HS1 Ltd has addressed our conclusions by setting out commitments in five specific areas:

(a) Electric vehicle fleet infrastructure: HS1 Ltd commits to holding a working group in Year 1 of CP4 and report on it in its Year 1 Asset Management Annual Statement. This working group will require the involvement of DfT and NR(HS), to discuss possible solutions to introduce charging infrastructure at the Singlewell depot;

(b) Renewable energy: Since its May 5YAMS, HS1 Ltd has made progress with DfT in establishing a possible mechanism for third-party funding of solar panels. Therefore, a working group is not needed and HS1 Ltd is ready to lead on the initiative. HS1 Ltd commits to reporting progress in its Year 1 Asset Management Annual Statement. HS1 Ltd proposes to focus on solar, before investigating wind or hydroelectric power;

(c) Circular economy: HS1 Ltd commits to exploring options to integrate circular design principles and sustainable procurement into future projects, expanding its existing circular economy plans, and reporting on progress in its annual Environment Social and Governance (ESG) reports (with key updates expected in Year 2 of CP4);

(d) Biodiversity: Since its May 5YAMS, HS1 Ltd has made progress in this area with NR(HS). Therefore, a working group is not needed and HS1 Ltd is ready to lead on the initiative. HS1 Ltd commits, by the end of Year 1 of CP4, to conducting a biodiversity re-baseline survey and to producing a management plan to achieve net gain, with due regard to priorities set in Local Nature Recovery Strategies and the Government's Environmental Improvement Plan. HS1 Ltd commits to reporting progress in the Year 1 Asset Management Annual Statement; and

(e) Carbon emissions: HS1 Ltd commits to developing supplier engagement targets on Scope 3 emissions by Year 1 of CP4 and liaising with key suppliers to monitor delivery against these targets in CP4. HS1 Ltd also commits to incorporating supplier-specific data into its annual Carbon Footprint Analysis by the end of Year 2 of CP4, to develop an updated scope 3 emissions baseline. HS1 Ltd commits to reporting progress in its annual ESG report.

Our Final Determination

4.97 For the reasons set out in our Draft Determination and in this document, taking into account stakeholder responses to our Draft Determination, we have determined that HS1 Ltd's plans meet its General Duty in relation to environmental sustainability in CP4.

Signalling Upgrade

Stakeholder consultation responses

4.98 Our Draft Determination set out our position that the planned European Rail Traffic Management System (ERTMS) signalling upgrade will be funded as a Specified Upgrade.

4.99 Our Draft Determination also set out a provisional timeline for the specified upgrade, for discussion during the Draft Determination consultation.

4.100 Freight stakeholders (DB Cargo and Rail Freight Group) described the provisional timeline set out in our Draft Determination as "challenging", particularly for fitment of Class 93 rolling stock.

4.101 On this point, we note that the provisional timeline set out in the Draft Determination was indicative of progress using current UK fitment plans. Clearer plans will be developed during the Specified Upgrade early design works. Based on experience from our regulation of the mainline network, we note that it will be important to establish an achievable timeline and adhere to it, as too much deviation from the timeline may result in a lack of alignment between workstreams and incur inefficiencies.

HS1 Ltd revisions to its plans

4.102 HS1 Ltd has changed its 5YAMS to show Additional Investment Recovery Charges (AIRC) will be used to recover costs of the early works, estimated at £577k over a one-year period starting in Q4 of the current financial year.

4.103 We have agreed with HS1 Ltd's approach of charging the actual costs it will incur for this project, based on the financing cost of its revolving credit facility (that is, the SONIA rate plus 0.75%). See Chapter 6 for our approach for funding financing costs of small specified upgrades, that is, projects with a total spend of less than £700k.

4.104 HS1 Ltd's 5YAMS expects transition to ERTMS to be complete by CP6, subject to the findings of early planning and design works to be undertaken during 2024.

Our Final Determination

4.105 For the reasons set out in our Draft Determination and in this document, taking into account stakeholder responses to our Draft Determination, we have determined that HS1 Ltd’s plans meet its General Duty in relation to specified upgrades.

5. Cost Assessment

Renewals

Stakeholder consultation responses

Cost Policy - general

5.1 Our Draft Determination concluded that HS1 Ltd's Cost Policy was a significant improvement on cost estimating conducted at the PR19. We supported HS1 Ltd's use of the Cost Policy for PR24 and also identified some scope for improvements ahead of future periodic reviews.

5.2 Operators and DfT welcomed our support for HS1 Ltd's Cost Policy, and no stakeholders objected to this.

Cost Policy - station renewals

5.3 Our analysis of the application of the station renewal Cost Policy indicated that there was a small, but still material, skewing of the cost estimate, increasing it by approximately 0.5%. This skew does not affect costs in CP4. Our Draft Determination concluded that there was the opportunity for a small (0.5%) efficiency to be applied to renewals in CP5-CP11 to correct for the skew in the Cost Policy.

5.4 No stakeholders objected to our 0.5% adjustment to stations renewals, to address issues with the quantification of risks and opportunities in the Cost Policy model.

Cost Policy - improved base cost data in future control periods

5.5 Our Draft Determination concluded that a significant limitation of the Cost Policy is that little data exists for renewals costs on HS1; because most of the HS1 assets have never been renewed. Our analysis of the data uncovered several examples where base costs in HS1 Ltd's model had been increased by approximately 3-5%. We also analysed other evidence, including pre-efficient and post-efficient renewals data from NRIL's Southern Region. In our Draft Determination we estimated the size of the potential efficiency from improving base cost data to be 4% for future control periods.

5.6 DfT, Southeastern and EIL supported our proposed adjustments to the outputs of the Cost Policy. In particular, Southeastern stated it was reassured by our proposed 4% adjustment (to reflect a lack of good-quality base cost data); and EIL stated that “the Cost Policy for all time horizons should be expected to result in net opportunities not additional risk uplifts”.

Variable / fixed costs split

5.7 Our Draft Determination concluded that there were minor changes required to HS1 Ltd’s allocation of renewals and maintenance costs within its charging model between “wear and tear related” costs and “non wear and tear related”. We identified five asset types with potential changes (underbridges, points, acoustic barriers, contact wire and embankments). Our Draft Determination proposed a small (2%) reallocation towards more wear and tear related costs as a result of these changes.

5.8 Stakeholders did not object to our conclusion on the split of fixed and variable costs; however, as explained in paragraphs 5.17-5.18, HS1 Ltd has not accepted two of our reallocations.

HS1 Ltd revisions to its plans

Cost Policy - general

5.9 HS1 Ltd accepted our support for its Cost Policy and undertook to review it in light of the improvements that we suggested.

Our Conclusions

5.10 Our Draft Determination conclusion is still valid for this item. We support the Cost Policy, but we have noted opportunities to improve base cost data, below.

Cost Policy - station renewals

5.11 HS1 Ltd has accepted our 0.5% efficiency on station renewals, to address issues with the quantification of risks and opportunities in the Cost Policy. HS1 Ltd has made this change in its revised model, resulting in a marginal impact on costs (£2.4m reduction in total costs over 40 years).

Our Conclusions

5.12 We have concluded that HS1 Ltd has addressed our Draft Determination conclusion for the 0.5% adjustment.

Cost Policy - improved base cost data in future control periods

5.13 HS1 Ltd disagreed with our proposed 4% adjustment, to address a lack of good-quality base cost data. HS1 Ltd noted that it had derived its cost estimates at a granular level and did not believe a blanket reduction across all assets is appropriate; that it had taken intermediate steps to reduce costs before applying the Cost Policy, which duplicate some of the issues raised by ORR; that the 'P values' selected are already sufficiently optimistic; and that stations renewals were estimated using Spon's Price Books or rates assured by DfT in PR19.

Our Conclusions

5.14 We recognise the work HS1 Ltd has done to develop a complete set of cost estimates for renewals. The approaches taken by HS1 Ltd are logical and reasonable, in the absence of better data. However, these rates are not HS1-specific and some of them will include elements of realised risk, markups and inefficiencies. As noted in our Draft Determination, we also found instances where costs for both route and stations renewals had been inflated within HS1 Ltd's models.

5.15 By the end of CP4 we expect HS1 Ltd to have gathered better quality, HS1-specific cost data. Some cost estimates may increase and some may decrease compared to the current estimates, but there should be greater clarity on the inclusion of risks, markups and HS1-specific factors, which will allow HS1 Ltd to select optimal rates and remove any double-counting or conservativism. We have concluded that the data HS1 Ltd is currently using is systematically overestimating renewals costs and it is reasonable to assume this will be corrected before these renewals costs are incurred in CP5-CP11. Cost estimates for CP5-CP11 renewals will be reviewed again in future periodic reviews. None of the information presented by HS1 Ltd since our Draft Determination specifically addresses this issue.

5.16 We have concluded that the 4% adjustment set out in our Draft Determination is still valid.

Fixed vs variable costs

5.17 HS1 Ltd agreed with our changes in three asset types (underbridges, acoustic barriers and points operating equipment) and has made these changes in its charging model. These three items represent a reallocation of approximately 1% of costs from fixed to variable charges.

5.18 HS1 Ltd disagreed with our proposal in the other two asset types (embankments and contact wire). HS1 Ltd provided additional evidence for these assets, noting that the higher design specifications on HS1 make embankments more resilient to traffic loading; and make contact wires more resilient to heat and wind than conventional railway assets.

Our Conclusions

5.19 We are satisfied with the additional justifications provided by HS1 in its response to our Draft Determination. Compared to HS1 Ltd's plans in May 2024, Our Draft Determination proposed a reallocation of approximately 2% from fixed to variable charges. This has now reduced to approximately 1% in HS1 Ltd's revised models. We have concluded that this is the appropriate split for variable / fixed costs.

Our Final Determination

Cost Policy

5.20 We have concluded that HS1 Ltd's revised plans do not meet its General Duty, with regards to efficient cost estimating for renewals. This is because HS1 Ltd has failed to take account of inefficiencies caused by a lack of good-quality base cost data for renewals.

5.21 While we recognise the merits of HS1 Ltd's Cost Policy, it is a new model, without any real-world validation or learning from previous periodic reviews. So, it is highly dependent on the quality of the input data. Good-quality, HS1-specific renewals cost data does not exist for most HS1 assets, because the assets have never been renewed. This lack of data is resulting in an overestimate of charges, which should be corrected for.

5.22 In the absence of any new evidence, or any attempt by HS1 Ltd to quantify the magnitude of the opportunity for efficiency, we are determining a reduction of 4% based on the analysis presented in our Draft Determination, for all renewals in CP5-CP11.

5.23 In accordance with HS1's passenger access terms, any areas where we find that HS1 Ltd's revised 5YAMS is not consistent with its General Duty requires a further consultation of the parties to the terms, and other interested parties. We therefore consulted further on this matter in December 2024 and received the following responses, with regards to renewals costs.

5.24 Operators, DfT and Rail Partners remained supportive of our adjustment to renewals costs (4% reduction, for renewals in CP5-CP11), to account for a lack of HS1-specific base cost data.

5.25 Rail Partners highlighted the importance of challenging efficiency targets in CP4, because lower charges will help to support business cases for growth in freight and passenger traffic.

5.26 NR(HS) noted our conclusion and our approach to addressing uncertainty in renewals costs through the five-yearly periodic review process.

5.27 HS1 Ltd accepted our conclusion, on the basis that we had acknowledged the uncertainty around long-term renewals estimates and the risk that charges will need to increase in PR29.

5.28 We have taken due consideration of these responses and our determination remains as above (a 4% reduction for all renewals in CP5-CP11).

Fixed vs variable costs

5.29 For the reasons set out in our Draft Determination and in this document, taking into account stakeholder responses to our Draft Determination, we have determined that HS1 Ltd's plans meet its General Duty in relation to the split of fixed versus variable costs.

Operations & Maintenance

Stakeholder consultation responses

HS1 Ltd costs

5.30 Our Draft Determination concluded that HS1 Ltd's internal costs were consistent with its duties under the concession agreement and that its costs to assure NR(HS)'s plans and performance were also supported.

5.31 Stakeholders who commented were generally supportive of our assessment of HS1 Ltd's costs. However, the response from EIL stated that "[a]*ny cost increases claimed by HS1 must only be permitted by the ORR if they are absolutely necessary, fully evidenced and carefully scrutinised.*"

Operations and Maintenance costs

5.32 Our Draft Determination concluded that base costs for operations and maintenance were reasonable, but there were opportunities to improve the efficiency of additional costs under the 'NR(HS) costs' line item. Specifically, we identified opportunities for efficiencies of approximately £14.7m from contract risk (£1.65m); the management fee (£3.7m); protection from inflation (£2.9m); and enablers (£6.5m). We also identified an alternative opportunity to achieve a similar level of efficiencies by accelerating the efficiency plans.

5.33 Operators and DfT were supportive of our proposed efficiency challenges. Southeastern and EIL presented arguments for why we should have gone further with our efficiency challenge. These included detailed evidence, examples and calculations relating to the individual opportunities we identified in our Draft Determination (enablers, contract risk, the management fee, indexation by the Retail Price Index (RPI)+1.1%, and accelerating planned efficiencies).

Challenges on the scope of our review

5.34 In our Draft Determination we explained that HS1 Ltd gave us access to detailed evidence, setting out how it estimated the operations and maintenance costs in its 5YAMS. We carried out a detailed review of the key elements which make up the operations & maintenance cost estimate including: base costs, risk allowances, profit margins, efficiencies and headwinds. We reviewed these estimates to ensure that any costs being passed on to operators are efficient and in line with best practice, as required by HS1 Ltd's General Duty under the Concession Agreement. We have carried out similar assessments in previous periodic reviews.

5.35 HS1 Ltd contracts out its operations and maintenance work to its main supplier, NR(HS). As a result, much of the evidence we reviewed for our Draft and Final Determinations was provided by NR(HS), with permission from HS1 Ltd. Because some of the costs and details provided by NR(HS) are commercially sensitive, some of this information was only shared with us and was not visible to HS1 Ltd. As such, we held workshops and deep-dive sessions with NR(HS) to understand the build-up of the cost estimates set out in HS1 Ltd's plans.

5.36 As we stated in our Draft Determination, we are not involved in the contract between HS1 Ltd and NR(HS) and we have no power to direct changes to this contract. However, we are required to ensure that any costs passed on to train operators are efficient. So, if we identify any inefficiencies in HS1 Ltd's cost estimates which arise from its contracts with suppliers, then we are required to quantify these inefficiencies and adjust the charges HS1 Ltd can pass on to operators accordingly.

5.37 In our Draft Determination we set out a range of opportunities for HS1 Ltd to achieve the £14.7m reduction, to enable pragmatic discussions during the consultation. These included contract risk, inflation, enablers, the management fee and acceleration of planned efficiencies. Each item is described separately below. Our Draft Determination stated that HS1 Ltd could cdxchoose to use a combination of these opportunities, or any other means to achieve a similar level of additional efficiency.

5.38 NR(HS) and its parent company (NRIL) provided detailed responses to our Draft Determination, focussing on the opportunities we identified to reduce the operations and maintenance costs HS1 Ltd can pass on to operators. NR(HS) and NRIL provided new evidence and clarifications of earlier submissions. We have taken this new evidence into account and used it to update our calculation of the efficient costs HS1 Ltd can pass on to operators.

5.39 However, NR(HS)'s and NRIL's responses also included extensive objections to us imposing changes on specific elements of NR(HS)'s business model. As stated above, we are not involved in the contract between HS1 Ltd and NR(HS) or the latter's business model; we are required to quantify and adjust for any inefficiencies in the costs HS1 Ltd is passing on to operators and it is for HS1 Ltd alone to decide if or how it passes on those adjustments to its supply chain.

5.40 We have summarised NR(HS)'s main arguments relating to the individual opportunities below, noting any new evidence provided and setting out our conclusion on each item. We note that some of NR(HS)'s response and our analysis of those aspects are commercially sensitive and cannot be presented in detail here.

Contract Risk

5.41 Our Draft Determination concluded that HS1 Ltd's estimate for the contract risk fund (held by NR(HS)) was excessive and an efficient value would be £1.65m lower than the estimated £6.6m, over 5 years. This conclusion was based on our review of the data provided, which found that risks were overstated in terms of both probability and impact, which would result in the P80 estimate being overstated. Our review concluded that the expected level of funding required was between NR(HS)'s calculated P60 and P80 values, and that using an intermediate value would reduce HS1 Ltd's cost estimate by £1.65m over CP4.

5.42 EIL provided examples and analysis, suggesting that NR(HS)'s estimation of performance risk may be based on the cost of delays caused by incidents, but EIL noted that under the current performance regime NR(HS) does not compensate operators for the full cost of delays. As a result, the amount which NR(HS) pays out from this risk fund is likely to be significantly smaller than the value NR(HS) has calculated.

5.43 NR(HS)'s response noted the historic use of a P80 figure and the asymmetrical nature of the risk borne by NR(HS). Its response suggests that the opportunity we identified would result in NR(HS) taking on more risk. Its response also indicates that if multiple low probability / high impact risks were to materialise, then NR(HS) may make a loss in some years of the control period.

Our conclusions

5.44 We have reviewed our Draft Determination conclusion to test whether it would result in unreasonable cost pressure on HS1 Ltd or its supplier. To do this we created a simple Monte Carlo model to analyse the contract risk data. When assessing risk and uncertainty we are, by definition, unlikely to derive certainties in results. We therefore reviewed the evidence provided in several different ways, including consideration of different scenarios; affordability in-year; total cost over control periods; and historic actual spend from the contract risk fund. We then considered these assessments together to understand the credible outcomes in CP4.

5.45 Our analyses took into account the outperformance mechanism (where NR(HS) is responsible for all overspend but only keeps 50% of the underspend in years 3-5, but 100% in years 1-2).

5.46 Our analysis found that the proposed reduction of £1.65m from our Draft Determination was not expected to impose excessive cost pressures on HS1 Ltd or its suppliers, in any plausible scenario.

5.47 We recognise the significant uncertainty around the actual payments NR(HS) will need to make from this contract risk fund in CP4. However, we have concluded that it is not efficient for the risk fund to be sized to cover the extremely low probability of multiple low-probability risks occurring over a short period. Therefore, we have chosen to retain our conclusion from our Draft Determination that the efficient cost is £1.65m lower than HS1 Ltd's estimate.

5.48 We disagree with NR(HS)'s argument that we would be imposing "more risk" on HS1 Ltd or NR(HS). We are not proposing that HS1 Ltd or NR(HS) should take on "more risk". Our conclusion is that HS1 Ltd and NR(HS) have overstated the funding required for the expected risk.

Protection from inflation

5.49 HS1 Ltd's contract with NR(HS) applies annual inflation at RPI+1.1% to operations and maintenance costs.

5.50 Our Draft Determination concluded that applying inflation at RPI+1.1% was not efficient when compared against normal practice, notably other infrastructure managers whom we regulate, who use CPI plus input price adjustments. In the absence of input price adjustment data for the HS1 network we concluded that it would be reasonable to use RPI+0% (approximately equivalent to CPI+1%). This would be a reduction of £2.9m to HS1 Ltd's cost estimate for CP4.

NR(HS)'s response

5.51 NR(HS)'s response set out a detailed argument for why linking input prices to RPI is preferable to CPI for its operations and maintenance costs. NR(HS) did not present any evidence to justify the 1.1% increase above RPI.

Our conclusion

5.52 We have chosen to retain our Draft Determination conclusion that the use of RPI+1.1% is inefficient, and the efficient approach would be to use RPI+0%, broadly equivalent to CPI+1%. Correcting for this results in a reduction of £2.8m over CP4 to HS1 Ltd's latest estimate for NR(HS) costs of £258.8m (note that this value differs slightly from the £2.9m stated in our Draft Determination, because we have recalculated it using the most up-to-date value for NR(HS) costs).

5.53 Regarding NR(HS)'s comments on linking inflation on operations and maintenance costs to RPI versus CPI, this is a decision between HS1 Ltd and NR(HS). We have quantified the adjustment HS1 Ltd needs to make to achieve an efficient cost.

Enablers

5.54 In HS1 Ltd's May 5YAMS, the NR(HS) cost estimate of £255.8m included 'enablers', to cover "the upfront investment required to continue to unlock and deliver financial efficiency".

5.55 Our Draft Determination concluded that it is reasonable to pass on costs for investment in software or hardware if ownership sits with HS1 Ltd, as these become assets which benefit the system into the future. We concluded it is not reasonable to pass on costs for training or developing people up to the standard already achieved by comparators, as the benefits stay with NR(HS). We noted that it is normal practice for companies in the supply chain to absorb a certain level of training costs, to train their staff to the level expected to fulfil their contracts.

5.56 HS1 Ltd's cost estimate for NR(HS) costs included a management fee, which would typically be expected to cover this type of training and development costs, therefore including these items as enablers represents a double-counting of costs. As a result, we concluded that these costs were not efficient and we quantified the inefficiency. Based on our line-by-line assessment of the enablers, our Draft

Determination concluded that £6.5m of the enabler costs should not be passed on to operators.

5.57 Our Draft Determination stated that it was for HS1 Ltd to decide how it achieved the efficient cost. If HS1 Ltd decides to pay its supplier for these activities as additional enablers, then HS1 Ltd would need to find a similar magnitude of efficiencies elsewhere to meet our challenge.

5.58 EIL’s response suggested that 100% of the efficiency enablers should be funded by NR(HS) from its management fee.

5.59 NR(HS)’s and NRIL’s responses presented multiple arguments against the opportunity we identified, in particular:

(a) NR(HS)’s response provided new evidence, including more detailed descriptions of the enablers which we had not supported; and on the interaction between the management fee and other costs;

(b) NR(HS)’s response included a report by a consultant which noted that enablers relating to training and development were required to enable the planned efficiencies in CP4; and

(c) NR(HS)’s and NRIL’s responses and subsequent correspondence noted that NR(HS)’s internal business arrangements do not include any mechanism to ‘absorb’ these enablers.

Our conclusion

5.60 We have reviewed the additional evidence and arguments presented by all stakeholders and revisited our line-by-line assessment of the enablers. We have held meetings with NR(HS) since the Draft Determination where we discussed the line items in detail.

5.61 We have concluded that the rationale in our Draft Determination is still valid. It would be inefficient for HS1 Ltd to pass on additional costs for ‘enablers’ which are to the benefit of its supplier, rather than the benefit of the system and which HS1 Ltd should reasonably expect its supplier to absorb.

5.62 However, based on our line-by-line assessment of the new evidence provided, we have reduced the magnitude of the adjustment for inefficiency to £5.25m over CP4 (down from £6.5m in our Draft Determination). This change was due to specific line items, where additional evidence demonstrated that these related to software benefiting the system; or they had been misclassified and should have been included in base costs.

5.63 Regarding NR(HS)'s consultant's statement that training-related enablers are required to enable the planned efficiencies in CP4, we concluded that this is not sufficient justification for passing costs on to operators, for activities which a supplier was already required to deliver for its own benefit. For example, investments by a supplier to attract and retain talent are primarily to the benefit of the supplier and are ongoing obligations (rather than a step-change required at the start of CP4), even though these staff may contribute to achieving efficiencies for the HS1 system. We could not support additional HS1 access charges being used specifically to give one supplier a material advantage over its market competitors.

Management fee

5.64 Our Draft Determination noted that during the PR24 process, operators, HS1 Ltd and NR(HS) had all indicated a willingness to change mechanisms and incentives in the system, including the outperformance mechanism. We also noted evidence from a benchmarking report provided by NR(HS), indicating that its 8% management fee was higher than some comparators, in part to account for imbalances in risks and incentives.

5.65 Our Draft Determination concluded that there may be an opportunity to review mechanisms and incentives in CP4, to address these imbalances and therefore to consider reducing the management fee. This could make costs more efficient for operators and the system overall, so it was important that we addressed this opportunity in our Draft Determination. We quantified this opportunity based on the benchmarking report provided by NR(HS), which indicated a midpoint value of 6.6% for comparators without these imbalances. Reducing the management fee from 8% to 6.6% would reduce HS1 Ltd's cost estimate for NR(HS) costs by £3.7m out of £258.8m in CP4.

5.66 Southeastern and EIL were supportive, in principle, of reducing the management fee and of reviewing incentives such as the outperformance mechanism. However, both responses indicated that they may seek tougher financial incentives on NR(HS), rather than supporting an improvement in incentives for NR(HS), in exchange for a reduction to the management fee.

5.67 EIL suggested that we should have also recommended a reduction in the mark-up on renewals. We recognise EIL's position, but we see potential efficiencies to renewals contracts as falling within the scope of the Cost Policy and the adjustments we have made to annuities charges.

5.68 NR(HS)'s and NRIL's responses included multiple arguments for retaining the 8% management fee. They provided additional evidence, including a new consultant's report. In particular, their responses noted the following:

(a) NR(HS) clarified that the outperformance mechanism was only one factor in the imbalance that justified the management fee of 8%. It noted that the performance regime and the way NR(HS) bears third-party risk for the system were far greater factors in the imbalance. Hence, it argued that our Draft Determination had overstated the opportunity to reduce the management fee by changing the outperformance regime;

(b) NR(HS) noted that our Draft Determination misrepresented NR(HS)'s statements about the outperformance mechanism being an ineffective incentive;

(c) NR(HS) noted that it was willing to take part in a review of mechanisms and incentives with HS1 Ltd and operators, with a view to making costs more efficient. However, NR(HS) noted that it had attempted to address some of these mechanisms through its 'sprint' initiatives in CP3 and had found other stakeholders were unwilling to make material changes to the status quo. NR(HS) noted that ORR had also attempted to review these mechanisms with stakeholders during the PR24 process, but this had not resulted in any changes. NR(HS) argued that, in principle, it may be possible to agree changes in the HS1 system which result in a lower management fee; but that this is not a realistic opportunity for efficiency in CP4;

(d) NR(HS) and NRIL clarified that the management fee is not currently used to cover NR(HS)'s management costs (e.g. competence and training) and all such management costs are passed on to HS1 Ltd and operators. NRIL clarified that the previous benchmarking reports commissioned by NR(HS) had compared NR(HS)'s management fee against 'profit margins' in other comparators, rather than comparing against 'management fees' that included management costs. NR(HS) and NRIL argued that our Draft Determination was double counting the opportunity for NR(HS) to absorb some enablers from the management fee, while simultaneously proposing to reduce the management fee; and

(e) NR(HS) and NRIL clarified that the management fee is used to cover emerging risk. Hence, NR(HS) and NRIL argued that our Draft Determination was double-counting the opportunity to reduce contract risk, while simultaneously proposing to reduce the management fee.

Our conclusion

5.69 We have reviewed the new evidence and arguments presented by all stakeholders. The responses from NR(HS) and operators are sufficient evidence to conclude that the opportunity to reduce the management fee by changing the outperformance mechanism in CP4, is smaller than we indicated in our Draft Determination. On this basis, we have concluded that our Draft Determination conclusion for an opportunity to reduce the management fee by £3.7m in CP4, should not be retained.

5.70 Clarifications provided by NR(HS) and NRIL indicate that the management fee is not currently being used to cover management costs, as we would reasonably expect. We concluded that this supports our argument that enablers are inefficient, as this confirms the management fee has not already been used to cover reasonable management costs.

5.71 We are no longer including an adjustment to the management fee as an opportunity for efficiency; however, we have considered the evidence on the management fee when concluding on other opportunities; and when determining the total adjustment required to achieve efficient costs.

Acceleration of planned efficiencies

5.72 Our Draft Determination set out an opportunity to achieve greater efficiencies in CP4, by accelerating planned efficiencies associated with asset management maturity. Our Draft Determination indicated that this could provide an opportunity of £2m to £3m in efficiencies per year (or up to £15m over CP4), if actual efficiencies exceed the planned efficiencies in the same way they have done, consistently, in previous control periods.

5.73 Our Draft Determination noted that the level of acceleration would depend on HS1 Ltd's decisions on the other opportunities we identified. For example, if HS1 Ltd chooses not to address the inefficiencies we identified on inflation, enablers and other areas, then HS1 Ltd might choose to set more stretching efficiency targets in CP4, to achieve the efficient level of costs.

NR(HS) and NRIL's responses

5.74 NR(HS) and NRIL's response and subsequent correspondence noted that its plans represented a 10% gross efficiency from the end of CP3 to the end of CP4. NRIL noted that this is similar to the exit-to-exit efficiency which NRIL is planning to achieve for operations and maintenance over five years on the mainline network; in plans which ORR approved in PR23.

5.75 NR(HS)'s and NRIL's responses to our consultation suggested that no further efficiencies are achievable. In subsequent discussions and correspondence, both NR(HS) and NRIL have indicated that they are assessing the potential for acceleration or reprofiling of efficiencies or taking on an additional 'stretch' efficiency. On 10 December, HS1 Ltd wrote to us confirming a proposal from NRIL to increase efficiency targets by a further 3% at the end of CP4. The proposed phasing of this efficiency and the total impact on the NR(HS) costs were not clear.

5.76 NR(HS)'s response and NRIL's subsequent letter of 29 November 2024 noted that our proposed reductions in funding for enablers would have a negative impact on NR(HS)'s ability to delivery efficiencies.

Our conclusion

5.77 In Chapter 4, we concluded that there are opportunities for HS1 Ltd and its suppliers to improve asset management maturity in specific assets, with more urgency than their current plans. We concluded that this would help to optimise operations and maintenance costs and improve resilience. As a result, we retain our conclusion from the Draft Determination, that there are opportunities for further efficiency through acceleration of efficiency plans.

5.78 In the absence of any clear, quantified proposals by HS1 Ltd or NR(HS), we have carried out a simple analysis to quantify the opportunity in CP4. We considered evidence from HS1 Ltd's plans and also from our regular monitoring of HS1 in previous control periods. We concluded it is reasonable to assume key efficiency initiatives could be delivered at least 6-12 months earlier than planned. From our simple analysis, 6-12 months' acceleration would produce between £1.3m and £2.2m of increased efficiencies over CP4. We concluded that a midpoint of this range (approximately £1.8m) was a reasonable estimate of further efficiency, achievable in CP4. This value is consistent with values suggested by NR(HS) and NRIL in discussions since the Draft Determination.

5.79 Regarding NRIL's comments that NR(HS)'s exit-to-exit efficiency was comparable with NRIL's, our conclusion is that this is not an appropriate comparison. The funding for enablers and R&D, the contractual structures and the roles of the organisations are fundamentally different. Furthermore, the HS1 network is relatively new compared to the mainline network and there have been significantly higher efficiencies achieved by NR(HS) since the start of its contract, as the understanding of the assets, the risks and the opportunities continues to mature.

5.80 Regarding NR(HS)'s challenge that we are reducing enablers which would impact its ability to deliver efficiencies: our conclusion is that we would reasonably expect the management fee to cover some of these activities, rather than operators funding them as additional enablers.

Other considerations

5.81 NR(HS)'s and NRIL's responses argued that, if we maintained our proposed reductions in our Final Determination; and low-probability, high-impact risks materialised; and none of our proposed opportunities for efficiency yielded any savings; then NR(HS)'s business would become unprofitable in the later years of CP4. NR(HS)'s main evidence for this was analysis in a report by its consultant. NR(HS) and NRIL went on to state that any losses by NR(HS) would violate cross-subsidy agreements between NR(HS) and its state-funded parent company, NRIL.

Our conclusion

5.82 NR(HS)'s response referred to our May 2010 consent to NRIL in relation to arrangements in connection with the provision of certain services to the HS1 network. This consent stated that we considered it "*necessary to limit the potential for cross-subsidy from NRIL's core business (supported solely by NRIL's customers and funders) to NR(HS) in the event of cost overruns under the revised Operator Agreement*".

5.83 NR(HS)'s own evidence (a consultant's report) suggests that NR(HS) could become marginally unprofitable in years 4 and 5 of CP4. However, the same analysis suggests NR(HS) would be profitable in years 1 to 3, with material net profits over the control period as a whole. Hence, NR(HS)'s own evidence demonstrates that NR(HS) could fund losses in later years from profits in earlier years, without any need for cross subsidy from NRIL.

5.84 Our consent also stated that NR(HS), "*as a contractor to HS1, should stand or fall on its own merits*". The consent did not state that NR(HS) must remain profitable at all times, nor that NR(HS)'s annual profits must be transferred to NRIL. The consent seeks to limit the potential for cross-subsidy, however it does not eliminate any risk of cross-subsidy. We do not consider the consent overrides our obligations under the Concession Agreement to ensure that costs passed on to HS1 operators are efficient.

5.85 In any case, the profitability analysis undertaken by NR(HS)'s consultant appears to be based on a worst-case scenario whereby significant risks materialise (a specific scenario was provided to the consultant by NR(HS), but the details are unclear); and all the opportunities we identified yield zero savings; and none of NR(HS)'s own stretch efficiency targets materialise. While we recognise the need for a supplier to conduct this type of analysis for its own business purposes, we do not consider this to be an appropriate scenario for HS1 Ltd to use as the basis for setting efficient charges for operators.

HS1 Ltd revisions to its plans

5.86 HS1 Ltd has supported NR(HS)'s position and has not made any reductions to its operations and maintenance costs, to address the inefficiencies we identified in our Draft Determination.

5.87 HS1 Ltd has not made any new commitments in its 5YAMS, to address our concerns or the opportunities we identified in our Draft Determination.

5.88 Since our Draft Determination, the Government announced a rise in employers' contribution to National Insurance. HS1 Ltd's revised 5YAMS included a £3.0m increase in its estimate for NR(HS) costs over CP4, based on evidence provided by NR(HS). We note that HS1 Ltd has proposed to separately manage the impact of the National Insurance increase for renewals expenditure through a change control process.

5.89 HS1 Ltd has calculated a £0.7m increase to its own costs in CP4, which covers: the rise in employers' contribution to National Insurance and an increase in GSM-R costs due to increased estimates from NRIL.

5.90 HS1 Ltd also identified a potential increase in its own costs, if we decide to introduce a fixed cost wash-up, as part of our review of access terms changes.

5.91 HS1 Ltd also identified a potential increase in its own costs, if we decide to introduce a Delay Attribution Board, as part of our review of access terms.

5.92 We have reviewed the new evidence submitted by HS1 Ltd, as well as arguments put forwards by other stakeholders. We note that there is still uncertainty on each of these cost increases. As such, we have assessed HS1 Ltd's costs in totality and concluded that £3.85m of additional costs over CP4, compared to our Draft Determination, is reasonable. This value considers HS1 Ltd's proposed costs for National Insurance and GSM-R, as well as our decisions on access terms in relation to the washup (approximately £0.15m of additional costs) and the Delay Attribution Board (no additional costs, as we have decided not to introduce this).

Our Final Determination

5.93 We have concluded that HS1 Ltd's revised plans do not meet its General Duty, because we have identified material inefficiencies in the operations and maintenance costs it proposes to pass on to operators. As a result, HS1 Ltd's proposed charges are not efficient.

5.94 We determine that the efficient level of operations and maintenance costs HS1 Ltd can pass on to operators through charges, is £11.5m less than that proposed by HS1 Ltd. This value takes into account new evidence provided by HS1 Ltd and stakeholders in response to our Draft Determination. This is a smaller reduction than the £14.7m stated in our Draft Determination, reflecting our analysis of new evidence.

5.95 As stated previously, it is for HS1 Ltd to decide how it will achieve this reduction in costs. But, for clarity, we have quantified the magnitude of the £11.5m reduction based on the sum of the evidence-based opportunities we identified above: £1.65m from risk; £2.8m from inflation; £5.25m from enablers; £1.8m from accelerating efficiencies; and no change to the management fee.

5.96 We have considered the phasing of our adjustment over CP4. We determine the charges HS1 Ltd can pass on to operators. We determine a total charge for Operations and Maintenance which is which is spread evenly across the control period. As such, our £11.5m adjustment to charges is also spread evenly across the control period, reducing charges by £2.3m each year.

5.97 We recognise that HS1 Ltd and its suppliers may decide to profile the additional efficiencies differently, with more efficiencies later or earlier in the control period. This is for HS1 Ltd to decide. We also recognise that a non-flat profile of efficiencies may incur additional cost of capital for HS1 Ltd, in years where costs exceed charges.

5.98 In our modelling, we considered how the £11.5m adjustment might be profiled based on the profile of risk, markups and enablers in HS1 Ltd's plans (risk and markups are constant, enablers are weighted towards the start of CP4), but noted that the change in cost of capital did not materially impact charges.

5.99 In accordance with HS1's passenger access terms, any areas where we find that HS1 Ltd's revised 5YAMS is not consistent with its General Duty requires a further consultation of the parties to the terms, and other interested parties. We therefore consulted further on this matter in December 2024 and we received the following responses.

5.100 Operators, DfT and Rail Partners remained supportive of our reduction to the operations and maintenance charge, to address opportunities for further efficiency. However, EIL noted that it was disappointed we had reduced our adjustment to £11.5m, from £14.7m in the Draft Determination.

5.101 HS1 Ltd acknowledged our conclusion but noted that it does not have visibility of NR(HS) commercially sensitive evidence, so it is reliant on our scrutiny in this area. HS1 Ltd encouraged us to take into account any new evidence on enablers in NR(HS)'s response.

5.102 NR(HS) continued to challenge our conclusion and provided some new information and new arguments. These focused on enablers relating to staff training and development, which we concluded were double-counted with the management fee, so HS1 Ltd could not pass these costs on to operators. A publishable version of NR(HS)'s response is available alongside this document, and we have summarised NR(HS)'s main arguments as follows:

5.103 NR(HS) argues that the step-change in asset management in CP4 will require new technology, but also changes to standards, method statements, competency frameworks, and training;

5.104 NR(HS) argues that the HS1 infrastructure is unique and has a bespoke framework of standards and competencies;

5.105 NR(HS) argues that if (hypothetically) it exited its contract, all staff would remain with the new supplier, so "the system remains the sole beneficiary" of any investment in training and development.

5.106 In coming to our conclusion we took into account all of these representations. In its 5YAMS HS1 Ltd's cost estimate included £14.7m for enablers. Our review concluded that the majority of these costs (£9.45m, or around 65%) are efficient, as they support a necessary step-change in asset management. As well as supporting these enabler costs, we have also supported £4m of R&D funding. Furthermore, through PR24 we have helped HS1 Ltd, NR(HS) and operators to resolve issues around definitions and governance, which had been preventing HS1 Ltd from using these types of funds effectively in CP3. R&D funds can be used in CP4 to support changes in standards, processes or training where appropriate. Likewise, the £9.45m of enablers relating to technology is sufficient to cover some process changes and training, not just the purchase of the technology.

5.107 We note that the investment in enablers in the first two years of CP4 results in a low or even negative net efficiency in these years. This is different to the phasing of efficiency in other companies we regulate (including NRIL) and represents a one-time investment as the HS1 assets transition from ‘new assets’ into a stable pattern of maintenance and renewals. This investment is also the reason why we would expect the exit-to-exit efficiency to be greater for HS1 Ltd in CP4 than for NRIL and why we expect the discussion on enablers to be fundamentally different in PR29.

5.108 As such, we have concluded that our determination provides sufficient funding to deliver the necessary step change in asset management, including an appropriate level of funding for process changes and training on new, or HS1-specific technology.

5.109 However, HS1 Ltd’s estimate includes an additional £5.25m of enablers which relate to activities including: improving NR(HS)’s recruitment to help it maintain its own obligations; improving training, technology and workspaces to improve the value proposition, job satisfaction and productivity for its employees; and training for NR(HS) managers to provide leadership development. The activities NR(HS) describes do not directly relate to a step-change in asset management in CP4, nor an HS1-specific challenge. These are ongoing obligations for all suppliers and are covered by the provision of a management fee.

5.110 It is for HS1 Ltd to negotiate and manage its contracts with suppliers. If HS1 Ltd chooses to pay its supplier both a management fee and additional funds for the supplier to meet its own management obligations, that is for HS1 Ltd to decide, but this is not efficient and HS1 Ltd cannot pass on this inefficiency to operators through regulated charges.

5.111 We note that HS1 Ltd’s plans include additional costs for National Insurance Contributions and other changes. We determine that HS1 Ltd meets its General Duty in relation to its own costs, subject to minor revisions (£0.15m increase compared to HS1 Ltd’s 5YAMS for the access terms wash-up process, as discussed above).

6. Charges

Renewals charges (including annuity calculations)

Our Draft Determination conclusions

6.1 Our Draft Determination set out the following conclusions with regards to annuity modelling and charges:

(a) HS1 Ltd's annuity models were fit for purpose and aligned with good practice;

(b) We supported HS1 Ltd's traffic weighting adjustment to the route annuity. However, for consistency, we also applied a partial traffic weighting to stations annuity. This resulted in a £0.3m/yr reduction in stations charges;

(c) We removed the underfunding factor from the route annuity, which had been introduced in PR19. This resulted in a £0.9m/yr reduction in route renewals charges);

(d) We allowed small negative balances towards the end of the 40-year annuity model, where we concluded these would be addressed through the evolution of the asset management plans. This resulted in a £0.4m/yr reduction in route renewals charges; and a £0.4m/yr reduction in stations renewals charges;

(e) We assumed restrictions on escrow investments will be addressed, allowing HS1 Ltd to achieve better returns on investments in future control periods. This resulted in a £0.5m/yr reduction in route renewals charges; and a £0.3m/yr reduction in stations renewals charges;

(f) We used a different cost of capital assumption for the smoothing of charges across CP4.

Stakeholder consultation responses and our views

Traffic weighting

6.2 There was general support for the application of a traffic weighting adjustment to the route and stations annuities. For example, EIL stated that the adjustment was an "important step to ensure intergenerational equity, that is, that the same costs are borne by today's passengers as by future passengers". However, EIL considered that the traffic weighting should be applied to all stations assets, rather than the partial application in our Draft Determination.

6.3 We have concluded that the partial traffic weighting adjustment for stations in our Draft Determination was based on the lower proportion of stations assets which degrade with wear and tear compared with route assets. We have concluded that that it would be inappropriate to apply a full weighting as suggested by EIL for this reason. We have therefore retained a partial weighting for the stations annuities.

6.4 The impact of this weighting on the model is dependent on the future traffic forecasts. Our decision on traffic forecasting is set out in paragraphs 6.23 and 6.26 for freight and passenger operators respectively.

Underfunding and negative escrow balances

6.5 Respondents agreed with our removal of the CP3 underfunding adjustment to the route annuity and allowing for negative escrow balances in the 40-year forecast. EIL highlighted the uncertainty of forecasting renewals over a long period and agreed that pre-funding such uncertainties is inefficient.

6.6 HS1 Ltd accepted these changes. However, it noted its concern that removing the underfunding adjustment and allowing for negative balances, while also applying our asset management adjustments, increased the risk of underfunding renewals in future control periods, which could then result in higher charges to operators (for example, if renewals efficiencies or forecast escrow returns are not achieved). HS1 Ltd stated that it would like us to commit to no negative balances in the first two control periods of a 40-year renewals forecast. HS1 Ltd also asked us to review a sensitivity analysis, which it provided in its response.

6.7 We have concluded that the level of planned renewals expenditure for route in CP4 is around £70m more than the route annuity charge over this period. However, this will not result in negative balances in the short-term, because HS1 Ltd can draw down on the funds that have built up in the escrow account over previous control periods. We have reviewed HS1 Ltd's sensitivity analysis and can confirm that our Final Determination decisions do not result in a negative escrow balance in the next two control periods. We are satisfied that any risk to future charges and renewals funding can be appropriately managed through future periodic reviews.

Escrow returns

6.8 Southeastern agreed with our proposed changes to the escrow returns assumptions and considered that an expansion of authorised investments was necessary to allow better returns. EIL made a similar point in its response to HS1 Ltd's Draft 5YAMS.

6.9 HS1 Ltd and DfT did not consider that it was realistic to achieve the higher returns assumed in our Draft Determination, in CP4. They were both of the view that the necessary reforms to the Concession Agreement to enhance the scope of authorised investments may not be achievable in CP4 and instead considered that we should use a lower returns assumption. However, HS1 Ltd provided new values which were higher than those in its May 5YAMS (3.45% in CP4 and 3.70% in CP5-CP11; whereas it had previously assumed 3.20% and 3.30% respectively).

6.10 We consider that that it would be beneficial to change the Concession Agreement to allow HS1 Ltd to achieve better returns on its five escrow accounts. The current returns are lower than wider market returns and, as such, represent poor value for money. However, HS1 Ltd and DfT are the only parties to the Concession Agreement and we are mindful of their views regarding what changes are achievable in CP4. They are both of the view that the Concession Agreement will take time to amend. For this reason we have concluded to accept HS1 Ltd's revised investment returns assumptions, even though they do not reflect a change in the scope of authorised investments. We suggest that a working group including HS1 Ltd, DfT and operators be set up to consider this issue. We are content to facilitate this if required.

Weighted average cost of capital (WACC)

6.11 The WACC is used to determine an even profile of charges (in real terms) to recover operating and maintenance expenditure where these vary across the control period, so there is a timing difference between the costs (outgoings from HS1 Ltd) and the charges (income to HS1 Ltd). The WACC is also a consideration in HS1 Ltd's management of Specified Upgrades. Funding for Specified Upgrades is outside the scope of PR24, but we review whether HS1 Ltd's approach to the WACC is appropriate.

6.12 Respondents agreed with our decision to allow a bespoke cost of capital to be used for recovering the financing costs for large Specified Upgrades to the rail network. 'Specified Upgrades' are defined in the Concession Agreement and HS1 Ltd has defined 'large' upgrades as those which cost over £700k. However, HS1 Ltd proposed an alternative approach for 'small' specified upgrades (projects costing less than £700k) to use the rate charged on its rotating credit facility, which is the means by which HS1 Ltd raises funds for these projects. This rate is based on the Sterling Overnight Index Average (SONIA) rate which is updated daily, plus 0.75 basis points. Over the past three months SONIA has averaged 4.8%, which would mean a nominal financing cost of 5.6% (including the 0.75 basis points). In real terms this is 1.6%, assuming 3.95% CPI inflation this year. This approach was used for funding the recently approved ERTMS early works project.

6.13 We agree with this approach for small specified upgrades as the rate is based on the actual financing costs that HS1 Ltd is likely to incur to finance projects. We note that these projects are relatively few in number and that the ORR is required to sign off on each project.

HS1 Ltd revisions to its plans

6.14 In response to our Draft Determination, HS1 Ltd has made the following changes to the annuity calculations in its November 5YAMS and LCRs:

(a) applied the partial traffic weighting to the stations annuities;

(b) removed the underfunding adjustment and the adjustment to avoid negative balances;

(c) increased the escrow returns assumption from 3.20% per year in CP4 to 3.45%, and from 3.30% to 3.70% per year for CP5-CP11. As explained In paragraph 6.8, this is different to our Draft Determination assumptions but we have accepted this approach;

(d) HS1 Ltd has not made the adjustments to the renewals costs which we proposed in our Draft Determination (see Chapters 4 and 5 for details).

Our Final Determination

6.15 For the reasons set out in our Draft Determination and in this document, and taking into account stakeholder responses to our Draft Determination, we have determined that HS1 Ltd’s plans meet its General Duty in relation to its annuity calculations.

6.16 We have determined minor adjustments in relation to traffic forecasting, set out in paragraphs 6.25-6.26; and to remove funding for the Escrow Investment Project as a pass-through costs, as discussed in paragraphs 7.66-7.67. We have determined major changes in relation to renewals cost estimates, set out in the Chapter 4 (paragraphs 4.48-4.50). The following calculation of annuity charges and escrow balances takes into account these adjustments.

6.17 We determine that the annuity charge for CP4 is £160.9m in cash prices (£140.6m in real prices) for the route annuity, and £48.4m in cash prices (£42.4m in real prices) in total for the four stations. This comprises £30.4m for St Pancras

International, £7.7m for Ebbsfleet International, £3.2m for Ashford International and £7.1m for Stratford International.

6.18 Table 6.1 shows the movements in the forecast escrow balances in CP4.

Table 6.1 Movements in escrow balances in CP4

£m (cash prices)	Route	Stations	Total
Opening Balance	**189.2**	**84.7**	**273.9**
Annuity received	160.9	48.4	209.3
Expenses incurred	242.5	57.4	299.9
Returns	28.8	13.6	42.4
Closing Balance	**136.4**	**89.3**	**225.7**

Note: assumes no freight income for the reasons explained in this document.

Table 6.2 Movements in stations escrow balances in CP4

£m (cash prices)	St Pancras International	Ebbsfleet International	Ashford International	Stratford International	Total
Opening Balance	**54.4**	**11.8**	**9.3**	**9.3**	**84.7**
Annuity received	30.4	7.7	3.2	7.1	48.4
Expenses incurred	39.6	8.9	3.8	5.1	57.4
Returns	8.7	1.8	1.5	1.6	13.6
Closing Balance	**53.8**	**12.4**	**10.2**	**12.9**	**89.3**

Determining charges for operators

Our Draft Determination conclusions

6.19 Our Draft Determination set out the following conclusions:

(a) HS1 Ltd's charging models were fit for purpose and aligned with good practice;

(b) We re-allocated fixed costs from freight to common costs, funded by passenger operators. This resulted in a reallocation of £0.6m over CP4, from freight to passenger operators.

Stakeholder consultation responses and our views

Freight traffic forecasts

6.20 Our Draft Determination assumed a freight traffic volume of 200 trains per year, based on the latest forecast from HS1 Ltd at that time. Since the Draft Determination, HS1 Ltd's has reduced its forecast of freight volumes to zero, stating this was the most appropriate forecast "due to market conditions and uncertainty".

6.21 DB Cargo suggested reducing the freight forecast downward, relative to the Draft Determination, from 200 trains a year to zero freight. It stated that a "level of 200 freight trains per annum has been assumed. This is helpful in illustrating the level of charges...it should be remembered that freight services have ceased to operate (July 2024)...and this level of operation is not based on a traffic forecast by DB Cargo."

6.22 In contrast to HS1 Ltd and DB Cargo, EIL stated "setting freight volumes to zero appears to be a drastic step".

6.23 We agree that zero freight is the most realistic forecast based on recent and forecast traffic levels. DB Cargo has not operated services on HS1 since mid-2024. However, we must determine appropriate charges for freight which can be applied in CP4 if freight returns to the network. Determining a charge requires us to make a reasonable assumption about the volume of freight traffic. We have engaged with HS1 Ltd and freight stakeholders since the Draft Determination and HS1 Ltd has provided a shadow charging model in which there are 200 freight paths annually, to illustrate projected freight charges should freight return to the network in CP4.

6.24 Basing charges on zero freight trains in CP4 will lead to a reallocation of some minor costs to domestic and international passenger operators. This increases passenger operators' OMRCA1 charges relative to our Draft Determination by a small amount. HS1 Ltd's November 5YAMS has reallocated £89k freight specific fixed costs to domestic freight operators on the national network via the Ripple Lane (domestic sidings) charge. This is a separate charge levied on freight users of Ripple Lane using NRIL infrastructure, which is out of scope for this review. We agree with this adjustment.

Passenger traffic volumes

6.25 We received several responses to our Draft Determination on modelled passenger traffic volumes. Some responses focussed on the first year of CP4 and others on the medium- to long-term forecast:

(a) First year of CP4

(i) In its response to the Draft Determination, HS1 Ltd stated that for Southeastern and EIL, the services that are likely to be operated in the first year of CP4 will be lower than the forecasts set in 2023.

(ii) Southeastern provided lower traffic volume forecasts for the first year than we assumed in our Draft Determination. HS1 Ltd agreed with these forecasts and has used them in its November 5YAMS.

(iii) HS1 Ltd's November 5YAMs has assumed a lower international traffic forecast traffic forecast than our Draft Determination. EIL disagreed and instead stated that we should use the original traffic volumes from the May 5YAMS. Following further discussions with HS1 Ltd and operators we have used a revised forecast for international traffic. Our minor adjustment to the forecast is based on further evidence provided by EIL in December for the First Working Timetable (FWT).

(b) Medium- to long-term forecast

Southeastern stated that the overall traffic forecasts used in our Draft Determination are conservative. Southeastern stated that while the medium- to long-term is harder to predict, it intends to provide evidence of higher volumes in the future. No other respondents commented on this matter.

6.26 We agree with HS1 Ltd's revised forecast for domestic travel, which uses the lower traffic volumes provided by Southeastern. HS1 Ltd and the operators agree that this is the most realistic forecast. We agree with EIL's latest forecast for international traffic in CP4 (based on FWT evidence provided in December 2024), which we consider reasonable and is approximately halfway between the May 5YAMS and the November 5YAMS forecasts. These revisions have only a minor impact on CP4 charges.

Direct and indirect costs

6.27 HS1 Ltd has agreed with most of the decisions in our Draft Determination on direct and indirect costs. HS1 Ltd disagreed with our Draft Determination's allocation of direct and indirect costs associated with embankments and contact wire.

6.28 We agree with HS1 Ltd's additional justifications for embankments and contact wire (discussed in more detail in the Cost Assessment chapter, paragraphs 5.18 and 5.19). Therefore, we accept HS1 Ltd's position on direct and indirect costs and we have made the resulting changes to OMRCA1 and OMRCA2.

HS1 Ltd revisions to its plans

6.29 In response to our Draft Determination, HS1 Ltd has made the following changes to the annuity calculations in its November 5YAMS and LCRs:

(a) as discussed in the Cost Assessment chapter and the annuity section of this chapter, HS1 Ltd has made revisions to amend its operating, maintenance and renewals costs;

(b) as discussed in paragraphs 6.20-6.25, HS1 Ltd has made changes to its CP4 traffic forecasts; and

(c) HS1 Ltd has modelled a scenario that assumes 200 freight trains annually, to illustrate what freight charges would be if freight returns to the network at this level in CP4. We agree with this approach.

Our Final Determination

6.30 For the reasons set out in our Draft Determination and in this document, taking into account stakeholder responses to our Draft Determination, we have determined that HS1 Ltd's plans meet its General Duty in relation to calculating OMRC for operators, subject to a minor adjustment to international traffic volumes.

6.31 Tables 6.3 to 6.9 set out our Final Determination charges for operators in CP4 subsequent to the adjustments determined in this document. Table 6.3 shows HS1's income from charges to operators in CP4. This is 7.9% lower than CP3, primarily due to the application of HS1's new Cost Policy (which has reduced renewals expenditure over the 40-year period); a traffic weighting to annuities (explained in our Draft Determination); the removal of the CP3 underfunding adjustment; and our efficiency challenge on operations and maintenance costs, and renewals. Charges income has increased by 1.1% from our Draft Determination to our Final Determination, primarily due to changes to assumptions on expenditure and escrow returns.

6.32 Charges income from EIL (international passenger services) has remained unchanged from our Draft Determination, whereas charges income from Southeastern (domestic passenger services) has increased by 2.2%. The main reasons for this difference are the reallocation of some direct and indirect costs, and revised traffic forecasts. Income from freight charges has reduced from £2m in CP3 to zero in our Final Determination for CP4 due to our revised assumption that there will be no freight usage of the network in CP4.

Table 6.3. Final Determination of HS1's CP4 charges income (Route OMRC, Station LTC and QX charges)

£m (February 2023 prices)	CP3	Draft Determination	Final Determination	Change from Draft Determination to Final Determination
EIL	338.5	312.3	312.5	0.1%
Southeastern	517.0	461.2	471.0	2.1%
EMR	48.5	50.0	50.2	0.3%
Freight	2.0	0.7	0.0	(100.0%)
Total	**905.5**	**824.3**	**833.7**	**1.1%**

Table 6.4. Final Determination charges for international passenger services

February 2023 prices	CP3	Draft Determination	Final Determination	Change from Draft Determination to Final Determination
OMRCA1 (£ per train km)	5.16	5.64	5.86	3.8%
OMRCA2 (£ per train minute)	15.56	11.55	12.114	8%
OMRCB (£ per train minute)	36.76	34.03	35.10	3.2%
OMRCC (£ per train minute)	13.15	13.73	13.85	0.9%

Table 6.5. Final Determination charges for domestic passenger services

February 2023 prices	CP3	Draft Determination	Final Determination	Change from Draft Determination to Final Determination
OMRCA1 (£ per train km)	2.07	2.27	2.36	4.0%
OMRCA2 (£ per train minute)	3.17	2.59	2.63	1.5%
OMRCB (£ per train minute)	40.00	36.60	37.73	3.1%
OMRCC (£ per train minute)	13.15	13.73	13.85	0.9%

Table 6.6. Final Determination charges for freight

February 2023 prices	CP3	Draft Determination	Final Determination	Change from Draft Determination to Final Determination
OMRCA1 (£ per train km)	6.15	6.74	6.95	3.104%
OMRCA2 (£ per train km)	4.97	1.00	0.80	(20.0%)
Total	**11.2**	**7.74**	**7.75**	**0.104%**

Note that these freight charges will only be levied if freight returns to the HS1 network.

Table 6.7. Income from Stations Long Term Charge in CP4

£m (February 2023 prices)	CP3	Draft Determination	Final Determination	Change from Draft Determination to Final Determination
St Pancras	37.8	25.9	26.6	2.6%
Stratford International	7.7	6.1*	6.2	2.8%
Ebbsfleet International	8.1	6.5*	6.7	3.5%
Ashford International	4.4	2.7	2.8	5.7%
Total	**57.9**	**41.1**	**42.4**	**3.0%**
EIL	31.6	19.8	20.4	3.2%
EMR	7.8	5.2	5.4	2.6%
Southeastern	18.6	16.1	16.5	2.9%
Total	**57.9**	**41.1**	**42.4**	**3.0%**

**In our Draft Determination, in Table 6.10, the Draft Determination income values for Stratford International and Ebbsfleet International were incorrectly shown as £6.5m and £6.1m respectively, due to a transposition error.*

Table 6.8. Breakdown of HS1 Ltd's November 5YAMS proposed total OM&R costs in CP4

£m (February 2023 prices)	Route	Stations	Total November 5YAMS
HS1 Ltd			
Operating costs	73.9	-	73.9
O&M financing costs	0.4	-	0.4
Total HS1 costs	**74.3**	**-**	**74.3**
NR(HS)			
O&M costs	233.5	-	233.5
Management fee	18.7	-	18.7
Contract risk premium	6.6	-	6.6
1.1% inflation uplift	2.8	-	2.8
Total NR(HS) costs	**261.7**	**-**	**261.7**
Other costs			
Renewals	218.7	52.2	270.9
Pass-through	122.2	-	122.2
R&D	4.0	-	4.0
Total other costs	**344.9**	**52.2**	**397.1**
Total regulated costs	**680.9**	**52.2**	**733.1**

Table 6.9 Conversion of CP4 costs to charges

£m (February 2023 prices)	Route	Stations	Total Final Determination
Total costs (as per Table 6.8)	**680.9**	**52.2**	**733.1**
ORR O&M efficiency adjustment	(11.5)	-	(11.5)
ORR O&M minor adjustments (reductions in wash-up costs; Escrow Investment Project)	(0.1)	-	(0.1)
Remove: renewals costs	(218.7)	(52.2)	(270.9)
Add: renewals annuities	140.6	42.4	182.9
Total	**591.2**	**42.4**	**633.6**
Stations QX charge	-	200.2	200.2
Total including QX charge	**591.2**	**242.5**	**833.7**
Traction electricity charge	148.3	-	148.3
Total including QX and traction electricity charges	**739.5**	**242.56**	**982.0**

7. Network Incentives

Changes to Access Terms

Our Draft Determination conclusions

7.1 Our Draft Determination set out 25 proposals for changes to access terms, for discussion through the consultation.

7.2 In this section, we discuss the major proposals on which we received comments, particularly those where we have changed our decision from the Draft Determination.

Stakeholder consultation responses

Volume Reopeners (VRO) amendments

7.3 In our Draft Determination, we said that we were minded to approve amendments to the VRO as proposed by HS1 Ltd. These are summarised in Table 7.1.

7.4 In its response, HS1 Ltd welcomed our position on amendments aimed at clarifying the definition and application of the VRO, including the amendment to reflect the recovery of costs over the remainder of the control period, which is in line with the approach taken in practice.

7.5 Southeastern recognised the benefits of clarifying the VRO provisions and agreed that HS1 Ltd's proposals were reasonable. Southeastern also sought clarity about the proposal for operators to approve HS1 Ltd's forecasts to execute a VRO; what the process would be if operators do not agree with the forecasts; and whether operators are required to approve all forecasts or just their own.

VRO provision for zero-freight scenario

7.6 HS1 Ltd welcomed our agreement to its proposal to include an amendment that allows the reallocation of freight-avoidable fixed costs in the event of no freight services operating. Recognising our decision to reallocate certain costs currently categorised as freight-avoidable costs to common costs, HS1 Ltd said that this provision was still needed to allow HS1 Ltd to recover Ripple Lane fixed costs should no freight trains operate.

7.7 Southeastern said that it understood the challenges faced by freight operators and the need for HS1 Ltd to ensure that a zero-freight scenario is considered.

7.8 We have concluded that the changes HS1 Ltd has proposed as to how the VRO applies are appropriate, as they provide greater clarity, and are also broadly supported by operators. In terms of the process for operators approving forecasts, we would only expect operators to comment on their own forecasts.

Our Final Determination

7.9 We approve HS1 Ltd's proposed amendments to the passenger access terms (PATs) in respect of the VRO.

Fixed costs wash-up

7.10 In our Draft Determination, we said that we were minded to approve an annual fixed costs wash-up.

7.11 HS1 Ltd strongly objected to the proposal to introduce an annual fixed cost wash-up mechanism, arguing that it would introduce additional complexity to charging arrangements and increase HS1 Ltd's costs. It listed a number of reasons for its objection including: new credit risks; cost certainty for operators; legal certainty; and additional costs to HS1 Ltd. These are summarised below.

New credit risks

7.12 HS1 Ltd said that the proposal introduces two new credit risks to HS1 Ltd. One in the situation where an operator has overpaid fixed costs refundable from another operator, which had underpaid costs. Under existing bilateral arrangements HS1 Ltd would be liable to refund the operator who had overpaid before it had recovered the underpayment from the underpaying operator.

7.13 The second risk arises from the possibility that an international services operator, having planned to run a level of services in the FWT, subsequently runs zero services in that year. Because a fixed cost wash-up mechanism involves allocating fixed costs at the end of a year based on actual volumes, HS1 Ltd would not be able to recover these costs in this case. Currently, this risk is reduced as charges for fixed costs are paid in advance.

7.14 To mitigate the first risk HS1 Ltd had proposed a "pay when paid" mechanism, whereby it is not liable to refund the overpaid operator until it has received payment from the operator that has underpaid.

7.15 To mitigate the second risk of an underpayment by an international service operator, HS1 Ltd had proposed:

(a) adding the amount (of the underpayment) to next year's value to be washed up (noting that this cannot be used in Year 5 of the control period); and/or

(b) recovering the amount directly from international operators at the end of the year (which will be needed in Year 5 of the control period).

7.16 HS1 Ltd, subsequent to its Draft Determination response, has told us that it no longer considered either of the above mitigations viable due to financing limitations that would arise in circumstances where there are no international services operating. It has put forward the following alternatives:

(a) in the event that there are zero international services operated, the international operator(s) pay the international OMRCA2 costs based on the submitted FWT (that is, calculated as the £ per minute charge multiplied by the total minutes given by the FWT); or

(b) that the costs are added to the common costs to be recovered from the international operator(s) for that financial year.

7.17 HS1 Ltd also identified an additional credit risk in that there are some instances where the domestic underpin (DUA) would not apply.

7.18 In this case, HS1 Ltd has proposed that, either:

(a) in the event that there are zero domestic services and the DUA does not apply:

(i) domestic operators pay domestic OMRCA2 costs based on the submitted FWT (that is, calculated as the £ per min charge multiplied by the total minutes given by the FWT): or

(ii) the costs are added to the common costs to be recovered from the domestic operator(s) for that financial year.

(b) In the event there are zero international and domestic services, and the DUA does not apply, then domestic operator(s) and international operator(s) pay domestic and international OMRCB charges based on the submitted FWT (that is, calculated as the £ per min charge multiplied by the total minutes given by the FWT).

Cost certainty for operators

7.19 In its response to our Draft Determination, HS1 Ltd also said that a wash-up mechanism based on actual train volumes would mean that operators would not have certainty about the level of fixed costs to be recovered in any one year. As such operators would not be able to determine in advance which services are profitable and modify operations accordingly. In extreme circumstances, such as those that occurred during COVID-19, operators could face significant cost increases as a result of the wash-up, potentially affecting their ability to operate in the following year.

Legal certainty

7.20 HS1 Ltd also raised the concern that this proposal might contravene the Railways (Access, Management and Licensing of Railway Undertakings) Regulations 2016 ("Access and Management Regulations") on the basis that HS1 Ltd considers there is an implied requirement that an operator should be able to determine its costs in advance.

7.21 HS1 Ltd also pointed to the Railways Act requirement that ORR should exercise its functions in a manner which enables persons providing railway services to plan the future of their business with a reasonable degree of assurance, which operators might argue a fixed costs wash-up is inconsistent with.

Additional costs to HS1 Ltd

7.22 HS1 Ltd also responded that a wash-up mechanism would impose additional costs on HS1 Ltd that it has not budgeted for. These include developing a wash-up model; legal costs associated with developing the proposal; and the ongoing operation of the wash-up.

7.23 HS1 Ltd set out a number of changes it wished us to make to our wash-up proposal arrangements:

(a) that we make a clear statement that the charging mechanism for OMRCA2/B costs wash-up arrangements are consistent with the Access and Management Regulations and its duties under s.4(1)(g) of the Railways Act;

(b) agreement that an annual wash-up is the most effective and efficient level of frequency, more frequent wash-ups would result in the unnecessary transfer of funds between operators with resultant increase in costs. However, given the possibility of a material change in traffic volumes, an in-year wash-up (if needed in HS1 Ltd's reasonable judgement) is justified. However, this should be limited to one per year; and

(c) HS1 Ltd did not consider the decision to hold a mid-year review should be based on a materiality threshold as it would be too restrictive. But if we consider a threshold should be used, that it should be linked to a material change in FWT volumes and be in the range of 20-25%.

7.24 EIL in its response reiterated its proposal of a fixed cost wash-up mechanism, commenting that it would align the charging regime more closely with actual usage. However, it recognised that any additional wash-up arrangements would introduce additional uncertainty over the total level of charges charged to an operator in any one year. To mitigate this, it proposed a +/-10% threshold for the deviation in traffic volumes from forecast as a trigger for a wash-up. This is intended to balance the need for accurate cost allocation and certainty over charges for operators.

7.25 EIL also recognised that a wash-up removes any volume risk from HS1 Ltd of any over-/under-recovery of fixed costs outside a volume re-opener.

7.26 In response to HS1 Ltd's concern that no international services are run within a year, EIL stated such a risk would be very unlikely, given for example that it still ran trains during COVID-19. EIL considered the risk so remote as not to warrant specific contractual provisions and responded that it expects such a situation would trigger a volume reopener.

7.27 Southeastern welcomed the open dialogue on this proposal through the PR24 process. Southeastern reiterated its proposal for a wash-up as it is fairer for all parties as it allows costs to align with actual usage. Also, that it allows for the simpler allocation of rates (that is, costs) across a control period as there would be no further changes to determined rates in subsequent years.

7.28 Southeastern said it did not consider a fixed costs wash-up required excessive work, particularly as similar wash-ups are already undertaken for other cost categories.

7.29 Southeastern said there should be no trigger level for a wash-up so that it occurs on a "business as usual" basis rather than one that "needs dusting off as and when required", as this would make it less efficient. A quarterly statement of accounts would be sensible, which would provide operators with an evolving picture upon which they could plan.

Our conclusions

7.30 In our Draft Determination, we said that we were minded to approve the introduction of a wash-up mechanism as it brings actual and forecast operator charges more in line with the actual costs of operating on the network, ensuring the right operator pays the correct proportion of actual costs. As outlined in our Draft Determination and in paragraph 3.1 above, we consider that all our decisions are consistent with the relevant statutory requirements.

7.31 In our Draft Determination, we outlined proposals as to how a fixed cost wash-up could work, but said that we recognised there are elements that required further discussions with industry as to how a wash-up would work in practice. To achieve this, we held a number of stakeholder workshops with HS1 Ltd, DfT and the current operators, to develop the wash-up mechanism further and reach agreement on its operation.

7.32 We welcome the constructive dialogue between HS1 Ltd and operators in the various workshops held to discuss how a fixed cost wash-up mechanism would work in practice. This has taken matters forward and will be finalised through legal drafting produced by HS1 Ltd. In the light of the constructive engagement with industry in developing this proposal we approve its introduction.

7.33 We recognise HS1 Ltd's concern that an annual wash-up potentially introduces greater uncertainty to operators about the costs they will ultimately face. However, operators have requested the wash-up and are willing to trade-off the potential increase in uncertainty with the benefits of bringing actual costs in line with traffic.

7.34 In response to HS1 Ltd's request for additional funding to operate a fixed cost wash-up, we have made additional provision for this in HS1 Ltd's funding, details of which can be found at paragraphs 5.92 and 5.111 of this document.

7.35 The details of how the wash-up will operate will be finalised by HS1 Ltd in legal drafting. However, there are a number of principles we consider should be part of the wash-up mechanism.

Wash-up frequency

7.36 We have concluded that the wash-up should be on an annual frequency and there should be provision for one interim in-year wash-up triggered when the reallocation of costs reaches £10m (in February 2023 prices) or higher for a six-month period and it is unlikely to reduce over the remainder of the financial year. £10m was proposed by EIL and supported by HS1 Ltd (Southeastern did not respond on this).

HS1 Ltd's credit risks

7.37 We recognise that an event whereby an operator runs zero services in any one year is highly unlikely, nevertheless given the potentially high sums involved, it is a risk for which we consider there should be provision. While the wash-up mechanism itself is to account for variations between forecast and actual traffic, a situation whereby an operator would escape liability of any of the charges for fixed costs places an inappropriate risk on HS1 Ltd. We therefore conclude that the credit risks identified should be dealt with as described below:

(a) wash-up payments between operators should be based on a pay-when-paid basis;

(b) in the event of an international operator not running any trains booked in the FWT, international services operator(s) would pay OMRCA2 costs under the conditions set out in paragraph 7.16(a) above;

(c) in the event of a domestic operator(s) not running any trains booked in the FWT, and the DUA not being triggered, domestic operators would pay OMRCA2 charges under the conditions set out in paragraph 7.18(a)(i) above; and

(d) in the event of zero international and domestic services, and the DUA not being triggered, domestic and international operator(s) would pay the OMRCB charges due in that year, under the conditions set out in paragraph 7.18(b) above.

Our Final Determination

7.38 We approve the introduction of a fixed cost wash-up mechanism.

OMRCA1 wash-up

7.39 In our Draft Determination, we said that we were minded to approve a wash-up mechanism for OMRCA1 charges, whereby operators are refunded if there are changes to the FWT but there is no net reduction in the total number of services run on a particular day, that is, in cases where FWT cancelled services are replaced by spot bids.

7.40 In its response, HS1 Ltd said that while it considered the existing access terms for charging OMRCA1 consistent with the Access & Management Regulations, it accepted our minded to position to introduce an OMRCA1 wash-up under the circumstances described above.

7.41 HS1 Ltd supported our position that the FWT acts as a volume floor for OMRCA1 for the reasons we outlined in our Draft Determination. HS1 Ltd highlighted that because OMRCA1 rates are set at the start of a control period, and that there are no reopener provisions outside an interim review, HS1 Ltd had under-recovered £4.3m in cash terms as a result of lower volumes due to COVID-19.

7.42 HS1 Ltd accepted that renewals planning is longer term but pointed out that the renewals element of the OMRCA1 charge is deposited in the escrow account and is not an income for HS1 Ltd. If the FWT floor were removed, consideration would need to be given to how funds deposited in the escrow account are withdrawn and refunded to operators in the event of a refund.

7.43 HS1 Ltd said that if we were to proceed with the OMRCA1 wash-up as proposed in our Draft Determination, the wash-up should be applied on a same-day basis, and then aggregated for the period between wash-ups. HS1 Ltd commented that this is because the objective of the refund is to account for genuine replacement of services as a result of cancellations by operators or due to external infrastructure issues outside the control of HS1 Ltd. Using a longer period of a week or railway period (four weeks) would capture additional services run at a later time as replacement services, but are not genuinely replacements for cancelled services.

7.44 EIL welcomed our proposal but said it should also include a refund for all cancelled FWT trains, not limited to netting-off for a single day. This is because in situations where there is large-scale disruption, EIL may not be able to recover all services to accommodate disrupted passengers within one day.

7.45 EIL also said that there should be refunds for all cancelled FWT services where this leads to the total number of operated trains falling below the number originally reserved in the FWT.

7.46 EIL pointed that out that there exists a reopener mechanism between HS1 Ltd and NR(HS) in response to significant cost increases, but there is not one where costs fall, and no systematic protection for train operators against overcharging if services do not operate at forecast levels.

7.47 EIL maintained that the non-refundability of variable costs is not consistent with the Access & Management Regulations, which define costs directly incurred as costs relating to the operation of a train.

7.48 EIL raised three concerns about the current charging mechanism:

(a) HS1 Ltd is not charged additionally by NR(HS) for spot bid trains, so EIL asked why operators are charged for these services.

(b) In respect of renewals costs, recovered though OMRCA1, EIL noted that a train that does not operate does not impose wear and tear and therefore should not be charged. Paying a renewals annuity for a train that does not run is an overcharge borne by today's users for the benefit of future users.

(c) EIL indicated that NR(HS) may well be able to make adjustments to staffing levels, work programmes and costs within the notice period of planning the FWT, typically 6-12 months, thereby escaping these variable costs.

7.49 Southeastern supported the introduction of a wash-up for cancelled trains replaced by spot bids.

Our Conclusions

7.50 We have concluded that we retain our minded to decision to implement a wash-up mechanism to refund OMRCA1 charges, if there are changes from FWT but no net reduction in the total number of services run on a particular day. We do so because we agree with EIL that operators should not be charged costs directly incurred for trains that do not operate above the FWT.

7.51 Having considered arguments put forward by HS1 Ltd and operators we have decided that the wash-up should apply to service disruptions over a railway period. This is to allow operators, in circumstances of exceptional disruption, to recover services on more than just the day of disruption. However, we expect this to be the case in only a limited number of occasions annually.

7.52 In response to EIL's call for a wash-up mechanism to cover all cancelled services below the FWT: as stated in our Draft Determination, although these charges are to reflect variable costs, HS1 Ltd's total variable costs include costs from suppliers which are pre-determined. HS1 Ltd and its suppliers need to plan and commit operating and maintenance resources, consistent with asset management policies, in advance based on forecast traffic levels. Renewals are increasing in CP4 and some renewals costs will have been committed at the start of the year based on forecast traffic levels (considering not only the impact of wear and tear on the timing of the renewal, but also the access available to deliver work in the period). Hence these costs cannot be fully escaped if actual traffic levels are lower than forecast. We therefore do not agree that OMRCA1 should be refunded when train volumes fall below the FWT.

7.53 In relation to spot bid trains being charged OMRCA1 when the forecast costs are already recovered based on FWT trains, these additional spot bid trains also impose wear and tear costs on the network, which will need to be recovered at some point, and they should pay their share of the costs. Moreover, the Access and Management Regulations require infrastructure managers to charge at least the costs directly incurred by operators.

Our Final Determination

7.54 We approve the proposal that HS1 Ltd's charging structure should include an OMRCA1 wash-up mechanism to refund OMRCA1 charges if there are changes from FWT but no net reduction in the total number of services run on a particular day.

Pass-through costs

7.55 In its May 5YAMS, HS1 Ltd set out a proposal to add several cost categories as pass-through costs. In our Draft Determination we said that, in principle, only costs outside HS1 Ltd's control should be treated as pass-through costs, but that we recognised there may be justifiable exclusions to this principle. On that basis, our Draft Determination stated that we were minded to approve the following proposed categories of costs: energy management and bill-checking fees, Renewable Energy Guarantees of Origin (REGOs) in non-traction energy costs, the costs of the REACT and N-1 schemes and that of the Escrow Investment Project.

7.56 Pass-through costs proposed by HS1 Ltd that we did not consider met our criteria and therefore were not minded to approve were business rates success fees, insurance broker fees and professional services.

7.57 Operators agreed to the majority of HS1 Ltd's proposals, however they raised objections to the inclusion of business rates success fees, insurance broker fees and the Escrow Investment Project as pass-through costs.

7.58 In its response, HS1 Ltd set out how it would respond if any of the cost categories it proposed to be treated as pass-through costs were not approved.

7.59 Southeastern said that it agreed with the principle that only charges beyond HS1 Ltd's control should be levied as pass-through costs and that consultation should be offered to operators in the event of any large or extraordinary items, to allow operators to express a view on both price and the activity involved.

7.60 In its response, EIL stated that it agreed with the principle that pass-through costs should only cover costs that are outside of HS1 Ltd's control, so as to provide HS1 Ltd with the strongest incentive to generate efficiencies over costs within its control.

7.61 EIL said that because it considers business rates success fees and the Escrow Investment Project costs as those that are not incurred on a regular basis, it would more appropriate that these should be negotiated on a case-by-case basis with operators and not treated as pass-through costs. EIL said that because it considers business rates success fees and the Escrow Investment Project costs as those that are not incurred on a regular basis, it is more appropriate that these should be negotiated on a case-by-case basis with operators and not treated as pass-through costs.

7.62 Regarding insurance broker fees, EIL said it would reserve its position on these costs until it had received a full breakdown of them from HS1 Ltd. EIL stated that as a matter of principle all pass-through costs should be properly detailed, so their scope is transparent to train operators.

7.63 In workshops held with stakeholders to discuss the detail of how the proposed PATs changes should be implemented in practice, HS1 Ltd clarified that insurance broker fees and professional services had always formed part of the insurance fees pass-through cost, but that it had drawn these out as a separate cost category to provide operators with greater transparency. Operators requested HS1 Ltd provide them with a full breakdown of insurance costs before deciding whether or not to accept insurance broker fees and professional services as a pass-through cost.

7.64 In respect of business rates success fees, operators understood that the purpose of these charges is to enable HS1 Ltd to challenge business rates revaluations when considered necessary, to secure lower rates if a challenge is successful. However, operators said that they would prefer to take a view of the relative cost of a challenge versus expected benefit in terms of lower rates if a challenge is successful, at the time of a business rates revaluation. They therefore said this should be assessed by HS1 Ltd and operators on a case-by-case basis, rather than a pass-through cost.

7.65 Also, as part of the stakeholder workshops on access terms, EIL reiterated its objection to the Escrow Investment Project being a pass-through cost as there was no certainty about the eventual cost or benefits.

Our Conclusions

7.66 In stakeholder workshops we held to discuss the access terms, further discussion took place on the treatment of business rates success fees, insurance broker fees and professional services and the Escrow Investment Project. Operators were concerned that the level of business rates success fees and the Escrow

Investment Project costs were uncertain, so may be better negotiated at the time rather than treated as pass-through costs.

7.67 We accept operators' arguments that there is too much uncertainty around these two items for them to be treated as pass-through costs: the scope is not clear, and as such these costs should be negotiated with operators nearer the time that they are incurred. HS1 Ltd said in its November 5YAMS that it was willing to accept a negotiated approach for these costs and we agree with this approach.

7.68 In respect of insurance broker fees and professional costs, given that these costs are already included as pass-through costs and because both using a broker to secure lowest rates and professional services to assess insurance risks may enable HS1 Ltd to secure the best insurance rates, we agree with HS1 Ltd that these should be included as pass-through costs. However, HS1 Ltd should ensure that these costs are made fully transparent to operators.

Our final determination

7.69 We approve the inclusion of the following categories of pass-through costs: management and bill-checking fees for non-traction energy; REGOs in non-traction energy; and insurance broking fees and professional costs.

7.70 However, we do not accept that success fees in business rates; and the Escrow Investment Project should be treated as pass-through costs.

7.71 HS1 Ltd's November 5YAMS included £200k of pass-through costs for the Escrow Investment Project. For our Final Determination we have removed this £200k from the O&M charge

OMRC Indexation floor

7.72 In our Draft Determination, we said that we were minded to approve EIL's proposal to remove the OMRC indexation floor. We did so because we considered it reasonable that operators should benefit from reduced costs due to negative inflation as they pay more when there is positive inflation. In its response, Southeastern supported the removal of a floor to indexing OMRC.

7.73 HS1 Ltd said it was very concerned by the proposal to remove the OMRC indexation floor. It said that this proposal does not appear to have taken into account that it would result in a misalignment with the same provision in the Operator Agreement (OA) between HS1 Ltd and NR(HS), which could have a significant cost impact on HS1 Ltd.

7.74 This misalignment, HS1 Ltd said, would occur during periods of deflation whereby NR(HS) operating and maintenance costs charged to HS1 Ltd would not fall but HS1 Ltd's income from charges would. Dependent on the scale of deflation this could result in HS1 Ltd losing a significant sum. This could be further exacerbated when accounting for costs that do not fall even when there is general price deflation as measured by CPI, such as HS1 Ltd's staff and subcontractor costs.

7.75 HS1 Ltd is not unilaterally able to amend the terms of the OA and HS1 Ltd considers it unlikely that NR(HS) would agree to an amendment, as the largest share of its costs are staff salaries that do not fall with general inflation. HS1 Ltd also noted that ORR has no power to compel NR(HS) to make any changes to the terms of the OA.

7.76 HS1 Ltd also stated that the Concession Agreement, PATs and OA were implemented as part of the original concession sale, and that this decision would fundamentally undermine the key principle of the concession that HS1 Ltd is held cost-neutral - the basis on which the concession sale was valued and transacted.

7.77 HS1 Ltd also pointed out that it had no control over general inflation index movements, and that NR(HS)'s operating and maintenance price is a fixed annual price set for the control period - a cost that HS1 Ltd could not control and had little ability to change outside of an interim review event. HS1 Ltd said it was concerned that the impact of removing the floor on HS1 Ltd's income would not meet the criteria for triggering an interim review.

Our Conclusions

7.78 In principle, it might be reasonable that operators should benefit from negative inflation in the same way that they pay more if there is positive inflation. We also consider that in a five-year control period, it is unlikely that HS1's cost base would be subject to cumulative year-on-year negative inflation and that HS1 Ltd's example was not realistic. We recognise that this is not the case with the current mechanism.

7.79 We agree with HS1 Ltd that it is its responsibility to arrange the provision of services through the OA but we do not agree that the way charges to operators are changed to adjust for changes in inflation should necessarily mirror those arrangements. This is because the term in the operators' access terms is designed to be adjusted for changes in general inflation not input price inflation, which is dealt with elsewhere in our determination as discussed in paragraph 5.50.

7.80 However, in its response (in particular the confidential elements of it) and in discussions following the Draft Determination, HS1 Ltd has provided evidence of possible unforeseen consequences to its financing arrangements, of removing the indexation floor at this time. We have concluded that HS1 Ltd could be negatively impacted by the removing the indexation floor in the access terms, even if negative inflation does not occur.

7.81 Given that negative inflation of any significant magnitude or duration is unlikely to occur, we have concluded that there is insufficient justification to remove the indexation floor at this time. We recommend that HS1 Ltd and operators work together to consider how charges should be fairly indexed and, if an agreed way forward is not found, we intend to explore this issue further at our next periodic review.

Our final determination

7.82 We have decided not to remove the OMRC indexation floor as part of this periodic review, but we recommend that HS1 Ltd and operators work together to consider how charges should be indexed.

Performance regime

7.83 HS1 Ltd's performance regime is designed to encourage all parties to minimise disruption and improve the performance of the HS1 network. The performance regime is set out in Section 8 of the access terms.

7.84 Our Draft Determination set out our position on the performance regime for CP4, on which stakeholders were invited to respond.

7.85 In our Draft Determination, we said that HS1 Ltd's performance regime would not be recalibrated in PR24, but a recalibration would commence by September 2025, by which time it is hoped that more representative, post-COVID data will be available. (We refer to this as 'the deferred recalibration'.) Respondents accepted the principle of deferring the recalibration, and we remain in agreement.

7.86 In our Draft Determination, we said that HS1 Ltd's commitment was to a start date for the deferred recalibration, rather than an implementation date, because of the risk of delay if parties disagreed on recalibrated parameters. In its response, HS1 Ltd asked us to make explicit its view that not committing to an implementation date also allows for the scenario where HS1 Ltd and operators agree not to implement recalibrated parameters. Further, HS1 Ltd expressed concerns that completion of a recalibration could be delayed by an operator's failure to provide necessary data, which again would point to a commitment to a start date rather than an end date. We are happy to make clear HS1 Ltd's position, and to confirm that we are accepting its commitment to commence work by September 2025.

7.87 In our Draft Determination, we invited views on HS1 Ltd's proposal that it, as infrastructure manager, should be able to withdraw a proposal for change (of parameters from the deferred recalibration) if it is not sufficiently supported. In its response, HS1 Ltd noted the possibility that it and operators could collectively decide that the planned recalibration should not be implemented. HS1 Ltd said it "would only stop a recalibration process where there is agreement across parties" and that it would not be appropriate for one operator alone to have the power of veto.

7.88 Southeastern stated its strong belief that not proceeding with implementation of a recalibration should be a "system decision".

7.89 We have concluded that HS1 Ltd should make decisions on whether to proceed with a proposal for change, based on the best interests of the system. This is a pragmatic way to contractualise the planned recalibration.

7.90 In our Draft Determination, we said that HS1 Ltd should be able to make a specific adjustment to operators' charges following the planned performance scheme recalibration, if the recalibration results in a revised pricing of performance risk. However, we said that this will be limited to the deferred recalibration that will commence by September 2025.

7.91 In its response, HS1 Ltd said that it accepts this. Southeastern and EIL each said they supported our position that any amendments to charges are limited to the deferred recalibration. In light of this support, our conclusion is unchanged from our minded to position in our Draft Determination.

7.92 In our Draft Determination, we said that, in relation to unplanned performance scheme recalibrations, we disagreed with HS1 Ltd's proposal that the costs associated with such a recalibration should be recovered from the party requesting it.

7.93 In its response, Southeastern said that it would not support HS1 Ltd being able to invoice operators for such costs. However, EIL said that it had supported HS1 Ltd's original proposal to invoice operators that request recalibrations, as a way to avoid "spurious" requests. HS1 Ltd encouraged us to reconsider and made a new proposal to give HS1 Ltd the ability to invoice operators "for a share of the external costs HS1 incurs" for a mid-control period performance regime recalibration.

7.94 We have considered HS1 Ltd's updated proposal and we have concluded that HS1 Ltd should be able to share between itself and operators the external costs of unplanned recalibrations (other than for the deferred recalibration that will commence by September 2025). We consider that it is fair that each party contributes, and we see this as fairer and less punitive than HS1 Ltd's original proposal that the requester would bear all costs. The costs must also be transparent to all parties.

Our Final Determination

7.95 We approve HS1 Ltd's revised proposals in relation to its performance regime.

Possessions regime

7.96 HS1 Ltd's possessions regime compensates train operators for the direct costs, such as bus and taxi hire costs, that they incur as a result of possessions taken outside of a defined Possessions Allowance. The regime is intended to incentivise HS1 Ltd to plan possessions efficiently and minimise disruption. The possessions regime is set out in Section 4 of the access terms.

7.97 Our Draft Determination set out our position on the possessions regime for CP4, on which stakeholders were invited to respond.

7.98 On the volume of possessions in the Possessions Allowance, we said in our Draft Determination that the allowance would need to increase substantially in CP4, due to the significant rise in renewals and maintenance interventions that are needed. In their responses, HS1 Ltd and operators accepted the need for this increase. We also said that any change to ballast renewals plans ahead of the November 5YAMS would need to be reflected in the Possessions Allowance. HS1 Ltd has not made any change to its ballast renewals plans, and in the Asset Management Activity chapter (paragraph 4.65) we accepted this delivery profile, so the Possessions Allowance will be as presented in the November 5YAMS.

7.99 In its response, Southeastern said that the longer and more frequent possessions planned in CP4 will increase its costs and reduce its revenues. It expressed disappointment that a mechanism was not being introduced to recoup operators' costs resulting from possessions that fall within the Possessions Allowance. Such a mechanism could be considered in the future, though we would note that greater compensation for operators would introduce a cost that is likely to flow back to operators through increased charges in later control periods.

7.100 In our Draft Determination, we agreed to the separation of the Possessions Allowance into a Standard Possessions Allowance, for routine and low-complexity renewals, and an Extended Possessions Allowance, for significant and complex renewals. In responses, parties either agreed with this change or did not comment on it. We have concluded that we remain in agreement with the change.

7.101 In our Draft Determination, we said that unused Extended Possessions Allowance can roll over to the next year, but only if rolled-over possessions are included in the Engineering Access Statement in force at the time in accordance with the HS1 Network Code. In its response, HS1 Ltd agreed with this position, and EIL and Southeastern supported it as a way to prevent an uncontrolled build-up in the allowance. Our conclusion remains the same as our minded to conclusion in our Draft Determination. HS1 Ltd's November 5YAMS confirms that NR(HS) would continue to track possessions and report to operators, and would in future include a breakdown of possessions by category, stating whether a possession is within the current year's allowance or in the allowance rolled over from the previous year.

Our Final Determination

7.102 We accept HS1 Ltd's proposals in relation to its possessions regime.

Delay Attribution Board

7.103 In our Draft Determination, we said we did not have a strong view either way on the merits of the Delay Attribution Board (DAB) taking on oversight of delay attribution on the HS1 network. But, because of the various complex contractual changes and potential consequential effects, if this were to go ahead, we would want it to be agreed by the system and taken forward by HS1 Ltd as the infrastructure manager of the network. While this proposal is within the scope of our review provisions, we wanted confirmation that HS1 Ltd and its stakeholders agree on the right approach.

7.104 EIL continued to argue that there would be benefits to the DAB overseeing delay attribution on HS1. EIL disagrees with our position that this change needs to be based on industry consensus.

7.105 In industry workshops, the potential of HS1 Ltd leading work during CP4 to assess the potential costs and benefits of joining the DAB was raised.

7.106 HS1 Ltd agreed with our Draft Determination conclusion. HS1 Ltd advised that it did not support undertaking an assessment of the costs and benefits of the DAB, but that if it were to do this it would need to be funded for the additional costs, which it estimated to be £210k.

Our Final Determination

7.107 We do not have a strong view either way on the merits of the DAB overseeing delay attribution on the HS1 network, but we note that mechanisms already exist to resolve disputes. At present, disputes are resolved through rules for the network. We note that disputes can be referred to ORR under regulation 32 of the Access and Management Regulations if necessary.

7.108 If the change were to go ahead, we would want the costs and benefits to be agreed by all parties and taken forward by HS1 Ltd on behalf of the system. It is for HS1 Ltd and its stakeholders to agree the right approach to undertaking a project to assessing the costs and benefits of such a change. If HS1 Ltd and its stakeholders were to agree to take this work forward, we would support this change being made during CP4. However, we have concluded that there is not sufficient consensus or details to justify the change at this time.

Other miscellaneous changes

7.109 Our conclusions on other miscellaneous changes to PATs are summarised in Table 7.1.

Access Terms changes – Summary

Table 7.1 List of Access Terms proposals and determinations

Proposal	Proposer	Final Determination
Performance Regime: **Initial proposal** – Include a provision that gives HS1 Ltd the ability to invoice the operator for the external costs of a performance regime recalibration when they are the party that requests it (Section 18.1). **Revised proposal** – Include a provision that gives HS1 Ltd the ability to split the costs of a performance regime recalibration between parties (HS1 Ltd and operators).	HS1 Ltd	Approve revised proposal.
Performance Regime: Include a provision so HS1 Ltd may amend and reapportion the OMRCA2 and OMRCB to reflect the adjustment in performance risk costs from a recalibration (Section 18.1).	HS1 Ltd	Approve proposal only for recalibration that has been deferred from PR24 to commence by September 2025.
Possessions Regime: Update the Possessions Allowance definition to reflect the extended and standard possession allowance for CP4. (Section 18.2.2)	HS1 Ltd	Approve proposal.

Proposal	Proposer	Final Determination
VRO: Update the definition of a subsequent Review Event threshold to refer to the volume forecast for the relevant year in the preceding VRO (Section 18.3).	HS1 Ltd	Approve proposal.
VRO: Changes to simplify the definition of a VRO and clarify approach (Section 18.3).	HS1 Ltd	Approve proposal.
VRO: Include a provision that, if freight ceases operating on HS1, it triggers a reapportionment of remaining freight fixed costs across passenger operators (Section 18.3).	HS1 Ltd	Approve proposal.
Pass-through wash-up: Change the definition of the pass-through costs wash up term so the wash up applies to the total pass-through costs in the year (Section 18.4).	HS1 Ltd	Approve proposal.
Pass-through cost definitions: update existing pass-through cost categories to include additional items. These are: success fees in business rates; insurance broking fees and professional costs; management and bill-checking fees for non-traction energy; and REGOs in non-traction energy (Section 18.7.2).	HS1 Ltd	Approve proposals for insurance broking fees and professional costs; management and bill-checking fees for non-traction energy; and REGOs in non-traction energy. Reject proposal for success fees in business rates.
Pass-through cost definitions: Update to include the new pass-through cost categories for the REACT scheme, N-1 scheme and the Escrow Investment Project (Section 18.7.2).	HS1 Ltd	Approve proposals for the REACT scheme and N-1 scheme. Reject proposal for the Escrow Investment Project.
Additional investment recovery charge (IRC): Include provisions to expressly clarify the billing of AIRC on spot bid services and consequential changes (Section 18.9).	HS1 Ltd	Approve proposal.
FAT: Implement the N-1 Scheme for consistency with the PAT (Section 18.9).	HS1 Ltd	Approve proposal.
Minor corrections for consistency and clarification in provisions within scope of PR24.	HS1 Ltd	Approve proposal.

Proposal	Proposer	Final Determination
A wash up of OMRCA2 and OMRCB to allocate fixed costs on actual train volumes. SETL suggests an annual wash up. EIL proposes this only occurs when actual volumes deviate by 10%.	EIL and SETL	Approve proposal with no annual trigger level.
The APAt term in the wash-up provisions is restricted to inflation indexation differences only.	EIL	Approve proposal.
Change the trigger for a VRO from 4% difference in train volumes to 10%.	EIL	Reject proposal, as per Draft Determination.
Operators should approve volume forecasts HS1 Ltd uses to execute a VRO where an FWT is not available. *Note: this was misinterpreted in the Draft Determination as being cases where the forecast was "above FWT".*	EIL	Approve proposal, as per Draft Determination minded-to decision on handling of volume forecasts.
Include dedicated terms for OMRCA2 and OMRCB so these are not washed up through APAt term. EIL proposes the wash up of OMRCA2/B occurs only when volumes deviate by 10%.	EIL	Approve proposal so OMRCA2 and OMRCB are not washed up, but with no deviation of 10%.
The OMRCA1 wash up approach is changed so OMRCA1 applies to the ex-post volume of trains; that OMRCA1 is refunded if volumes are below FWT.	EIL	Approve proposal where difference between actual trains and FWT trains is positive - but not in cases below FWT.
Remove the floor to inflation indexation for OMRC so negative inflation (deflation) is passed on to the operators' charges.	EIL	Reject proposal.
The DAB is used as the relevant dispute resolution body for delay attribution disputes to improve the efficiency and effectiveness of dispute handling.	EIL	Reject proposal. Parties can undertake exploratory work on the usefulness of the proposal if there is system-wide agreement.

Proposal	Proposer	Final Determination
The timeframes for reviewing performance incidents should be extended to allow reasonable time to review, and the governance for the process outlined.	SETL	Reject proposal.
Performance Regime: Include a provision that allows for recalibration during CP4, commencing by September 2025 (Section 18.1).	HS1 Ltd	Approve proposal.
Possessions Regime: Change the number of possessions within the Possessions Allowance (Section 18.2.1).	HS1 Ltd	Approve proposal.
Possessions Regime: Allow unused Extended Possessions Allowance to roll over between years.	HS1 Ltd	Approve proposal, subject to use of Engineering Access Statement as change control mechanism for rollover.
AIRC: Amend the term ‘Further IRC’ to Additional IRC to be consistent with the PAT (Section 18.9).	HS1 Ltd	Approve proposal.

7.110 The following proposals were considered outside the scope of our review and have been taken forward by consultation between the parties to the access terms:

Table 7.2 Access terms proposals outside the scope of PR24

Area	Section	Proposal	Proposer	Explanation
PAT and FAT	Section 7 (Track Charges)	Carbon costs: Remove the provisions related to carbon costs and charges (Section 18.5).	HS1 Ltd	This is to reflect a change in law. The amendments can be made following the process in paragraph 5.2 of Section 9 of the PATs.
PAT and FAT	Various	Updates to reflect: • Removal of references to EU licences which no longer apply since Brexit. • The Corporate Insolvency and Governance Act 2020. (Section 18.9)	HS1 Ltd	This is to reflect a change in law. The amendments can be made following the process in paragraph 5.2 of Section 9 of the PATs.

Area	Section	Proposal	Proposer	Explanation
PAT and FAT	Section 7 (Track Changes)	Update to the Outperformance Sharing to reflect CP4 dates (Section 18.8).	HS1 Ltd	This is out of scope. The amendments can be made following the process in paragraph 5.2 of Section 9 of the PATs.
FAT	Section 7 (Track Charges)	Implement On-train Metering for consistency with the PAT (Section 18.9).	HS1 Ltd	This is out of scope. The amendments can be made following the process in paragraph 5.2 of Section 9 of the PATs.
PAT and FAT	Various	Minor amendments to update dates and addresses and for clarifications, cross-referencing and typos.	HS1 Ltd	HS1 Ltd has confirmed that these are minor changes to sections of the PATs that fall outside those defined as “Review Provisions” and are therefore out of scope. The amendments can be made following the process in paragraph 5.2 of Section 9 of the PATs.
	Invoicing	Proposals so that: • An operators’ payment period only starts after all necessary and accurate invoices and supporting documents are received, to allow reasonable time to review. • Operators’ may withhold amounts of an invoice they dispute to incentivise HS1 Ltd to improve invoicing accuracy. Currently operators must pay the invoice in full and then dispute. • There is specific reference to accurate and timely invoicing in the general standard for performance for HS1 (EIL only). • Reciprocal charging of interest applies on late	EIL and SETL	Invoicing arrangements are out of scope of the review.

Area	Section	Proposal	Proposer	Explanation
		payments by HS1 Ltd to operators (SETL only).		
	Outperformance	The current Outperformance Regime should be changed as it drives perverse incentives for NR(HS).	EIL and SETL	This is out of scope. The amendments can be made following the process in paragraph 5.2 of Section 9 of the PATs.
	IRC wash up	The IRC wash up approach is changed so IRC applies to the ex-post volume of trains run; that IRC is refunded if volumes are below FWT.	EIL	IRC is excluded from the scope of ORR's review by the concession agreement which takes precedence over the PATs.
	Interim Review trigger	Introduce a new trigger for an Interim Review when train volumes deviate by more than 25% from forecasts so the potential impact of large changes in train volumes on charges is subject to regulatory review.	EIL	The triggers for an Interim Review are set out in the concession agreement and are therefore out of scope of the review.

St Pancras International – contractual inconsistency

Our Draft Determination conclusions

7.111 Our Draft Determination set out our interpretation of the contractual arrangements at HS1 stations, focussing on the allocation of costs between stakeholders. In particular, we identified contractual inconsistencies between the Thameslink box and other areas of St Pancras station, in terms of operators' contributions to costs for common areas. Our Draft Determination stated that we expect HS1 Ltd to lead a working group to review network incentive options with stakeholders in Year 1 of CP4.

Stakeholder consultation responses

7.112 EIL and Southeastern welcomed a review of the contractual arrangements at St Pancras Station by affected stakeholders. Southeastern also proposed a full review of the Station Access Agreements and Conditions.

HS1 Ltd revisions to its plans

7.113 HS1 Ltd has committed to holding a working group involving DfT and NRIL (both counterparties to the Thameslink Box arrangements), Govia Thameslink Railway (GTR, who would have to enter into a potential new agreement to allow it to contribute to common stations costs), and existing operators where relevant.

Our Final Determination

7.114 We have concluded that HS1 Ltd has provided sufficient commitment in its November plans, to hold a working group on contractual arrangements at St Pancras International Station, and report on outcomes in its 1 April 2025 – 31 March 2026 Annual Asset Management Statement, due 8 June 2026.

8. Next Steps

8.1 We look forward to HS1 Ltd’s revised 5YAMS and LCRs, by 3 February 2025 for our review, following which we will issue implementation notices to enable the necessary changes to be made to the access arrangements for the network.

8.2 HS1 Ltd may challenge this final determination in accordance with the provisions of the concession agreement and station leases.

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