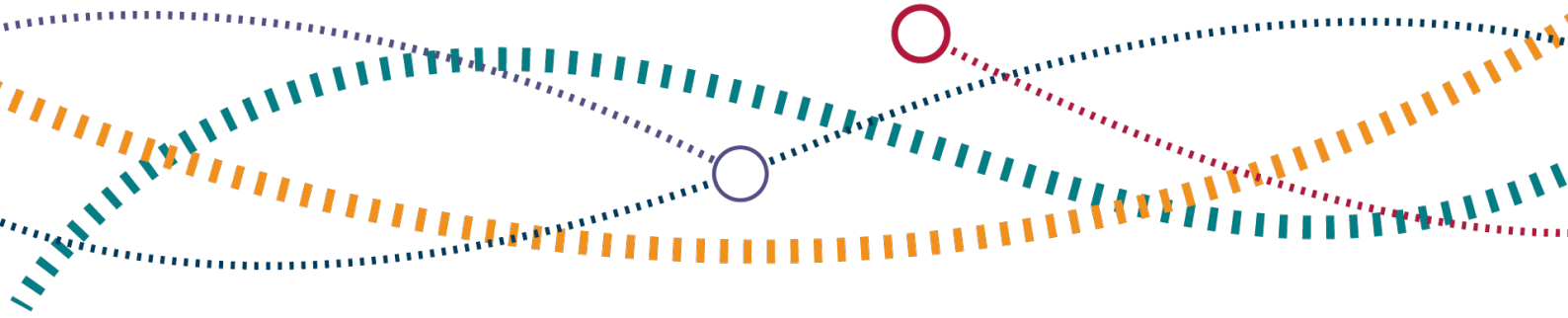
ORR annual report on HS1 Ltd

1 April 2021 – 31 March 2022

2 August 2022



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Executive Summary

This report sets out our assessment of the regulated aspects of HS1 Ltd's operational and financial performance for the financial year 1 April 2021 – 31 March 2022, which was the second year of Control Period 3 (CP3). Previous years' reports can be accessed on our website.

We report here on our assessment of the company's delivery against the final determination of our periodic review of HS1 Ltd 2019 (PR19), which was published on 7 January 2020. More information on PR19 can be found on our website here.

We saw good progress made towards closing out our recommendations this year, and continued outperformance of train service provision. However, we were concerned about the ability of HS1 Ltd to deliver its renewals portfolio in the remainder of the control period, and capability to manage changes to its plan.

Health and Safety

We made seven key health and safety recommendations in PR19 that involved ongoing improvement to HS1 Ltd's assurance of its business partners. HS1 Ltd had previously addressed five of the seven. The remaining two that were related to safety by design, and the avoidance and elimination of risk through lessons learned, were successfully addressed in the past year.

We also assessed Network Rail High Speed's (NR(HS)) application for continued safety management of the network, which allowed us to award it a further five-year safety authorisation.

Traffic volume and train service performance

Traffic volume on the HS1 route increased by 6% this reporting year. However, it was still 29% below the number of services operated in the year to 31 March 2020 (before the impact of Coronavirus (COVID-19).

The number of services that were delayed by HS1 Ltd-attributable incidents during the year was 166 (0.32% of all services using the network), a deterioration on last year which saw 87 services delayed (0.18%). This remains substantially better than the company's minimum requirement set out in its Concession Agreement (13%).

Recognising that the needs of passengers and freight users demand a train performance service level considerably higher than the minimum contractual requirement, HS1 Ltd sets itself a stretch target for the average number of seconds each train was delayed by incidents attributed to HS1 Ltd. It achieved 4.00 average seconds delay per train

compared to a target of 6.80 seconds, the third year in succession where it has outperformed against this stretch target.

Asset Management

We have concerns about HS1 Ltd's ability to deliver its planned renewals over the control period. HS1 Ltd has failed to provide sufficient evidence that it has undertaken adequate assurance on NR(HS)'s decision to defer several renewal projects.

This year, we found that HS1 Ltd adopted an agile approach to asset management to mitigate the risks associated with COVID-19 to its business. It updated its business continuity plans to reflect the risks posed and ensured that its suppliers did the same. However, consistent with our PR19 determination, we expect HS1 Ltd to undertake a more rigorous assurance regime on NR(HS)'s project delivery, until delivery of the renewal shortfall has been achieved. Additionally, HS1 Ltd should request a recovery plan from NR(HS) and implement additional monitoring against the recovery plan.

Finance and efficiency

Reduced train operations presented difficult challenges to HS1 Ltd's financial position and resultant financial performance against forecasts. We are regularly engaging with HS1 Ltd to monitor the actions it is taking to mitigate these challenges.

The company received £62.3m of regulated income in the financial year 1 April 2021 – 31 March 2022, £14.6m lower than assumed at PR19 due to lower traffic levels. It spent £77.2m operating, maintaining and renewing its rail infrastructure, £1.1m lower than assumed in PR19. This represented £13.6m of financial underperformance relative to our determination.

NR(HS), which operates the infrastructure, has reported £1.3m more net efficiencies than planned this year and is expected to deliver the £8.6m efficiency challenge for the control period set at PR19. We will continue to monitor and report on this throughout the control period.

Background

HS1 Ltd has a 30-year Concession Agreement from the Secretary of State for Transport to operate and manage the HS1 network.

HS1 Ltd is responsible for the overall management and operation of the HS1 network, and subcontracts delivery of operations, maintenance and renewals to Network Rail (High Speed) Ltd (NR(HS)). NR(HS) is also the safety dutyholder for the HS1 network and therefore responsible for compliance with regulatory requirements relating to the management of safety on the HS1 network.

We are the health and safety regulator for the HS1 network under the conventional suite of legislation. HS1 Ltd has economic regulation responsibilities through the terms of the Concession Agreement and the Railways Infrastructure (Access and Management) Regulations 2016 ("the Regulations"), as amended in 2019.

Under the terms of the Concession Agreement, we have a role in ensuring the long-term sustainability of the asset, while making sure that HS1 Ltd is provided with incentives to reduce the costs of provision of infrastructure and access charges.

The Concession Agreement requires HS1 Ltd to secure the operation, maintenance, renewal, replacement, planning and carrying out of upgrades in accordance with best practice and in a timely, efficient and economical manner, to the greatest extent reasonably practicable having regard to all circumstances.

We undertook our latest periodic review of HS1 Ltd in 2019, assessing HS1 Ltd's Five-Year Asset Management Statement for this control period (CP3, 1 April 2020 – 31 March 2025). Further to our final determination, we monitor performance annually through data provided by HS1 Ltd against key metrics in the following areas:

- Health and safety
- Train service performance
- Asset management
- Financial performance and efficiency

Our approach to monitoring and reporting on HS1 Ltd in CP3 can be found on our website.

1. Health and safety

1.1 Many of HS1 Ltd's functions are contracted out to NR(HS) through an Operator Agreement. This means that both organisations have health and safety obligations, but NR(HS) is the Infrastructure Manager for the purposes of the Railways and Other Guided Transport Systems (Safety) Regulations 2006 (as amended). As such, NR(HS) has duties to establish and maintain a safety management system as set out in those regulations. However, HS1 Ltd has an important role as an intelligent client organisation.

1.2 This reporting year we carried out the following key activities:

- regular liaison meetings with NR(HS)'s senior managers, including the Head of Safety and Managing Director, throughout the year. These meetings focussed on NR(HS)'s health & safety performance, management of the impact of the COVID-19 pandemic on its business activities and review of incidents;
- quarterly liaison meetings with HS1 Ltd's Head of Assurance to discuss safety performance;
- we completed an assessment of NR(HS)'s application for a further safety authorisation under ROGS, this was issued and will expire on 25 January 2027;
- we followed up on HS1's responses to two outstanding PR19 recommendations, which were successfully addressed. These related to:
    - action and milestones for ensuring safety by design - HS1 evidenced how safety by design is covered in employers' health & safety requirements in its contracts with its suppliers, project safety procedure and is also part of HS1 Ltd's own project gate process; and
    - processes for avoiding and eliminating risk - while the primary responsibility for ensuring lessons learned get incorporated into training, health & safety procedures and project planning lies with NR(HS) as the infrastructure manager, HS1 Ltd carries out its own assurance that NR(HS) and the rest of the supply chain take on board any lessons appropriately. This is delivered through the route-based Operational Risk Reduction & Mitigation (OPSRAM) group comprising HS1 Ltd, NR(HS), the supply chain and external stakeholders, including train operators and RSSB, which reviews Rail Accident Investigation Branch reports and is the forum for discussions of

issues/incidents on the HS1 network and in the EU. Both HS1 Ltd's Head of Assurance and NR(HS)'s Head of Safety sit on OPSRAM. The Joint HS1 Ltd/NR(HS) Assurance Board (independently chaired, meets quarterly) provides high-level oversight of OPSRAM and how lessons are learned.

- we investigated an accident where a NR(HS) employee was seriously injured when he fell through an access hatch in a room at Stratford International station whilst accompanying a contractor. The investigation identified some areas for improvement in contractor management as well as to prevent a recurrence of the accident. NR(HS) responded positively with a comprehensive action plan.

1.3 Further information on health and safety performance on all of Britain's railways can be found in our health and safety annual report, and the Rail Safety and Standards Board (RSSB) Annual Safety Performance Report. Information on our approach to regulating health and safety risks is in the strategic risk priorities section of the ORR website.

2. Traffic volume and train service performance

Traffic volume

2.1 International services increased by 93% in the period 1 April 2021 – 31 March 2022; however, they remain 69% below the number of services operated in the last pre-COVID-19 year, 1 April 2019 – 31 March 2020. Similarly, South East Trains Ltd (SETL) North Kent Line (NKL) services remain 30% below the number operated that year. The number of freight services operated on HS1 fell by 4% this year.

Figure 1 – Number of passenger train services timetabled on HS1, 1 April 2010 to 31 March 22

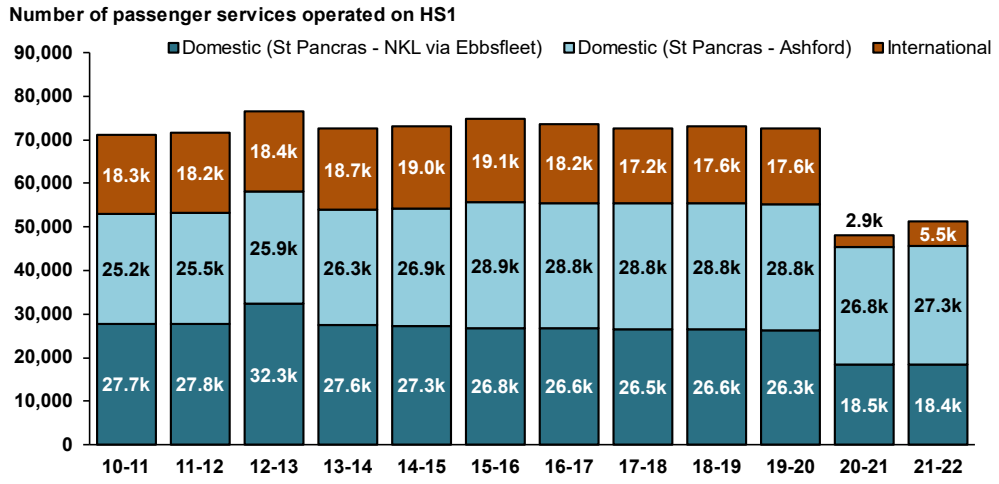
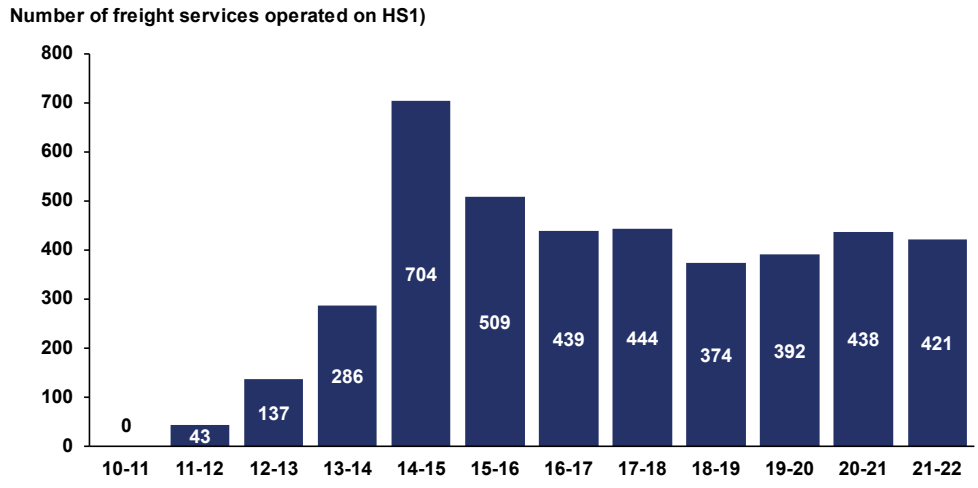


Figure 2 – Number of freight train services timetabled on HS1, 1 April 2010 to 31 March 22



Train service performance

2.2 We monitor two measures of train service performance. The first is number of delayed trains: HS1 Ltd's operational performance against minimum thresholds set out in its Concession Agreement. These state that the proportion of services delayed by HS1 Ltd in a quarter should not exceed 15%, and in a year must not exceed 13%.

2.3 The second measure is seconds of delay per train: both HS1 Ltd and its users expect much higher levels of performance than those set out in the Concession Agreement. As a result, HS1 Ltd set itself – and its subcontractor NR(HS) – a separate, more challenging target of 6.80 average seconds delay per train in the period 1 April 2021 – 31 March 2022[1], which we also monitor.

Performance against minimum threshold

2.4 Figure 3 shows a breakdown of performance for the year ending 31 March 2022.

Figure 3 – HS1 Ltd train service performance in 1 April 2021 – 31 March 2022[2]

	Total number of trains timetabled	Total number of delayed trains (attributed to HS1)	Delayed trains (attributed to HS1) as a percentage of timetabled trains	Total number of delayed trains - unknown cause
Domestic (St Pancras – North Kent Line via Ebbsfleet)	18,379	46	0.25%	1
Domestic (St Pancras – Ashford)	27,292	94	0.34%	1
International	5,530	26	0.47%	0
Freight	421	0	0.00%	0
Total	**51,622**	**166**	**0.32%**	**2**

2.5 The proportion of trains delayed by HS1 Ltd-attributable incidents this reporting year was well within the minimum standards set out in the Concession Agreement (13%). The number of delayed services in the year ending 31 March 2022 increased by 91% compared to the previous year, but at 166 was 33% less than the 249 delayed services recorded the year before the pandemic.

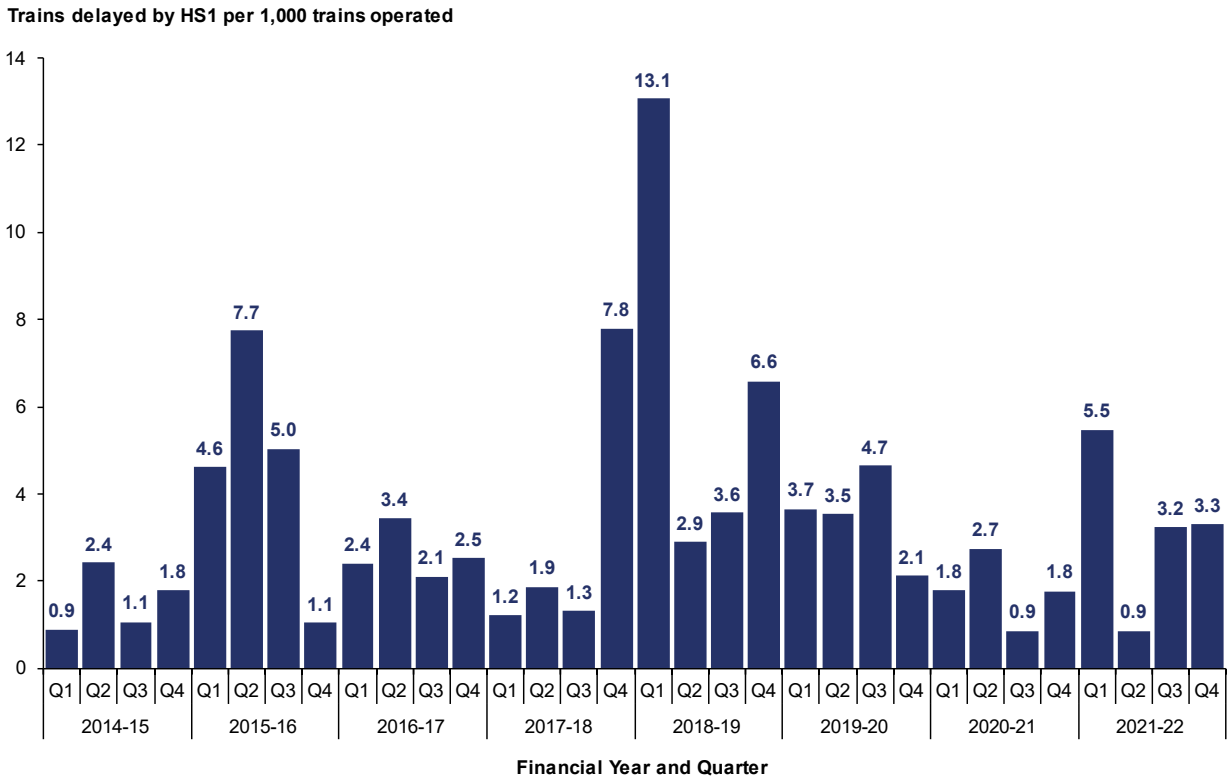
[1] The stretch target was 6.55 seconds delay per train the previous year.

[2] Some of the figures included in this chapter are subject to revision due to various factors including the re-classification of some delay incidents.

2.6 The percentage of trains (0.32%) delayed by HS1 Ltd-attributable incidents in the year to 31 March 2022 was up from that in the year to 31 March 2021(0.18%).

2.7 Figure 4 shows the quarterly number of delayed train services attributed to HS1 Ltd per 1,000 trains operated. Overall performance reduced as traffic volumes increased again: Q1 of the year to 31 March 2022 was the highest number recorded in any quarter since Q4 of the year from 1 April 2018 – 31 March 2019.

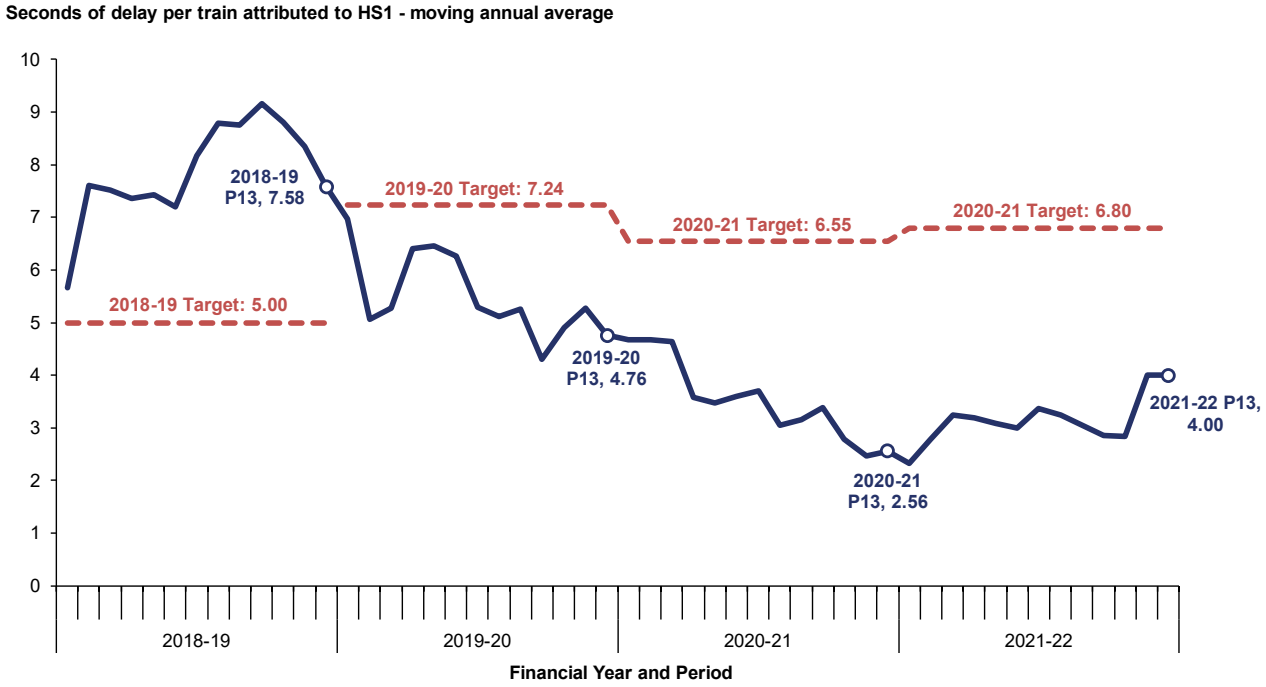
Figure 4 - Delayed train services per 1,000 trains operated attributed to HS1 Ltd by quarter, 1 April 2014 – 31 March 2022



Performance against stretch target

2.8 As can be seen in Figure 5, in terms of its stretch target for the year (6.80 seconds), the average delay per train due to HS1 Ltd-attributable incidents in the year 1 April 2021 – 31 March 2022 was more than two seconds better than the target at 4.00 seconds. However, this has increased by nearly one and a half seconds since the previous year.

Figure 5 – Delay per train service attributed to HS1 Ltd by period, 1 April 2018 – 31 March 2022



3. Asset management

3.1 This chapter examines how HS1 Ltd has managed the network's assets. While asset management is a wide-ranging area, we have focused our review on the following aspects: progress on addressing our PR19 recommendations; asset performance, availability, condition and data; asset planning; delivery of planned renewals; progress on research and development (R&D); and environmental sustainability.

3.2 We have concerns about HS1 Ltd's ability to deliver its planned renewals over the control period. HS1 Ltd has failed to provide sufficient evidence that it had undertaken adequate assurance on NR(HS)'s decision to defer several renewal projects.

3.3 Throughout the reporting year HS1 Ltd adopted an agile approach to mitigating the risks associated with COVID-19 to its business. It updated its business continuity plans to reflect the risks posed and ensured that its suppliers did the same. HS1 Ltd ensured that plans were updated as circumstances unfolded. However, consistent with our PR19 determination, we expect HS1 Ltd to undertake a more rigorous assurance regime on NR(HS)'s project delivery, until delivery of the renewal shortfall has been achieved. Additionally, HS1 Ltd should request a recovery plan from NR(HS) and implement additional monitoring against the recovery plan, should it be required.

Delivery of our PR19 recommendations

3.4 This year HS1 Ltd made further progress on the outstanding nine (of the original 28) recommendations set out in our PR19 final determination.

3.5 Figure 6 sets out progress against each remaining recommendations. We continue to monitor the progress of these recommendations via quarterly monitoring meetings with HS1 Ltd.

Figure 6 – HS1 Ltd progress against PR19 asset management recommendations

Recommendation	Action by date	Progress update
HS1 Ltd to undertake a follow-up review of progress towards ISO55001 certification	By 31 March 2023.	Ongoing.

Recommendation	Action by date	Progress update
Future 5YAMS to document and demonstrate the assurance activities HS1 Ltd has undertaken on suppliers' contributions.	In advance of CP4 5YAMS submission.	Ongoing – we note HS1 Ltd establishing its assurance framework this year.
HS1 Ltd to update its Asset Management Policy with current status and CP3 targets/milestones	By 31 January 2020.	Closed – objective to be met through meeting SAMP recommendation
Strategic Asset Management Plan (SAMP) should outline how the stated aims will be achieved and by when.	At next revision or no later than 31 December 2020.	Not completed. HS1 Ltd published its SAMP on 22 June 2022 (after the reporting year). We are concerned that it doesn't factor inflation into its CP4 investment scenarios or Asset Management Planning. HS1 Ltd has stated it will respond to our specific concerns during July 2022, and review the SAMP annually.
Specific Asset Strategies (SASs) should present the expected asset condition at end of control period, handback and end of the 40-year plan.	At next revision or no later than 31 December 2020.	Completed
HS1 Ltd to set out the minimum asset data requirements and then report on data quality annually	At next revision or no later than 31 December 2020.	Not completed. We note that HS1 Ltd now expects to provide this by 31 December 2022.
HS1 Ltd to review operations and maintenance risk ownership with funders.	Plan & programme to be developed and agreed by 31 March 2020.	Not yet completed (note that this recommendation was incorrectly marked as "Completed" in our previous report) - survey to be undertaken by end of July 2022.
Maintenance frequencies to be revisited as more HS1 Ltd -specific failure data becomes available.	During CP3.	Ongoing during CP3
HS1 Ltd to agree business case with stakeholders for CP4-10 PMO model.	Plan & programme to be developed and agreed by 31 March 2020.	Completed

Asset performance, availability and condition

Route asset performance

3.6 This section builds upon the previous chapter on train service performance and examines underlying asset reliability, as this is the main cause of delay.

3.7 Overall, HS1 route assets performed well this reporting year, with a total of 3,485 minutes delay against a target of 6,500 minutes (46% better than target). This performance was backed by 260 delay-free days recorded in the year, which equates to 71% of the year. There have also been five delay-free weeks in the year, outperforming the yearly target.

3.8 As well as an overall target for seconds delay per train (discussed in Paragraph 2.7) HS1 Ltd set its supplier NR(HS) targets for delays attributed to five different asset groups: Overhead Catenary System (OCS); Mechanical & Engineering (M&E); Signalling & Telecoms (S&T); Civils and Environmental; and Track.

3.9 The OCS, M&E and Civils and Environmental asset groups recorded zero seconds delay per train. Figures 7-11 show the Route Delay Per Train for each asset type.

Figure 7 – Route Delay Per Train for all Track Incidents

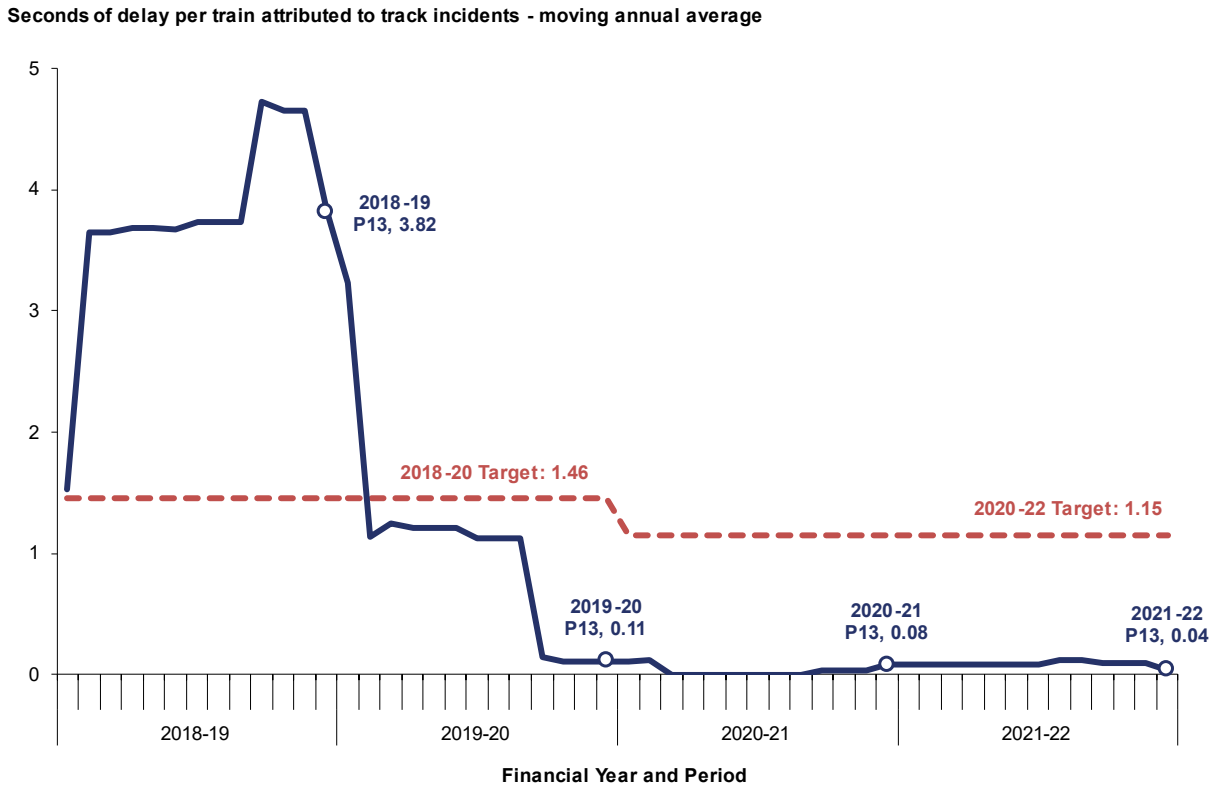


Figure 8 – Route Delay Per Train for all S&T Incidents

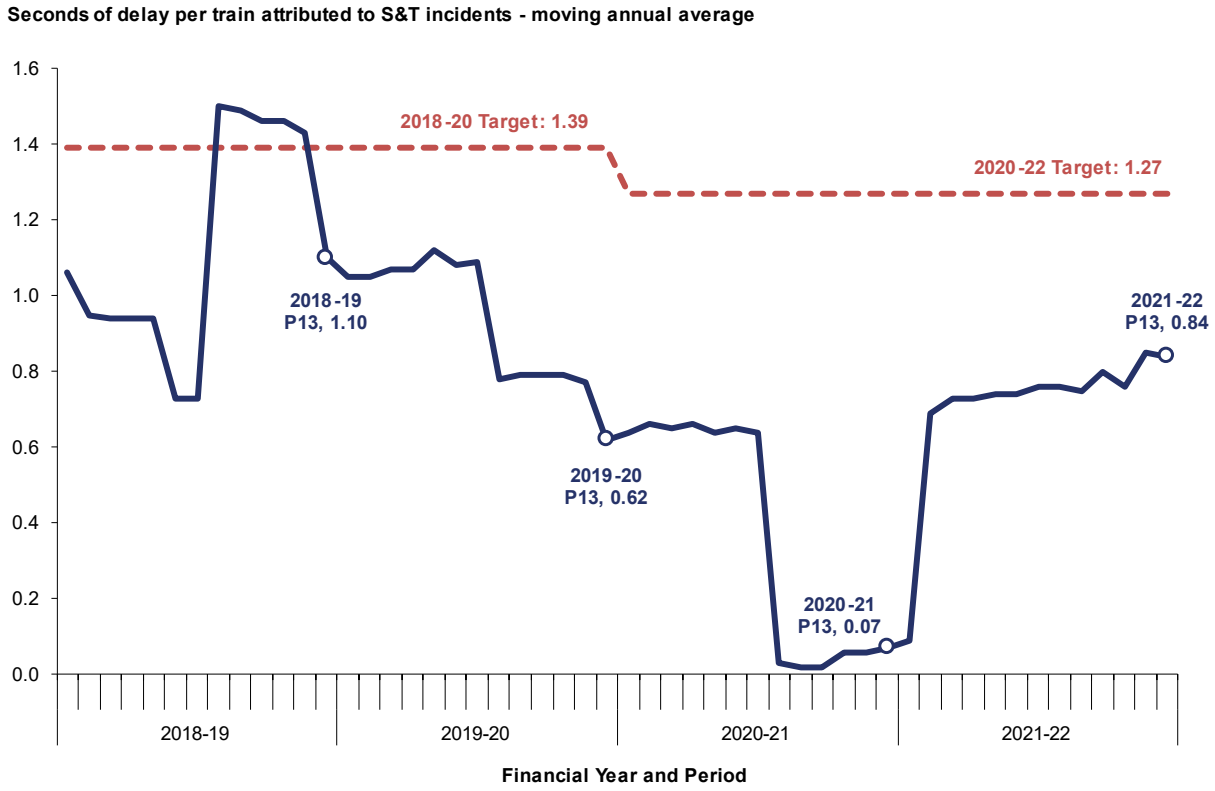


Figure 9 – Route Delay Per Train for all OCS Incidents

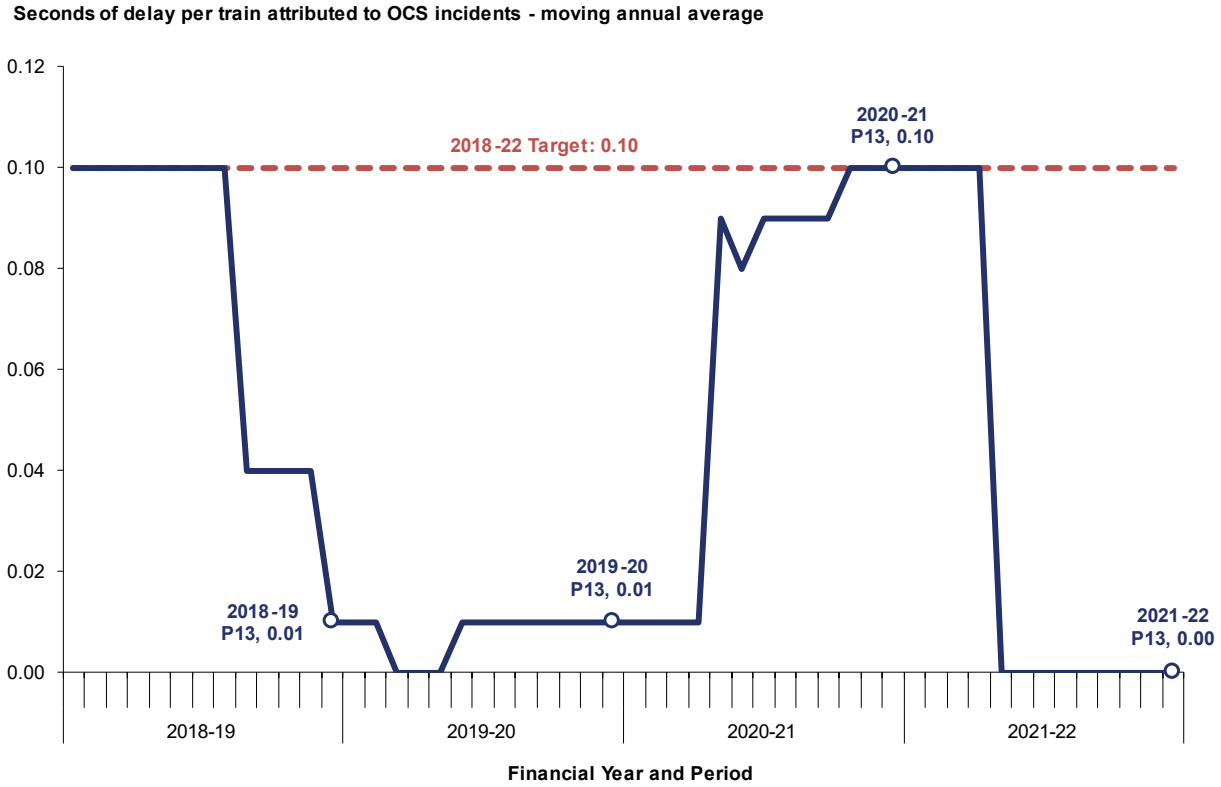


Figure 10 – Route Delay Per Train for all Civil and Environmental Incidents

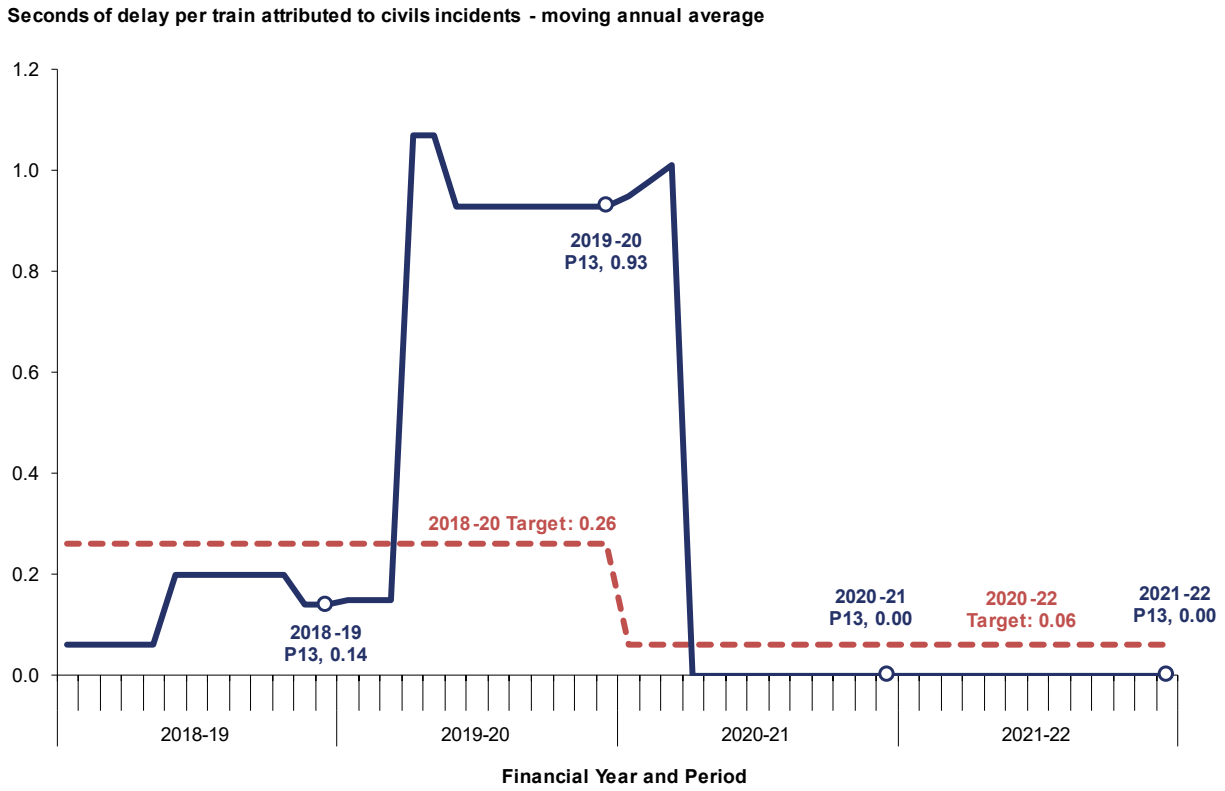
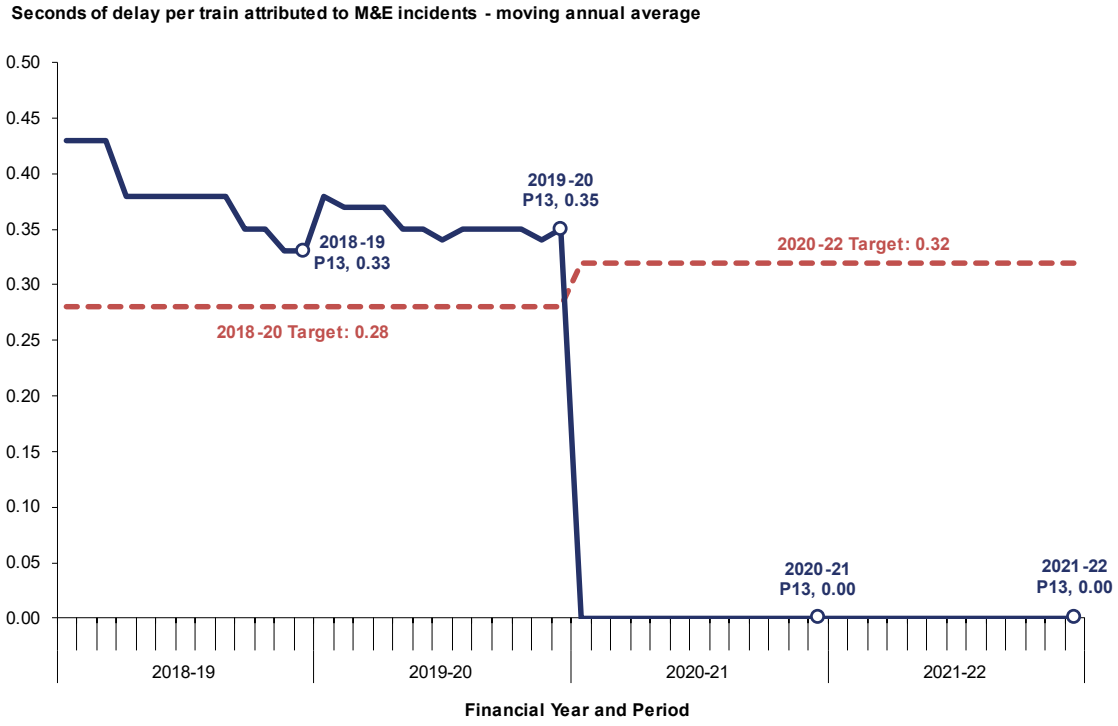


Figure 11 – Route Delay Per Train for all M&E Incidents



3.10 This year there were five major incidents (defined as those that led to more than 200 minutes delay):

- On the 16 May 2021, a track circuit failure occurred at St Pancras International. It was caused by water ingress through a seal in a location cabinet. A condition survey was undertaken to check all seals in similar assets to prevent similar incidents. No issues were identified. This incident resulted in 498 delay minutes.
- On the 10 June 2021, there was a points failure at Stratford International. This incident resulted in 373 delay minutes.
- On the 21 September 2021, a track circuit failure at Wennington crossover was caused by a tamping machine cutting a cable during a possession. This incident resulted in 292 delay minutes.
- On the 16 February 2022, a trespasser at St Pancras International climbed on the roof of a stabled Eurostar train. This incident resulted in 424 delay minutes.
- On the 4 March 2022, there was an overhead line (OHL) failure between Wennington crossover and Ebbsfleet International West, which was caused by a bird's nest. This incident resulted in 619 delay minutes.

3.11 In terms of the number of faults and Services Affecting Failures (SAFs), HS1 Ltd broadly met its desired levels, as shown in Figure 12. The exception to this was in the track asset group, which exceeded both its fault and SAF PR19 targets for both the reporting year and the last one. HS1 Ltd has not been able to provide a reason for this trend and we plan to follow this up as part of our ongoing assurance activities.

3.12 The Civils asset group had a fault level below its PR19 target but exceeded its SAF target for both this reporting year and the last one. All other asset groups had both their fault levels and SAFs below PR19 targets.

Figure 12 – Fault levels and SAFs

Asset Group	Category	PR19 target	Year to 31 March 2021 Actual	Year to 31 March 2022 Actual
		Average/Period	Average/Period	Average/Period
Signalling	Fault Level	18.00	2.08	2.69
	Service Affecting	1.00	0.46	0.85
Telecoms	Fault Level	4.00	0.00	0.15
	Service Affecting	1.00	0.00	0.15
M&E	Fault Level	9.00	0.15	0.00
	Service Affecting	1.00	0.08	0.00
OCS	Fault Level	2.00	0.15	0.08
	Service Affecting	1.00	0.15	0.00
Track	Fault Level	0.20	0.77	0.38
	Service Affecting	0.10	0.15	0.38
Civil	Fault Level	2.00	0.62	0.08
	Service Affecting	0.00	0.08	0.00

Source: HS1 Ltd AMAS 1 April 2021 – 31 March 22

Route asset availability

3.13 For asset availability we look at two areas. The first is power availability. The other is operational availability which is defined as the percentage of time that a specific asset group is available for operational use, excluding planned maintenance.

Power availability

3.14 UK Power Networks (UKPN) assets continued to perform well with availability of 99.9960% for the year, beating the target of 99.9885%. The only month with less than 100% availability was July, due to interruption of power on 18 July 2021 at Choats Road (21 minutes of unavailability); an investigation report identified that the most likely root cause was voltage exceeding the design limit which caused a circuit breaker to trip, affecting the up-power cable feeding the HS1 Ltd railway.

3.15 The previous reporting year, the same circuit breaker at Choats Road was responsible for two out of three incidents that led to power being unavailable, causing delays of 113 minutes and 5 minutes respectively. As a result, the circuit breaker was replaced in 2020. Based on the continued failures of this asset, we concluded that HS1 Ltd should commission a Root Cause Analysis to identify if this is a wider systemic issue.

3.16 On 3 May 2021, an incident occurred at Ashford Nadir substation which supplies the Ashford West substation and the Ashford Nadir pumping station. The investigation was concluded and shared with HS1 Ltd by UKPN at their regular monthly meeting. The cause of the incident was identified as a defective circuit board which was repaired and refitted.

3.17 83% of sites have had the required maintenance completed against the original UKPN maintenance plan for the year. The eight sites not completed are Singlewell Yard, Rainham Wennington (two sites), Ashford Nadir (two sites), Stone Street, Rainham and Choats Road feeder station. This was because of issues with a transformer at Sellindge and the fitment of the new Supervisory Control and Data Acquisition (SCADA)[3] system. We have challenged HS1 Ltd on how it will recover the maintenance plan; it has stated that maintenance at these sites will be actioned in the next year.

Operational availability

3.18 This reporting year saw a total of 427,440 minutes of availability and 3,485 minutes of delay on the HS1 network, 2,416 of which were linked with infrastructure. This represents a network availability of 99.2%, which is slightly lower than last year's network availability of 99.5%. As most of the minutes delay were attributed to infrastructure issues, we would expect that network availability improves as NR(HS) delivers the renewal portfolio. But we note that if NR(HS) continues to struggle with delivering the renewal portfolio in CP3, this might lead to a further reduction in network availability annually.

Route asset condition and capability

3.19 HS1 Ltd categorises its route asset portfolio into groups signifying their asset condition status. This ranges from **1** being as new to **5** being at functional failure as shown in figures 13 and 14 and described in detail below.

3.20 In the past year, the overall condition of HS1 Ltd's route asset portfolio has improved with the exception of the Civils and Telecoms asset groups. The main cause of

[3] Supervisory control and data acquisition (SCADA) is a control system architecture comprising computers, networked data communications and graphical user interfaces for high-level supervision of machines and processes.

worsening condition for these asset groups appears to be HS1 Ltd underdelivering its renewals programme for the last two years.

3.21 HS1 Ltd reported that several asset renewal projects which were planned for the next control period (CP4) had been accelerated because the asset had degraded more than expected and had to be renewed in CP3. Some asset renewal projects which were planned for CP3 have been deferred to CP4 because NR(HS) provided HS1 Ltd with new information on the asset's condition, which we understand indicated renewals in CP3 were not necessary. Further information on the delivery of HS1 Ltd's renewals can be found later in this report.

Figure 13 – 1 April 2020 – 31 March 2021 assessment of asset condition relative to that at the start of the control period

Percentage of assets in each condition status by department: 1 - As new; 2 - High reliability; 3 - Functions; 4 - Near service limit; 5 - functional failure

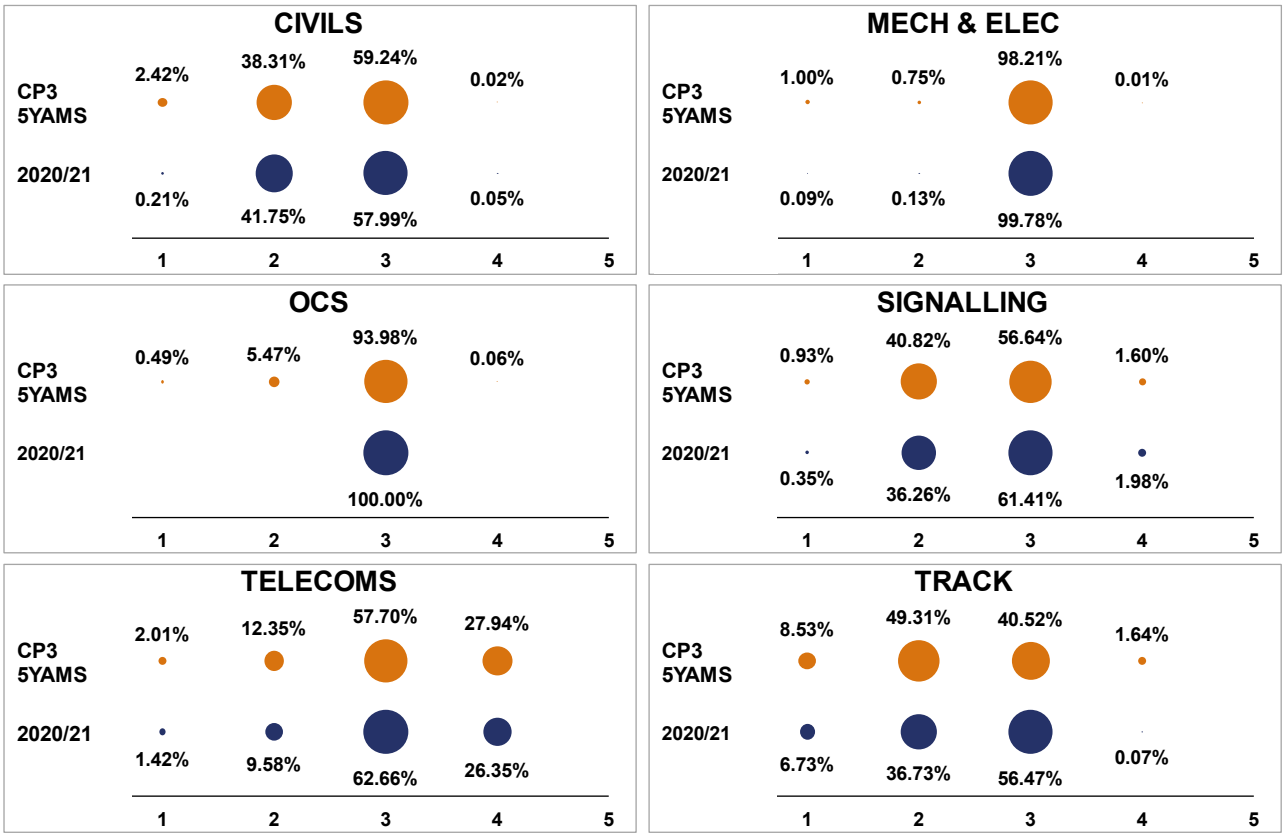
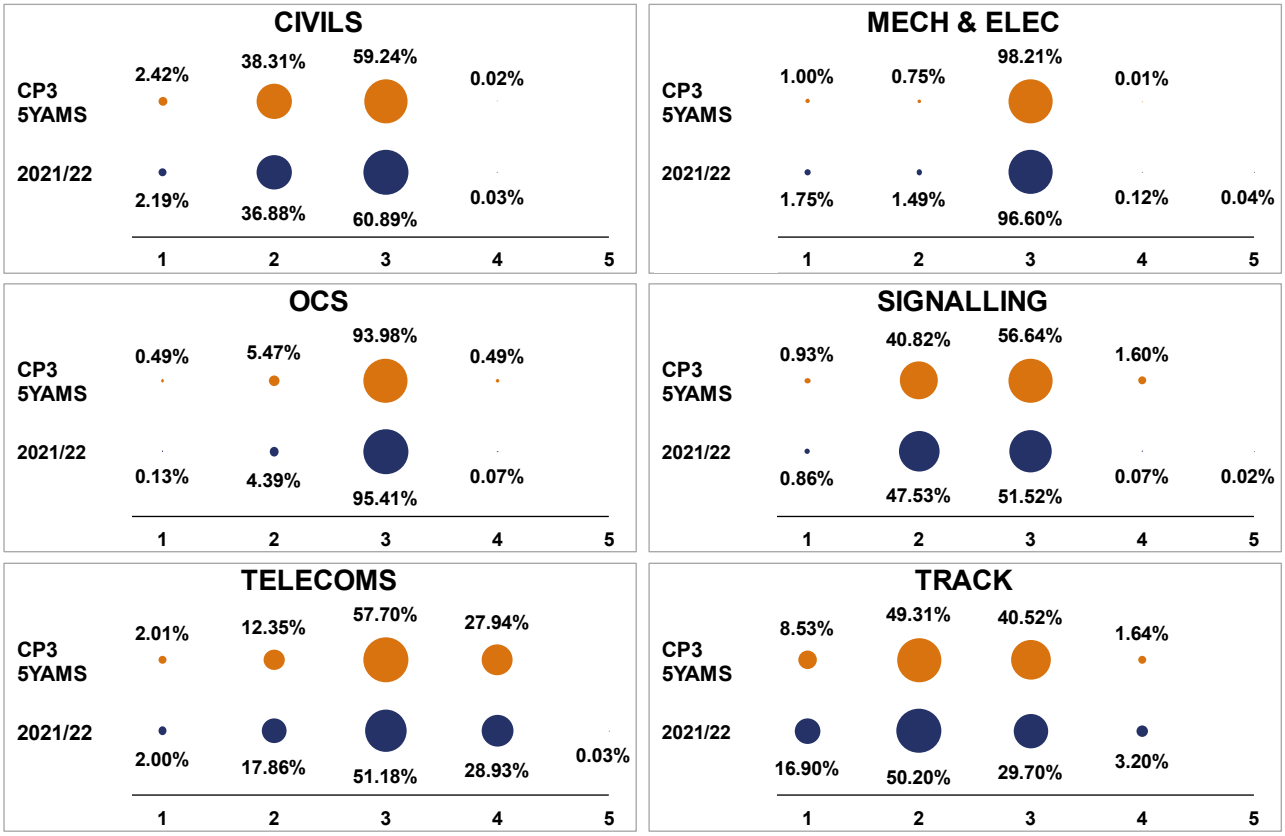


Figure 14 – 1 April 2021 – 31 March 2022 assessment of asset condition relative to that at the start of the control period

Percentage of assets in each condition status by department: 1 - As new; 2 - High reliability; 3 - Functions; 4 - Near service limit; 5 - functional failure



3.22 The percentage of Telecoms assets approaching their near serviceability limit [4] increased from 28.93% during 1 April 2020 – 31 March 2021 to 27.18% this reporting year. Additionally, this asset group has the highest percentage of assets nearing the end of their asset life. This is due to shorter asset life of telecoms assets compared to more traditional rail infrastructure type assets, such as track and civils.

3.23 The condition of the Civils asset group has slightly worsened since last year. In the year 1 April 2020 – 31 March 2021, 41.96% of the Civils asset portfolio was rated as having high reliability or being new. This reporting year, this had fallen to 39.07%.

3.24 The condition of the Track asset group has improved significantly from last year when 43.46% of the asset portfolio was rated as having high reliability or being new. NR(HS) undertook Track renewals this reporting year, resulting in an improvement to to 67.10% of the portfolio having high reliability or being new. However, the

[4] This is the point in an assets' condition lifecycle which if exceeded renders the asset unsafe and unfit to use.

percentage of the Track asset portfolio that was already near its serviceability limit increased from 0.07% last reporting year to 3.20% in this year.

3.25 The condition of the Overhead Catenary System (OCS) asset group has improved slightly from last year. Last reporting year, 100% of the OCS asset portfolio was rated as functional, because the assets were installed at a similar time and had a similar design life. NR(HS) undertook OCS renewals this reporting year, and now 4.52% of the asset portfolio is rated as having high reliability or being new.

3.26 The Mechanical and Electrical (M&E) asset group has improved slightly from last year when 0.22% of the Track asset portfolio was rated as having high reliability or being new. NR(HS) undertook M&E renewals this reporting year, and this improved to 3.24%.

3.27 The Signalling asset group has improved significantly from last year when 36.61% of the Track asset portfolio was rated as having high reliability or being new. NR(HS) undertook Signalling renewals this reporting year, and this improved to 48.39%. Additionally, the percentage of the Signalling asset portfolio that was at near serviceability limit dropped from 1.98% last reporting year to 0.07% in this.

3.28 Three assets groups had a status of functional failure this reporting year: M&E (0.04%), Signalling (0.02%) and Telecoms (0.03%).

3.29 HS1 Ltd's AMAS reports that asset capability has remained constant since commissioning with no projected reductions within the HS1 Ltd concession period. The maximum line speed remains the highest in the UK at 300km/h and the route availability meets all passenger and freight customer needs at 22.5 tonnes (axle loading). The maximum number of achievable train paths that the signalling system can deliver remains at 20 trains per hour.

3.30 Current demand forecasts indicate that existing capacity will be sufficient until 2046 although long term forecasting is particularly challenging in a pandemic and post pandemic environment. In practice, the limiting factors for the number of train paths are the operation of mixed traffic, turnaround times required at St Pancras International and the pattern of services being operated.

Asset data and information

3.31 In our CP3 determination we highlighted the need for HS1 Ltd to set out its minimum data requirements and then report on these annually. This reporting year, HS1 Ltd continued to develop the key elements of its asset information framework.

3.32 In particular, further progress was made with HS1 Ltd's Asset Information Standards, Governance, Specifications and Requirements. This includes the collation of 60-80% of the required Asset Information Strategies, as well as improvements to the HS1 Ltd Asset Data Dictionary for stations and car parks to include asset criticality, asset condition scoring and asset degradation.

3.33 In relation to the Information Lifecycle and Building Information Modelling (BIM), we understand that HS1 Ltd's strategic partners are working with their respective Computer Aided Facility Management (CAFM) systems, along with the implementation of mobile applications to aid field data collection.

Asset planning

Asset management capability improvement

Updated Asset Management Policy (AMP)

3.34 HS1 Ltd issued an updated Asset Management Policy after the reporting year, on 11 July 2022. It outlines the work it has done to review and refresh its AMP, which reflects the changes in the industry brought about by COVID-19, and the industry response to different market needs. HS1 Ltd sees this update as one of the first steps in developing medium- and long-term plans aligned with its latest objectives. We look forward to working with HS1 Ltd to understand this element of its Asset Management Strategy.

HS1 Ltd portfolio-level Strategic Asset Management Plan (SAMP) and Revised Asset Management Objectives (AMOs)

3.35 HS1 Ltd's latest SAMP contains AMOs considering four recovery profiles. Under a slower recovery, the AMOs give cost a higher weighting at the expense of performance, in line with its organisational strategy and new Asset Management Policy, HS1 Ltd has also included sustainability requirements in its AMOs. In line with HS1 Ltd's commitment to improving its asset management capability and increasing line of sight across its entire asset portfolio, HS1 Ltd had this reporting year been developing a portfolio-level SAMP for its entire asset base: route, stations, and car parks.

3.36 We received HS1 Ltd's SAMP after the reporting year (on 22 June 2022). We note that it seeks to provide direction to HS1 Ltd's strategic partners in developing their own strategies for the next periodic review (PR24) and beyond, including the long-term asset management approach, decision-making frameworks, and evidence requirements for asset management decisions. It also provides guidance on

investment scenarios to best meet the AMOs[5]. A key deliverable of this piece of work was the revised set of AMOs presented in the AMAS.

3.37 We have fed back to HS1 Ltd their concerns that the SAMP and AMOs, don't account for the rising inflation rates and its impact on CP4 investment.

Delivery of Renewals

Project efficiency reporting

3.38 To track any efficiency achieved by projects, HS1 Ltd is required to review the final cost of each project once it has been completed, against the original CP3 determination cost and record the reasons for any differences.

3.39 HS1 Ltd reported in its AMAS that four projects have been closed out in the first two years of CP3. Figure 15 shows how HS1 Ltd's reported outturn costs for these projects compared to the efficient price determined at PR19.

Figure 15 – Outturn cost vs efficient price for renewal projects completed 1 April 2021 – 31 March 2022

Project	PR19/Gate 4 price	Final cost	Explanation of difference
Culvert relining	£77k (PR19)	£49k	When more detailed survey work of the culvert was undertaken it was realised that a better solution would be to undertake a more localised repair, rather than the originally envisaged more detailed structural intervention, resulting in reduced cost.
Galley Hill earthworks	£682k (PR19)	£760k	The cost increase was due to additional scope. Detailed investigative surveys identified an area of vegetation and a dilapidated flint wall at the top of the chalk spine that was having a direct adverse effect on the performance of the chalk spine. The final designed solution included removing the wall and vegetation and a fencing solution to prevent potential vehicle incursion. The anticipated final cost of the project at Gate 4 was signed off as £791k. Following ORR advice in the CP3 determination, NR(HS) let the works using a target cost NEC Option C contract which resulted in a saving of £31k. This money remains in the escrow account for use on future projects.
Choats Manor Way expansion joint	£95k (Gate 4)	£93k	n/a

[5] The term Asset Management Objective is used interchangeably with Strategic Asset Management Plan. It is a document that sets out measurable results, context, and direction for an organization's activities. Asset Management Objectives are established through the strategic level planning activities of the organization and delivered through the Asset Management Plan. It is usually located in the SAMP or called the SAMP in some cases.

Project	PR19/Gate 4 price	Final cost	Explanation of difference
Ebbsfleet Bridge expansion joint	£253k (Gate 4)	£311k	There was a significant amount of change, partly driven by changes at the station created by the new HMRC freight handling facility developed to address issues with Brexit. This changed much of the original thinking on both site access and traffic management around the Ebbsfleet site (adding £18k of cost, paid for by HMRC). In addition, when the top of the road surface was removed, it was clear that there was additional damage that needed to be addressed (£30k). The project then had an extension of time due to falling temperatures putting works on hold and COVID-related delay issues (£10k).

Source: HS1 Ltd AMAS 1 April 2021 – 31 March 22

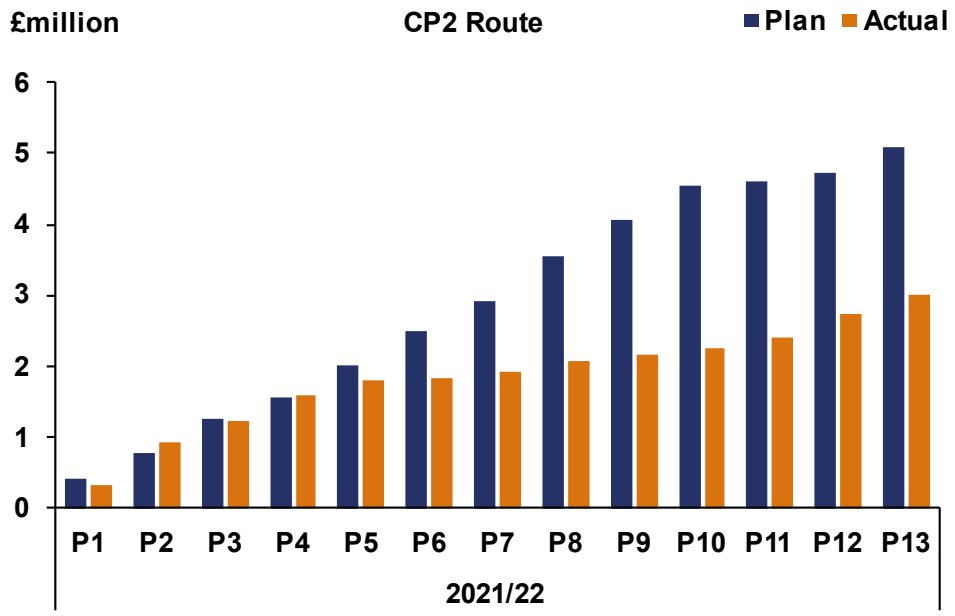
3.40 We note that out of the four renewal projects HS1 Ltd has completed, two (Galley Hill earthworks and Ebbsfleet Bridge expansion joint) were delivered above their Gate 4/PR19 cost. While this is only a small sample of projects, we are already aware of several renewal schemes which have exceeded their 5YAMS budget due to inaccurate estimates by NR(HS) and additional scope of works. We will continue to monitor the delivery of renewal efficiencies for the remaining part of CP3 and this evidence will inform our PR24 determination around efficient costs for future renewals.

Renewal delivery performance

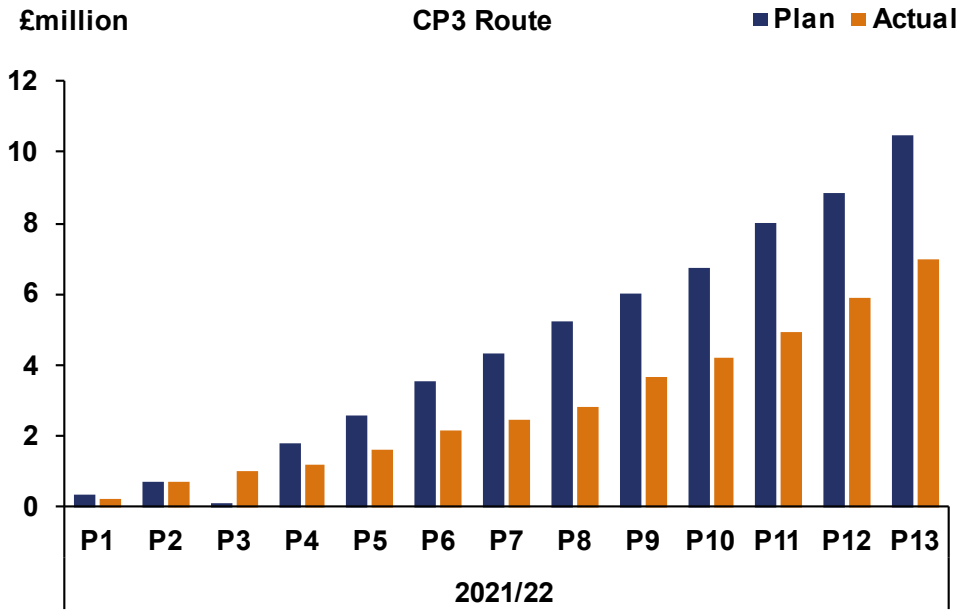
3.41 Last year, HS1 Ltd reported £8.87m total spend on renewals. This represented a shortfall of £7.02m, comprising £1.98m shortfall in delivery of CP2 carryover projects and £5.04m shortfall in delivery of CP3 projects.

3.42 This reporting year, HS1 Ltd reported £9.97m as the total cost of renewal work done as shown in Figure 16 below.

Figure 16 – Cost of Renewal work done 1 April 2021 – 31 March 2022



Period	P1	P2	P3	P4	P5	P6	P7	P8	P9	P10	P11	P12	P13
Plan	£0.4m	£0.8m	£1.2m	£1.6m	£2.0m	£2.5m	£2.9m	£3.5m	£4.1m	£4.5m	£4.6m	£4.7m	£5.1m
Actual	£0.3m	£0.9m	£1.2m	£1.6m	£1.8m	£1.8m	£1.9m	£2.1m	£2.2m	£2.3m	£2.4m	£2.7m	£3.0m



Period	P1	P2	P3	P4	P5	P6	P7	P8	P9	P10	P11	P12	P13
Plan	£0.3m	£0.7m	£0.1m	£1.8m	£2.6m	£3.6m	£4.3m	£5.2m	£6.0m	£6.7m	£8.0m	£8.8m	£10.5m
Actual	£0.2m	£0.7m	£1.0m	£1.2m	£1.6m	£2.1m	£2.5m	£2.8m	£3.6m	£4.2m	£4.9m	£5.9m	£7.0m

Source: HS1 Ltd AMAS 1 April 2021 – 31 March 2022

3.43 For the year 1 April 2020 – 31 March 2021, HS1 Ltd reported £8.87 million as the total cost of renewal work done. Overall, this represented a shortfall of £7.02m against their original plan for that year. The £7.02m comprising a £1.98 million shortfall in delivery of CP2 carryover projects and a £5.04 million shortfall in delivery of CP3 projects.

3.44 This reporting year (1 April 2021 – 31 March 2022), HS1 Ltd reported £9.97 million as the total cost of renewal work done. But there was a £2.07 million shortfall in the delivery of the CP2 projects and a £3.51 million shortfall in the delivery of CP3 projects. Overall, we consider this a worse performance in renewal delivery than the previous year, because it shows no recovery of the previous year's shortfall. This means there is now a two year compounded renewal shortfall of £12.6 million.

3.45 HS1 Ltd outlined the following reasons for its shortfall in delivery:

- For CP2 projects, delays were reported to be due to the impact of COVID-19 on site works – in particular, the Data Transmission Network (DTN)[6] renewal.
- For CP3 projects, delays were reported to be due to a shortage of resources either to develop the scope of works or to undertake the procurement of projects.

3.46 HS1 Ltd has stated that, in light of the renewal shortfalls to date in CP3, it expects NR(HS) to carry out additional work for the remaining three years of the control period to recover the delivery backlog. NR(HS) has responded by bringing in project delivery consultants to bolster its capability and to provide assurance that the works will all be delivered by the end of the control period.

3.47 NR(HS) also undertook a reconciliation exercise on planned renewals and advised HS1 Ltd that the latest understanding of the condition and fault levels of certain assets showed that their degradation was not as bad as originally thought. That is, the assets were thought to be in a condition such that renewal could be safely deferred into CP4 without impacting asset performance or safety.

3.48 HS1 Ltd subsequently made several changes to the CP3 renewals plan this year. The main changes are as follows:

- deferral of the renewal of access roads, gates and stairs as their condition did not require works in CP3;

[6] The Data Transmission Network (DTN) is HS1 Ltd's fibre optics network for relaying information and data over Wi-Fi, between the trains, stations and signalling outposts.

• reducing the scope of drainage renewals as the detailed surveys undertaken showed that a full renewal was not required at this stage;

• phasing of the Uninterrupted Power Supply (UPS) rectifiers and batteries works to start later and run into CP4; we understand that this is allowing NR(HS) to consider more cost-effective ways to address the condition of the units than forecast at PR19;

• phasing of points motor and gearbox mechanisms renewals to start later based on condition and the reduced wear during the pandemic; and

• an increase in the cost of crossings to be renewed in CP3, as the cost of materials for high-speed crossings is higher than originally estimated - the original estimate was based on the costs for low-speed crossings, which are cheaper.

3.49 As a result of the changes described above, HS1 Ltd reported that the CP3 portfolio base cost forecast increased slightly this year, to £69m, when compared with the £68m forecast in last year's AMAS. This excludes NR(HS)' mark-up of 10% and the Project Management Office (PMO) costs of £8.693m. We also note that, at around 12.6% of HS1 Ltd's total renewal costs, this PMO cost is higher than the 10% that we determined that it should be at PR19. We have challenged HS1 Ltd on these higher costs and have been told that a restructure of the NR(HS) Renewals Team should contribute to lowering these in the coming year.

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3.50 HS1 Ltd has failed to provide sufficient evidence to us that it has undertaken adequate assurance on NR(HS)'s decision to defer several renewal projects. HS1 Ltd told us it has reviewed NR(HS)'s methodology and it provides sufficient justification for the deferred renewals outlined in their last reconciliation exercise. However, we have not been provided with clear evidence to assure us of the capability of NR(HS) to accurately assess the current condition of its asset portfolio and to deliver the asset renewal programme. Further to our recommendation at PR19, HS1 Ltd should set out its minimum asset data requirements and report on data quality annually; as noted in Figure 6, this is now expected by 31 December 2022.

3.51 Overall, we consider that HS1 Ltd will continue to fall behind in the delivery of its renewal portfolio by the end of CP3. We came to this conclusion based on the following reasons:

- Over the last two years it has underdelivered to its planned renewals.
- To date it has only completed four renewal projects in the span of two years, out of the 65 projects to be delivered in the five years of CP3 (including deferred renewals

from the previous control period, and those being brought forward from the next one).

- The “CP4 Renewal Capability Programme” being undertaken in order to give NR(HS) the capability to carry out large scale renewal programmes, will not be completed until CP4. Until the programme is completed it is only logical to assume that NR(HS) does not fully have the capability to deliver large scale renewals for HS1 Ltd.

3.52 In the meantime, it is our view that HS1 Ltd should undertake a more rigorous assurance regime on NR(HS)’s project delivery, until delivery of the renewal shortfall has been achieved. Additionally, HS1 Ltd should request a recovery plan from NR(HS) and implement additional monitoring against the recovery plan.

Research and development (R&D)

3.53 Our PR19 final determination found that HS1 Ltd should establish a panel to review project investments and benefits, by 31 March 2020. HS1 Ltd has met this recommendation, formalised terms of reference, and put in place a framework of governance.

3.54 We note that this year its R&D programme has seen around £1.4m (of the £2m determined at PR19) committed to projects ranging from short-term tactical initiatives to long-term university research. HS1 Ltd also reported that it has developed three challenge statements in the areas of automated inspection and possession efficiency, to succinctly articulate priorities to prospective suppliers. Some of these projects are discussed below.

3.55 Tunnel Vision Project: we understand that HS1 Ltd is pursuing a technological alternative to traditional physical inspections of tunnel assets.

3.56 Ballast refurbishment: we note that HS1 Ltd has implemented an innovative approach to ballast cleaning using “PandaScope” [external link] technology to identify the level of ballast degradation and to ascertain how much of the material could be reused. Any ballast no longer suitable for the high-speed railway is to be recycled for use in lower category lines or as construction aggregate.

3.57 Augmented reality: we note that this year HS1 Ltd and partners including NR(HS), Athonet UK and the University of Sheffield’s Advanced Manufacturing Research Centre plan to implement a pilot project on a “digital twin” system which will support engineers to make effective decisions in future using remote-condition monitoring to allow fast diagnosis and reduced unnecessary travel.

3.58 Digital bridge inspection: we are told that NR(HS) has been working with Waldeck consultancy to develop a digital approach to capturing and reporting the condition of bridge assets to improve the accuracy and quality of inspections. HS1 Ltd commissioned an initial project to digitally record the condition of eight bridge assets of varying size and form, with the aim of investigating whether this approach would provide similar benefits to them.

3.59 Overhead Line Equipment performance: we understand that NR(HS) is working with a supplier and SETL to trial a system which will produce real time images of the dynamic performance of the OLE/pantograph, in the next year.

Environmental sustainability

3.60 HS1 Ltd reported the launch of a sustainability strategy last year, setting out six priority areas: transparency; climate change & adaptation; energy use; resource use & waste impacts; biodiversity; and social impacts. For each priority area, HS1 Ltd has set targets to 2030 and plans to deliver on these targets. Its first detailed Environmental, Social, Governance (ESG) report was published this year outlining its performance up to that point, and its intention to publish annual reports going forward. We note the following progress against the key areas:

Transparency

3.61 We understand that HS1 Ltd is developing and rolling out a reporting dashboard for targets and performance indicators across its priorities and it is working with its supply chain to implement this across the business. We note that it has reported any sustainability progress in periodic reports, board/quarterly reports and in its ESG report, and it is working to ensure that this reporting meets the recommendations of the taskforce on climate-related financial disclosures.

Climate change and adaptation

3.62 HS1 Ltd noted at the start of its work on environmental sustainability that traction energy use was its biggest carbon impact, contributing around 95% of its carbon emissions. We note that it is now working towards achieving zero net carbon by 2030. We note that this year it measured its baseline carbon footprint and identified carbon ‘hotspots’ enable it to identify priority areas for action and develop a carbon reduction plan.

3.63 We also note that HS1 Ltd this year activated its first trade using a Corporate Power Purchase Agreement (CPPA) to allow a power supply up to 10MW (40% of HS1 Ltd’s electricity usage) from green energy to be purchased by at a fixed price for 10 years,

and is looking to secure a second CPPA. We view this as an example of good practice, both in terms of environmental benefits and managing financial risk.

Energy use

3.64 This year HS1 Ltd reported that it has developed an energy strategy which, in addition to procuring green energy, aims to maximise energy reduction opportunities. It states that it is focused on passenger utilisation in order to reduce the energy use per passenger.

3.65 HS1 Ltd also reported that it has built a consolidated list of all energy initiatives and started implementing them, delivering a range of energy consumption reduction projects. Some of the projects being implemented include: optimisation of heating and chilled water control; optimisation tasks on each site's Building Management System; air-handling unit optimisation; and other energy management improvements.

3.66 In addition, we are aware that HS1 Ltd has been working with operators on the implementation of regenerative braking on domestic rolling stock to reduce net energy consumption by an estimated 19,572.25MWh, or 9% of total electricity consumption. We will continue to monitor the delivery of these initiatives to reduce HS1 Ltd’s energy consumption.

Resource use and waste impacts

3.67 HS1 Ltd reported that it is working with its supply chain, retailers and train operators to implement a waste hierarchy and to divert the maximum amount of waste from landfill; this includes resource use and waste data in its internal corporate dashboard and requires all construction project suppliers to report their waste data.

3.68 We also note that HS1 Ltd is reviewing its waste portfolio and developing standards for its suppliers, launching a trial to monitor and control waste in April 2021 at the Midland Road Service Yard.

3.69 HS1 Ltd has reviewed its specifications for construction materials, including the approved/banned lists. It reports that this review identified best-in-class, environmental-based material standards from which it has developed and published its own materials standard for construction, fit-out and refurbishment projects.

3.70 HS1 Ltd also reported that it is fully compliant with water pollution discharge consents and requirements, which are reported through its internal dashboard, measuring water usage and its relationship to its carbon footprint.

Biodiversity

3.71 Under the Channel Tunnel Rail Act 1996 HS1 Ltd has an obligation to protect and enhance the lineside habitat. HS1 Ltd has reported that its partners NR(HS) and Kent Wildlife Trust are surveying their natural assets to develop a baseline. The survey has identified that a "Biodiversity Net Gain" of 20% is achievable by 31 March 2031, and the three organisations have implemented a 10-year biodiversity improvement plan. In addition, we understand that HS1 Ltd has created a Biodiversity Action Plan (BAP) with key performance indicators for the next 20 years which NR(HS) has implemented into its own maintenance standards with the goal of embedding good biodiversity management into the maintenance of the railway.

3.72 We will be monitoring HS1 Ltd's delivery of its BAP.

Social impacts

3.73 HS1 Ltd reported that its employees provided 736 hours of volunteering time this year, meeting the sustainability strategy target of 700 hours each year ahead of the target of doing so by the end of 2022. In addition, it stated a commitment to identifying additional partner charities which align to its Sustainability Strategy to support.

3.74 HS1 Ltd has also stated that it is putting together a mitigation plan to reduce the noise levels that impact its neighbours.

3.75 We will be monitoring the delivery of this mitigation plan, and the wider sustainability strategy through our regular engagements with HS1 Ltd.

4. Finance and efficiency

4.1 HS1 Ltd's financial reporting for this year is summarised in Figure 17.

Figure 17 - Summary of HS1 Ltd's regulated income and expenditure 1 April 2021 – 31 March 2022[7]

£m, 2021-22 prices	Actual	PR19	Difference better / (worse)	2020-21
Income				
OMR charge	43.1	57.2	-14.1	55.2
Pass through income	19.2	19.8	-0.5	20.1
Total income	**62.3**	**77.0**	**-14.6**	**75.4**
Controlled track costs				
Network Rail (High Speed) Ltd	44.6	44.6	0.0	45.3
HS1 Ltd	9.8	9.4	-0.4	9.0
NRIL	3.4	3.9	0.5	1.8
Other	0.0	0.0	0.0	2.1
Total controlled track costs	**57.7**	**57.9**	**0.2**	**58.1**
Pass through costs				
Rates	8.7	9.0	0.3	8.9
UKPN Fees and Renewals	6.0	6.0	0.0	6.1
Insurance	3.2	3.2	0.0	3.1
Power-non traction	1.3	1.9	0.6	2.1
Total pass through costs	**19.2**	**20.1**	**0.9**	**20.1**
Freight costs				
Network Rail (High Speed) Ltd	0.1	0.1	0.0	0.1
Network Rail Infrastructure Limited	0.2	0.2	0.0	0.2
HS1 Ltd	0.1	0.1	0.0	0.1
Total freight costs	**0.3**	**0.3**	**0.0**	**0.3**
Opex-funded upgrades				**0.0**
Total OMRC Costs	**77.2**	**78.3**	**1.1**	**78.5**
Performance related payments	**0.0**	**0.0**	**0.0**	**-0.1**
Total Costs	**77.2**	**78.3**	**1.1**	**78.5**
Net Income / (Expenditure)	**-14.9**	**-1.3**	**-13.6**	**-3.3**

Source: HS1 Ltd AMAS 1 April 2021 – 31 March 2022

[7] Some figures in this section may not sum due to rounding.

Income

Figure 18 - Summary of HS1 Ltd's regulated income 1 April 2021 – 31 March 2022

£m, 2021-22 prices	Actuals YTD				PR19				Difference better / (worse)			
	International	Domestic	Freight	Total	Int	Dom	Freight	Total	Int	Dom	Freight	Total
OMR charge	6.3	36.2	0.6	**43.1**	20.1	36.8	0.2	**57.2**	-13.9	-0.6	0.4	**-14.1**
Pass through	1.9	17.3	0.0	**19.2**	5.8	14	0	**19.8**	-3.9	3.3	0	**-0.5**
Total income	**8.1**	**53.6**	**0.6**	**62.3**	**25.9**	**50.9**	**0.2**	**77**	**-17.8**	**2.7**	**0.4**	**-14.6**

Source: HS1 Ltd AMAS 1 April 2021 – 31 March 2022

4.2 HS1 Ltd received £62.3m of regulated income this reporting year, £14.6m lower than assumed at PR19.

Pass through income

4.3 £19.2m of HS1 Ltd's regulated income was from pass through income from train operators, recovering costs that are largely uncontrollable by the company. These include non-traction electricity, electrical infrastructure costs, insurance and business rates. Pass through income was £0.5m behind the PR19 forecast, largely due to lower costs, mainly driven by savings on non-traction electricity. This was offset by reduced pass-through costs.

OMRC income

4.4 £43.1m of HS1 Ltd's regulated income was from charges to train operators for operating, maintaining and renewing its network. There are agreed chargeable journey times for each service group at a rate per minute/per km per train. These charges, together with train numbers, drive the revenue. Overall, OMRC income was £14.1m behind the PR19 forecast, largely due to the impact of COVID-19 leading to considerably reduced train operations. While HS1 was protected from any income shortfall during the period of advance timetables (approximately six months), that protection reduced as advance timetables with reduced train numbers were booked.

4.5 A component of the OMRC is designed to build up a fund to pay for future renewals resulting from today's wear and tear of the network. This is invested in an escrow account and related investments. Both passenger train operators on the network were offered a temporary escrow payment holiday for 16 periods during 2020 and 2021. This offer was accepted by Eurostar International Limited (EIL). In total, EIL has deferred around £15.7m of payments into the escrow which it must repay with interest within the control period.

4.6 The impact of COVID-19 on HS1's regulated income was somewhat reduced by the protections embedded within HS1 Ltd's concession structure. While SETL reduced its First Working Timetable, adversely impacting HS1 Ltd's track access income, some protection has been offered to HS1 Ltd by the Domestic Underpin agreement with DfT. This agreement guarantees a minimum income level if the domestic operator runs too few services. This began in Q2 of the reporting year and HS1 Ltd expects to draw on this agreement for the foreseeable future as there is no indication that SETL will increase train levels in the short term.

4.7 The impact of COVID-19 on HS1's regulated income was also reduced by a reopener provision. Subject to an annual RPI-linked adjustment, the expectation would ordinarily be that OMRC charges agreed with TOCs would remain relatively stable until the end of the control period. However, HS1 Ltd's framework track access agreements also contain a re-opener provision, whereby OMRC charges can be reopened where the forecast volume varies by more than ±4% from the relevant baseline. The reopener sets revised OMRC charges, based on updated expected train minutes, enabling regulated OMR charges to be spread over a lower number of train paths and minutes. This attempts to ensure HS1 recover sufficient charges to cover costs. OMRC charges have therefore been reopened once again from the Principal Change Date this year. Reopeners were also used to re-allocate fixed costs between EIL and SETL.

Expenditure

Operating, maintenance and renewals costs

4.8 HS1 Ltd incurred £77.2m of regulated costs this financial year, £1.1m lower than assumed at PR19.

Controlled track costs

4.9 The majority of HS1 Ltd's regulated costs (£44.6m) were incurred in operating, maintaining and renewing its network. This work is undertaken through a long-term, fixed price contract with NR(HS)[8], uplifted by RPI + 1.1% each fiscal year. Figure 19 provides a breakdown of NR(HS)'s costs.

4.10 In accordance with the Operator Agreement, HS1 Ltd is required to pay train operators if Network Rail (High Speed) outperforms our PR19 financial assumptions in years 3, 4 and 5 of a control period. As the reporting year was the second of the control period, no outperformance payments were due. However, Outperformance

[8] Network Rail (High Speed) Limited is a wholly owned subsidiary of Network Rail.

Sharing could occur from the financial year 1 April 2022 – 31 March 2023. The mechanics of the sharing are set out in the Operator Agreement between NR(HS) and HS1 Ltd. The formula allows NR(HS) to make significant savings before having to share the outperformance, so a material outperformance share with TOCs would require substantial savings.

Figure 19 - Network Rail (High Speed)'s costs in 1 April 2021 – 31 March 2022

£m, 2021-22 prices	Actual	PR19	Difference better / (worse)	2020-21
Staff costs	19.2	20.9	1.7	20.0
Consultancy costs	1.2	0.4	-0.9	0.6
Corporate functions & NRIL				3.4
Plant & Materials	5.1	5.7	0.6	5.3
Sub-Contractors	2.4	2.5	0.0	2.4
Security of Infrastructure	1.8	1.9	0.2	2.1
Insurance	0.4	0.7	0.2	0.6
Overheads	3.3	3.7	0.4	2.9
Operating costs	**36.8**	**39.7**	**2.9**	**37.3**
Management fee	3.2	3.2	0.0	3.2
Risk premium	1.0	1.7	0.7	1.0
Outperformance	3.6	0.0	-3.6	3.8
Total NR(HS) costs	**44.6**	**44.6**	**0.0**	**45.3**

Source: NR(HS) Outturn statement 1 April 2021 – 31 March 2022

4.11 HS1 Ltd's internal costs are shown in Figure 20. These were £9.8m this reporting year, £0.4m higher than assumed at PR19. This included:

- £0.7m of increased consultancy costs, reported as including costs relating to HS1 Ltd's response to COVID-19;
- R&D overspend versus forecast of £0.1m as a result of catch up of R&D underspend earlier the previous year; and
- offsetting the above, office running costs and other costs were £0.2m and £0.3m lower respectively than assumed - partly due to the reduced costs incurred with staff working from home.

Figure 20 - HS1 Ltd's internal costs in 1 April 2021 – 31 March 2022

£m, 2021-22 prices	Actual	PR19	Difference better / (worse)	2020-21
Staff costs	4.8	4.9	0.0	4.7
Technical support / Consultants	1.9	1.2	-0.7	2.1
Office running costs	0.9	1.1	0.2	0.8
R&D	0.4	0.3	-0.1	0.0
Other costs	1.7	2.0	0.3	1.4
Total HS1 Ltd Costs	**9.8**	**9.4**	**-0.4**	**9.0**

Source: HS1 Ltd AMAS 1 April 2021 – 31 March 2022

Pass through costs

4.12 Some of HS1 Ltd's costs are passed straight through to train operators with offsetting pass through income. These costs are largely uncontrollable by HS1 Ltd and include traction electricity costs, rates and insurance. Pass through costs were £19.2m this reporting year, which was £0.9m lower than assumed at PR19. Most of this saving derives from non-traction power with a £0.6m saving due to reduced consumption and sell backs of excess electricity at prices higher than the purchase price.

Freight costs

4.13 HS1 Ltd incurs costs relating to freight traffic, including maintaining freight-specific infrastructure. Although few freight services ran during the period, HS1 Ltd is still obliged under the Concession Agreement to maintain these assets and incur associated costs. Freight costs were £0.3m, which was in line with the PR19 forecast.

Efficiency

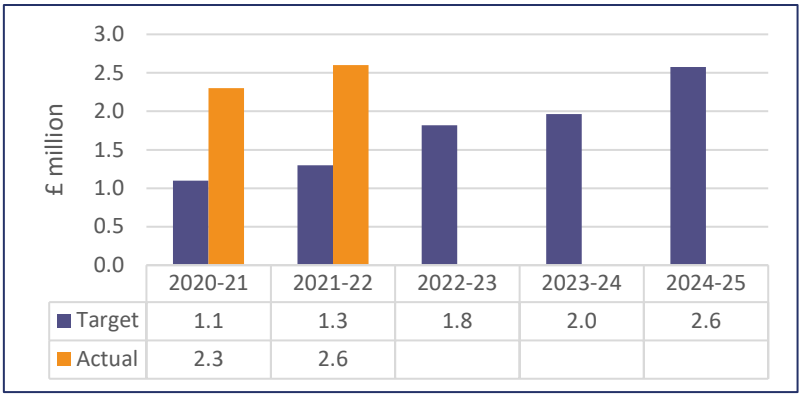
4.14 As part of PR19, we determined an efficient level of cost for the operations, maintenance and renewal of the route infrastructure.

4.15 The largest element of HS1 Ltd's cost is its contract with NR(HS). At PR19, we accepted that NR(HS)'s efficiency would increase £8.6m (6.7%) across the five years of CP3. This means that to deliver the same level of output, we expected NR(HS)'s costs in the final year of CP3 to be 6.7% lower than in the final year of CP2.

4.16 This reporting year, NR(HS) has again reported efficiencies additional to those planned: £2.6m against a target of £1.3m. This included £1.5m of staff related

savings due to managing vacancy gaps and workforce reform benefits. NR(HS) therefore expects to meet the efficiency challenge set at PR19.

Figure 21: NR(HS) actual and forecast annual efficiency improvement in CP3



Source: HS1 Ltd AMAS 1 April 2021 – 31 March 2022

Route escrow account

4.17 Some of HS1 Ltd's access charges are paid into an escrow account to fund current and future renewals. This fulfils a similar function to the Regulatory Asset Base in other regulated utilities by spreading these costs over the long term to ensure that users of the railway pay their fair share.

Figure 22: Escrow movements in the year to 31 March 2022

£m	Actual	PR19	Difference
Opening balance	11.6	88.2	-76.6
Transfer In	20.6	28.9	-8.3
Interest	0.1	1.2	-1.1
Deposits Maturing	160.7		160.7
Total transfers in	181.5	30.1	151.4
Drawdowns	-9.4	-17.4	7.9
Service Charge	0		0
Deposit Placed	-166.7		-166.7
Total drawdowns	-176.2	-17.4	-158.8
Closing balances	16.9		
Deposits matured and placed	84.9		84.9
Closing balances	101.8	100.9	0.9

Source: HS1 Ltd AMAS 1 April 2021 – 31 March 2022

4.18 The balance on the route escrow account at 31 March 2022 was £16.9m. The escrow balance increased by £5.3m in the year due to:

- £20.6m of payments into the escrow account - this was £8.3m lower than the PR19 assumption due to the Eurostar escrow holiday.
- £9.4m was withdrawn to pay for renewals undertaken in the year - £7.9m below the CP3 renewals plan (see Chapter 3 for more detail on delivery of renewals).
- £6m net drawdown as the total value of deposits increased.
- £0.1m of interest earned in the year.

4.19 Funds invested as at year end for the route are £84.9m with maturity dates of between six and twelve months.

Overview of statutory financial statements

4.20 HS1 Ltd made a profit after tax of £30.1m this reporting year (£51.7m the previous year) with earnings before interest, tax, depreciation and amortisation (EBITDA) of £20.5m (£55.1m the previous year). Its net assets decreased to £88.8m from the £497.5m of the previous year. These matters are explained in HS1's statutory financial statements. No dividend payments were paid in the year.

4.21 As noted above, the effect of COVID-19 on HS1 Ltd's income became more significant this reporting year. Whilst the number of train paths run has increased, billings were lower due to the previous year benefitting from the advance timetable bookings carried over from before the pandemic began. We are engaging regularly with HS1 and DfT on this.

4.22 The ratio of cash available to service the annual debt interest and principal payments (DSCR) for 1 April 2021 – 31 March 2022 was slightly lower than the previous year at 1.24x (1 April 2020 – 31 March 2021: 1.25x).

4.23 HS1 Ltd considers that it remains above its debt-service cover ratio (DSCR) covenant lock-up[9] level of 1.20 and has material headroom over the default[10] level of 1.05. HS1 Ltd has an investment grade credit rating (Fitch: Stable outlook: BBB+).

4.24 While there is uncertainty surrounding COVID-19, geopolitical conflict in Europe, the economy, new border control requirements, energy prices, inflation and strike action, HS1's auditors have concluded that the directors' use of the going concern basis of accounting in the preparation of the financial statements has been appropriate.

[9] The lock-up level is a restriction of distributions. Until DSCR recovers to above the lock-up threshold, any cash generated in the period that was planned to be paid out to shareholders, must instead be set aside for debt service.

[10] The default level is that at which cashflows are not sufficient to support the current level of debt. At this level a restructuring should be considered and normally it would also give the lenders the right to take direct enforcement action.

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