

HS1 Escrow Arrangements



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1 Introduction

Purpose of the Study

- 1.1 The Office of Rail and Road (ORR) commissioned Steer to carry out an independent analysis of the Escrow arrangements for funding of renewals on the high-speed rail network between London and the Channel Tunnel. These arrangements are defined by the Concession Agreement between the party responsible for operating, maintaining and renewing the network, High Speed 1 Ltd (HS1) and the UK Government.
- 1.2 The key purpose of the study is to fully understand:
 - the degree to which the Escrow arrangements enable efficient risk allocation between HS1, Network Rail (High Speed) Ltd (NR(HS)), the Department for Transport (DfT) and other parties;
 - whether the governance arrangements for the Escrow account support effective decision-making; and
 - whether the arrangements are sufficiently clear and transparent to provide stakeholders with confidence that they operate effectively.

Our approach

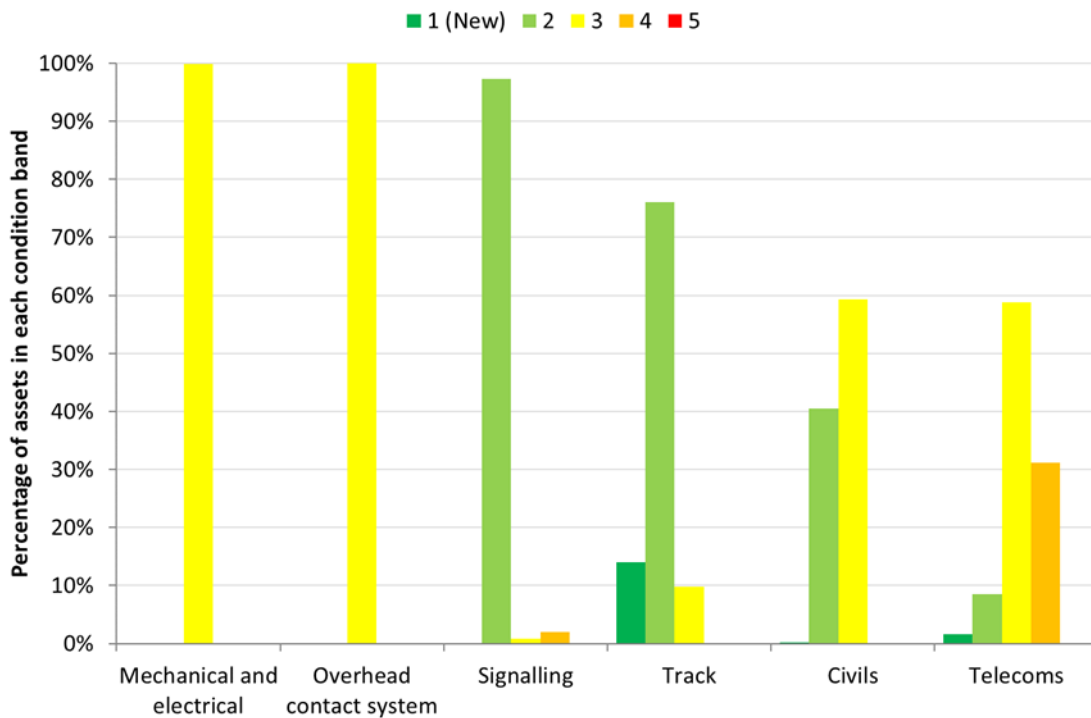
- 1.3 The methodology used in this study combines field and desk research to inform a focused assessment of the risk allocation resulting from the Escrow arrangements and a review of governance arrangements. More specifically, the methodology has included:
 - a review of the HS1 Concession Agreement and related documentation including consultation with users of HS1 done by the ORR earlier in 2018;
 - an internal workshop identifying risks surrounding the planning, delivery and funding of maintenance and renewals activity;
 - stakeholder interviews with HS1, NR(HS) and DfT to understand the perspectives of some of the key stakeholders with an interest in the arrangements; and
 - an investigation into eight chosen comparators to identify any learning points that may be relevant for the Escrow arrangements.
- 1.4 The results from these tasks have been used to identify the key risks in relation to the arrangements, and aid in the undertaking of a RACI review of the Escrow arrangements to determine whether **Responsibility** and **Accountability** for their management are clearly defined and the need to **Consult** and **Inform** relevant parties is properly recognised.
- 1.5 On the basis of this research and analysis, we have identified key findings and made recommendations for improving the governance of the Escrow arrangements.

2 Background

HS1 as a concession

- 2.1 HS1 was originally conceived in the 1980s as a commercial private sector project providing capacity to the national railways of Belgium, France and Great Britain to provide international passenger and freight services between the Channel Tunnel and London. In the early 1990s a decision was made to add franchised domestic services, less because of any immediate need than because of the opportunity to offer faster services to London and, in the event, to a new London terminal. HS1 therefore serves international passenger and freight operators, and domestic passenger operators, with different characteristics and commercial environments.
- 2.2 HS1 is a relatively new railway, opened in two stages in 2003 and 2007, with the oldest of its assets now in commercial use for around 15 years. This means that, at least compared to existing national networks such as Network Rail, HS1 has:
- relatively high levels of depreciation, because many of its assets are still well within their accounting life;
 - high levels of performance with few delays resulting from HS1 infrastructure akin to that achieved by other high speed infrastructure operators and even those achieved in Japan;
 - relatively low maintenance costs, partly because of the better “maintainability” of modern assets; and
 - relatively limited and “lumpy” renewal costs, at least in the medium term, partly because many asset categories do not yet require renewal, and partly because, with similar assets being of similar age and condition, they are likely to require renewal at similar times.
- 2.3 ORR’s annual report on HS1 Ltd 2016-2017 refers to benefits which may be due, at least in part, to HS1’s relatively new infrastructure:
- “Overall performance of the HS1 assets has improved on last year and continues broadly to meet key asset performance metrics.”
 - “There were a total of 194 trains delayed in 2016-17, which is a significant improvement on 2015-16 and was the second best result over the last seven years.”
- 2.4 Figure 2.1 based on Figure 8 of the report, illustrates the proportion of each type of asset in each of five condition bands.

Figure 2.1: HS1 assets by condition band at end of 2016-17



Source: ORR’s annual report on HS1 Ltd 2016-2017, Figure 8.

2.5 Some categories of assets, such as mechanical and electrical (M&E) and the overhead contact system (OCS) were assessed as being all in a single condition band. In contrast, assets with shorter lives, such as track (which begins to require replacement) and in particular telecoms, are spread more widely across the condition bands. Over time, and as assets are renewed, it can be expected that the condition of all asset categories will become more evenly distributed, and the resulting patterns of maintenance renewal will converge on the stable rates typical of older railways.

HS1’s costs

2.6 Railway costs are often subdivided into a number of distinct components, as summarised in Table 2.1.

Table 2.1: Components of railway costs

Costs	Description	Comments
Operations	Costs of operating the railway, incurred largely in real time, such as signalling staff and consumption of electricity.	
Maintenance	Costs of maintaining the safety and capability of the existing railway assets.	In practice, minimising life cycle costs may mean trading off maintenance and renewals. If maintenance is cheap, renewals may be deferred, but if maintenance is expensive, they may be brought forward.
Renewal	Costs of replacing railway assets with modern equivalents with the same safety and capability.	
Enhancement	Costs of increasing the capability of the railway.	In practice, a modern equivalent asset (MEA) may have higher capability, so any renewal may include an element of enhancement.
Interest and/or return	Costs of interest on debt or returns to equity.	Covered by the Investment Recovery Charge

Source: Steer desk research

HS1's access charges

- 2.7 HS1 and other infrastructure managers may recover some or all of their costs from the operators which use them through access charges. Within the EU, the basis on which access charges are set is ultimately constrained by Directive 2012/34/EU¹:
- Article 31 establishes that operators should pay at least the costs directly incurred².
 - Article 32 makes provision for operators to pay an additional mark-up³.
- 2.8 This can be restated as “Access charges must, as a minimum, reflect **costs**, but may be higher, to reflect **value**.”
- 2.9 In practice, analysis of the effect of additional traffic on a railway suggests that the costs directly incurred by additional traffic include elements of operations, maintenance and renewal costs, although detailed engineering studies may be required to estimate the costs imposed by any combination of rail vehicle, speed and section of track. By agreement with ORR:
- Network Rail, which has the benefit of having long experience of the effect of rail traffic on the costs of operating its large network, makes use of the VTISM model of OMR costs to derive its Variable Usage Charges (VUC).
 - HS1, in contrast, with its newer and smaller network, does not yet have the long-term experience of maintenance and in particular renewals which would be necessary to support an analogous modelling exercise.
- 2.10 However, such detailed analysis is not necessary once a mark-up is charged, provided that the resulting charge is at least as high as the costs directly incurred.

HS1 recovers its costs from operators through the charges summarised in Table 2.2.

¹ Implemented in the United Kingdom through the Railways Infrastructure (Access and Management) Regulations 2005.

² “The charges for the minimum access package and for access to infrastructure connecting service facilities shall be set at the cost that is directly incurred as a result of operating the train service.”

³ “In order to obtain full recovery of the costs incurred by the infrastructure manager a Member State may, if the market can bear this, levy mark-ups on the basis of efficient, transparent and non-discriminatory principles, while guaranteeing optimal competitiveness of rail market segments.”

Table 2.2: HS1 cost recovery mechanisms

Type of cost	Recovery mechanism	Comments
Operations, Maintenance and Renewals Charge (OMRC)	Recovery of directly avoidable costs. Allocated to operators on various bases: Operators which use the relevant asset Apportioned by timetabled minutes Apportioned on “equivalent gross tonne miles” Incremental costs (for freight operators)	This element implicitly includes costs directly incurred plus a mark-up to a larger total charge per path.
	Recovery of other (“fixed and common”) elements of OMR costs. Based on ORR review of HS1’s Asset Management Strategy (AMS).	Payments to fund future renewals are held in an Escrow Account.
Investment Recovery Charge (IRC)	Recovers the long-term construction costs of the HS1 network. Levied on passenger train services apportioned by timetabled minutes.	Levied for the duration of the concession until 2040. The IRC is outside the scope of PR19.

Source: Steer desk research

2.11 The Operations, Maintenance and Renewals Charge (OMRC) is intended to recover operations, maintenance and renewals costs:

- It includes an explicit mark-up, to take into account that not all OMR costs are directly incurred as a result of operating train services.
- It includes an element, based on HS1’s Five Year Asset Management Statement (5YAMS), set aside in an Escrow account to fund projected future renewals activity.

2.12 The Investment Recovery Charge (IRC) recovers the long-term construction costs of HS1 and provides the concessionaire with a return on its investment.

2.13 HS1’s access charges are set by ORR for each five-year Control Period⁴ set out in HS1’s Concession Agreement.

HS1’s Concession Agreement

2.14 A Concession Agreement covering the design, construction, financing, operation, repair and maintenance of what is now HS1 was agreed on 28 September 2003, supplemented on 28 September 2008, consolidated into one concession document on 14 August 2009 and subject to further amendment and restatement on 16 July 2010, 27 March 2015 and 18 December 2017⁵.

2.15 The Concession Agreement expires on 31 December 2040, after which control of HS1 transfers back to the Secretary of State for Transport.

2.16 The expiry of a Concession normally requires arrangements to ensure that the asset to which it applies is handed back in reasonable condition, and in particular to prevent the Concessionaire failing to carry out adequate maintenance and renewals in the final years before expiry. This is commonly achieved by two mechanisms:

- In the final years of the Concession, detailed surveys are carried out, and any maintenance or renewal work required to bring the asset to the required condition is identified.

⁴ The HS1 Concession was sold in 2010, so Control Periods run from 2010 to 2015 (CP1), 2015 to 2020 (CP2), 2020 to 2025 (CP3) and so on.

⁵ <https://highspeed1.co.uk/media/282500/supplement-to-concession-agreement-december-2017-2.pdf>

- In the event that the Concessionaire does not carry out this work before the end of the Concession, funds may be withheld to pay for the work to be carried out thereafter.

2.17 The HS1 Concession Agreement uses a different approach, set out in Schedule 10:

- Schedule 10 Section 1 sets out HS1's General Duty for Asset Stewardship, and specifically that HS1 should act as if it were responsible for the concession 40 years following the date at which any activities are planned or carried out.
- Schedule 10 Section 2 sets out the details of the Periodic Review process, and specifically that the OMRC will be set at the level that is needed to provide for OMR in accordance with HS1's General Duty, the requirement for a 5AYMS, the mechanism for ORR making Draft and Final Determinations on access charges, and the sharing of any efficiencies achieved by HS1 with the operators.
- Appendix 1 to Schedule 10 sets out the Escrow Arrangements.

2.18 In summary, rather than detailed surveys of asset condition immediately before the expiry of the Concession Agreement:

- HS1 is required to provide an assessment of OMR requirements looking 40 years ahead, most likely linked to developing a detailed assessment of asset condition as part of a 5AYMS as indicated in paragraph 2.17 above.
- ORR takes this assessment into account in determining efficient levels of OMR.
- Money required for the renewals component is placed in the Escrow account.
- In principle, at all points, including on and immediately after expiry of the Concession, the funds held in the Escrow account will be sufficient to fund renewals.

2.19 However, one specific feature of this arrangement is that variations in the OMR costs of HS1 are not borne by the Concession, or the government to which the asset will eventually revert, but by the operators. In practice, costs falling to the largest user of HS1, Southeastern, will ultimately be borne by the government through the franchising process, but the remainder of costs will be borne by Eurostar⁶ and the freight operators. It is important to note that while increased costs are picked up by the operators, 80% of any savings compared to planned costs are passed onto the operators in the form of reduced charges and only 20% to the HS1 concession.

HS1's Escrow account

2.20 Appendix 1 to Schedule 10 sets out the details of the Escrow arrangements, including the items summarised.

⁶ Eurostar, uniquely, uses or has used the infrastructure of Railtrack, Network Rail, HS1, Eurotunnel, RFF, Infrabel and Infrasppeed. The HS1 Concession Agreement is unique among these infrastructure managers in explicitly allocating all long-term OMR costs, as identified through the Periodic Review process, to the operators.

Table 2.3: Escrow arrangements

Section of Appendix 1		Comment
2.1	Restrictions on withdrawals	<p>Sets out the basis on which withdrawals may be made. In particular:</p> <ul style="list-style-type: none"> • The Escrow account may not be overdrawn. • The withdrawal must relate either to expenditure specified in the Five Year Asset Management Statement (5YAMS), or approved by ORR, or to make an Authorised Investment (to earn interest on deposits). <p>In the event that ORR approves expenditure not specified in the 5YAMS, HS1 must propose an increase in OMRC to replenish the Escrow account.</p>
2.2	Withdrawal procedures	Sets out the process by which HS1 requests the Secretary of State to allow a withdrawal.
2.7	Advance withdrawals	Sets out the principle that HS1 may not generally make withdrawals until a payment is due.
4	Access and audit rights	<p>Grants ORR and the Secretary of State reasonable access to review the books and records related to the Escrow account.</p> <p>Provides for monthly "Account Statements" from HS1 to ORR and the Secretary of State.</p>
5	Authorised investments	<p>Sets out provision for HS1 to invest monies in the Escrow account not immediately needed, inter alia:</p> <ul style="list-style-type: none"> • at an acceptable bank; • in low-risk investments, specifically "Treasury Bills or short-date gilts rated A- or better by Standard and Poor's or A3 or better by Moody's"; and • only for so long as the monies are not required, and no more than 12 months into the next Control Period; • with no more than £40 million in any one bank; • with no more than 90% of total funds in Authorised Investments; and • the proceeds from investments are paid back into the Escrow account.
6	Expiry of the Concession Agreement	On expiry (or early termination) the monies in the Escrow account shall be paid to the Secretary of State.

Source: Appendix 1 to Schedule 10 of the HS1 Concession Agreement.

2.21 Note that the Concession Agreement does not specify what approach the Secretary of State or ORR will take to the funding of HS1 or the determination of access charges after the concession has ended.

2.22 Table 2.4 sets out a summary of the Escrow arrangements using the RACI (Responsible, Accountable, Consulted, Informed) nomenclature.

Table 2.4: RACI assessment of Escrow arrangements

		Responsible	Accountable	Consulted	Informed	Regulatory approval	
5YAMS (control period plans)		HS1 NR(HS)	HS1	Stakeholders ^(a)		ORR	
Operation of Escrow account	Payments in	HS1	SoS		ORR		
	Withdrawals	Consistent with 5YAMS	HS1	SoS		ORR	
		Additional to 5YAMS	HS1	SoS		Stakeholders ^(b)	ORR
		Authorised Investment	HS1	HS1/SoS?		SoS?	ORR
		Efficiency sharing	HS1	SoS		Stakeholders ^(b)	ORR
Audit		Appointed auditor	SoS/ORR	HS1			

Source: Appendix 1 to Schedule 10 of the HS1 Concession Agreement, interviews, Steer analysis.

(a) implied by Periodic Review consultation.

(b) implied by the need to change OMRC in the following Control Period.

2.23 The analysis reveals two points which we discuss later in this report:

- There is no formal process of consultation of the operators on withdrawals for work additional to the 5YAMS, even though they may ultimately pay for this through an increase in OMRC. Informally, HS1 is beginning to provide additional information to users.
- More generally, the formal participation of operators in decision-making processes appears limited, although we understand that HS1 engages with them regularly through quarterly and ad hoc meetings on a range of issues including renewals.

Implications for planning and funding renewals

2.24 Operators using rail infrastructure typically pay a mark-up on costs directly incurred, which may or may not be intended to recover all OMR costs, but the risks associated with actual costs are borne by infrastructure managers or, most commonly, the governments that own them. This is the case with all five other infrastructure networks, in four EU Member States, which Eurostar uses or has used⁷. Uniquely among railway infrastructure managers we have examined, all HS1’s long term costs of OMR, including the costs of renewals, are explicitly borne by operators.

2.25 As noted above, and in contrast to a larger, older network, with stable rates of asset renewal funding largely through cash flow, renewals expenditure on HS1 may be:

- low in the early years of the concession, because it is relatively new; and

⁷ Railtrack (until 2002), Network Rail (from 2002), Eurotunnel, RFF, Infrabel and Infrasppeed (from April 2018). Infrasppeed is the builder and infrastructure maintenance company of the HSL-Zuid high-speed line in the Netherlands, which is coincidentally similar in size (125 kilometres, of which 85 kilometres is high-speed) and age (opened 2009) to HS1.

- “lumpy” in the later years, because it is relatively small.
- 2.26 The HS1 concession arrangements recognise the benefits of smoothing the funding of renewals, while addressing asset stewardship obligations and, inter alia, help address the issue of “intergenerational equity”:
- At one extreme, HS1 could in principle fund renewals directly from operator charges in the year in which the renewal costs occurred. This would, however, mean that operator charges would vary widely from year to year; that operators using HS1 early in its life cycle would pay little or nothing; and that operators using HS1 later in its life cycle would pay disproportionately more. There could also be incentives for operators to reduce or cease services during years with high renewals costs.
 - At the other extreme, with perfect knowledge of HS1’s life cycle costs, inflation, interest rates and other factors, it would be possible to fix annual charges throughout the life of HS1, so that operators using HS1 at different times contributed equally to its life cycle costs.
- 2.27 In practice, perfect knowledge of future asset ageing rates, mitigation measures, replacement costs, inflation and interest rates is not possible. However, the 5YAMS is designed to reduce the potential volatility in access charges and minimise the potential distortions in behaviour that such volatility might cause.
- 2.28 The HS1 Concession Agreement anticipates this need to set aside funds, and to ensure that it is held securely until required for future investment. HS1 is required to transfer revenue to an Escrow account, from which it may only withdraw for specific purposes, approved by ORR, including expenditure on renewal or certain defined categories of relatively safe investment.
- 2.29 HS1’s concession lasts until 2040, but it is required to act as if responsible for the stewardship of the infrastructure for up to 40 years beyond this date. This means that, by the end of the concession, it will need to have made, or be making, provision to fund renewals expected to be required up to 2080. However, beyond an overarching obligation to meet robust asset stewardship conditions, there is no specific requirement for a detailed assessment of the condition of HS1 in the years immediately before the expiry of the concession.
- 2.30 Another factor which is worth considering is how the Escrow Account is managed. The Escrow Account started during 2009-10 with a zero balance. During CP1 there was a £9 million shortfall in interest earned on Escrow funds. It had been assumed that these would earn 7.41% but the actual rate earned averaged 0.22%, due in part to restrictions on the types of investment permitted to low risk strategies such as bank deposit accounts and short term gilt-edged securities which the account can access. For CP2, HS1 assumed an average annual interest rate of 2.2% on Escrow funds. At the end of 2016-17, the account contained £56.4 million, slightly more than HS1’s total income from the OMRC during that year.
- 2.31 As the amount deposited in the Escrow Account grows, it will be increasingly material to ensure that it is well-managed and maximises the investment return consistent with acceptable risk.

3 Stakeholder consultation

Introduction

3.1 Following discussions with ORR, we consulted with three of the key organisations involved in the management of the Escrow arrangements, namely DfT, HS1 and NR (HS). As ORR have already conducted a wider consultation exercise as part of the periodic review of HS1’s access charges, we focused our questions to these organisations on the following issues:

- the extent to which there is efficient risk allocation between DfT, HS1 and NR(HS);
- whether the governance arrangements for the Escrow account support effective decision making; and
- clarity and transparency of the Escrow arrangements.

3.2 The results of this targeted consultation are summarised in the table in the following section. Fuller notes from the meetings held with each organisation are provided in Appendix A.

Summary of key consultation responses

Table 3.1: Consultation responses

Organisation	Summary of response
Risk allocation	
DfT	DfT noted that investment is HS1’s responsibility and that HS1 is seeking greater flexibility in its approach to investment. DfT is open to widening the options for investment as part of a wider assessment as long as HS1’s credit rating is maintained.
HS1	HS1 is satisfied with the current allocation of risk and noted that its investors could be adversely affected if the allocation were to change. In general therefore, it would not support changes to the concession agreement affecting risk allocation, although the provision of supplementary guidance to improve clarity and transparency could be helpful.
NR(HS)	NR(HS) takes operation and maintenance risk in terms of the cost of ensuring safety and good train performance, while operators are on risk for the level of renewals expenditure. NR(HS) carries out renewals projects at a fixed price, which can lead to inefficiencies (with risk and hence contingency built into the cost). Having the flexibility to carry out work on a time and materials basis could encourage a more collaborative approach to planning and delivery. NR(HS) has a duty under their safety authorisation to carry out safety critical work but there is a risk that HS1 might not pay for work that is not in the Control Period (CP) plan. Moreover, the Escrow do not operate flexibly when works straddle CPs. For example, when work originally considered for CP3 was brought forward to CP2 on safety grounds at only eight weeks’ notice, ORR did not have an opportunity to approve it in advance, so NR(HS) and HS1 carried out the work at risk. In addition, unplanned changes to the timing of renewals work can also result in inefficient risk management. Eurostar services account for a high volume of non-UK track kilometres, potentially resulting in substantial inbound delay and the need to cancel work.
Effective decision-making	
DfT	DfT’s governance role typically involves managing the monthly station Escrow process, attending meetings and releasing project funds on an ad hoc basis. They are also involved in the quarterly route Escrow process meetings, which are managed by ORR. Although ORR has scrutiny over route project milestones and expenditure, DfT is responsible for releasing the required funds from the Escrow. There are change mechanisms in place to accommodate changes in expenditure when costs are higher than planned. In these circumstances, NR(HS) advises HS1 of the cost and DfT releases the funds. In principle, the costs of other projects may be less than planned, such that overall changes in expenditure

Organisation	Summary of response
	across the portfolio are more limited. However, if NR(HS) incurs higher than expected costs, DfT releases the funds to ensure that the necessary work is completed. Where work is safety-critical, this can be brought forward and other work postponed until a later CP.
HS1	HS1 meets with the Southeastern and Eurostar treasury teams in an investment group every quarter to share information about renewals activity and expenditure.
NR(HS)	NR(HS) is removed from decisions regarding Escrow payments, although they are aware of the checks and balances in place to facilitate payment for renewals. They are responsible for pricing the first five years of the 40-year work bank, with HS1 responsible for estimating the cost of renewals for the following 35 years. NR(HS) consider that some of the assumptions made by HS1 without the necessary engineering knowledge and experience.
Clarity and transparency	
DfT	DfT considers that the requirements concerning the handback condition of the assets at the end of the concession are not sufficiently clear. It also considers that elements of the decision-making process are not sufficiently transparent for stakeholders. This could be remedied through measures such as greater participation of train operators at key meetings or through sharing of minutes to provide assurance that DfT and ORR are holding HS1 to account.
HS1	HS1 considers that there is sufficient clarity surrounding handback condition, but would welcome greater documentation of the purpose and operation of the Escrow account. It is seeking to ensure greater participation of operators in the strategic approach renewals by inviting their views on different cost-performance options.
NR(HS)	NR(HS) also considers that greater clarity on the required handback condition of the assets would be beneficial. It has also suggested that the section of the Concession Agreement relating to the Specific Upgrade process requires clarification. In particular, guidance on the appropriate treatment of modern equivalent assets (i.e. how far they should be treated as an enhancement rather than a renewal) would be beneficial.

Implications for HS1’s Escrow arrangements

3.3 While these observations were recorded in the context of a relatively limited stakeholder engagement exercise (involving only the three principal stakeholders and no discussion with users of the network except that conducted by the ORR earlier in 2018), they do suggest some significant concerns relating to the Escrow arrangements and the broader framework of incentives within which they operate:

- the assumptions and calculations relating to operations, maintenance and to a lesser extent, renewals are not as informed and accurate as they could be – this was also a concern raised by users such as Eurostar as part of the ORR consultation;
- there is a need for increased flexibility of investments; and
- there needs to be more transparency of the Escrow process, informing stakeholders of the decision-making process.

4 Comparators

Escrow accounts and similar arrangements

- 4.1 We identified comparators for HS1 with the aim of identifying issues which might be relevant to the Escrow arrangements. In particular, we sought examples in which Escrow accounts, or similar arrangements, had been used to hold funds reserved for construction, maintenance or renewal activities.
- 4.2 In practice we identified three distinct types of arrangement for holding funds:
- Escrow accounts in operation during the construction phase;
 - Maintenance Reserve Accounts (MRAs) in place during the operating phase; and
 - Escrow accounts in place during the operating phase.
- 4.3 The key features of these arrangements are summarised in turn below.

Escrow accounts operated during the construction phase

- 4.4 Escrow accounts are often used in the construction phase of a large project, during which equity and debt finance is raised in stages, just in advance of expenditure, as construction proceeds. The aim is to ensure that, when funds are raised in advance to pay for construction, they cannot be diverted to other purposes. The typical process is that finance raised is held in an Escrow account and only released, with the authority of the lenders' technical advisor, to pay for construction works consistent with the overall work programme for the project. We understand that arrangements of this type were put in place when work on the Channel Tunnel Rail Link was begun by London and Continental Railways (LCR) in 1996⁸.

Maintenance Reserve Accounts in place during the operating phase

- 4.5 Many concession agreements require the concessionaire to establish an MRA holding sufficient funds to cover a broad estimate of maintenance requirements for the next few years. The aim is frequently to ensure that, in the event of the failure of the concession, funds are held available to pay for maintenance until the concession can be re-let or refinanced. At its simplest, an MRA could be considered a "maintenance bond", based on a fixed amount

⁸ "The Department anticipated that there would be two stages to the winning bidder's financing of the project. The first stage financing would fund the first two years of the project while the winning bidder secured, through a second stage financing, the bulk of the funds it would require to fulfil its obligations. The competition required the bidders to set out the details of their plans for financing the project. LCR adopted the Department's two-stage approach, proposing to raise the second stage finance through the proceeds of a flotation in October 1997 and long-term bank debt. LCR's first stage financing plan comprised £430 million of short- to medium-term bank debt (Figure 4) and £60 million of equity from its shareholders. In May 1996, LCR's banks agreed to provide loans for the first stage financing, secured against Eurostar UK." "The Channel Tunnel Rail Link", National Audit Office, 28 March 2001.

considered to be sufficient to cover a reasonable period of short term renewals at any point in the life of the concession.

4.6 A typical requirement is for the MRA to be sufficient to cover 100% of projected requirements for the first year, 66% for the second year and 33% for the third year. However:

- The function of the MRA is often only to protect lenders, and there may be no requirement, or provision, for its continuation after all debt has been paid off.
- The MRA is concerned only with the next few years' maintenance, rather than the life cycle of the project, and specifically will not take into account expenditure required more than a few years into the future.
- The MRA need not be based on a detailed Asset Management Strategy (AMS) and Asset Management Plan (AMP).

Escrow accounts in place during the operating phase

4.7 As in the case of the arrangements for HS1, described in Chapter 2, Escrow accounts in place during the operating phase of a project are intended to smooth lumpy renewals payments over the life of a concession. In effect, they perform a similar function to the regulatory asset base established by regulators for the purposes of determining permitted depreciation as part of a regulatory settlement (with payments into the Escrow account factored into the broader determination of charges levied for using the asset). Therefore, unlike an MRA:

- The Escrow account is used to fund renewals rather than maintenance.
- The Escrow account is intended to cover costs over the entire period of the concession, plus an "after-period" (40 years in the case of HS1).
- Payments into the Escrow account, funded by charges, are intended to be relatively smooth over the life of the concession, although they may vary with changes in the assessment of renewals requirements over the remaining term of the contract.

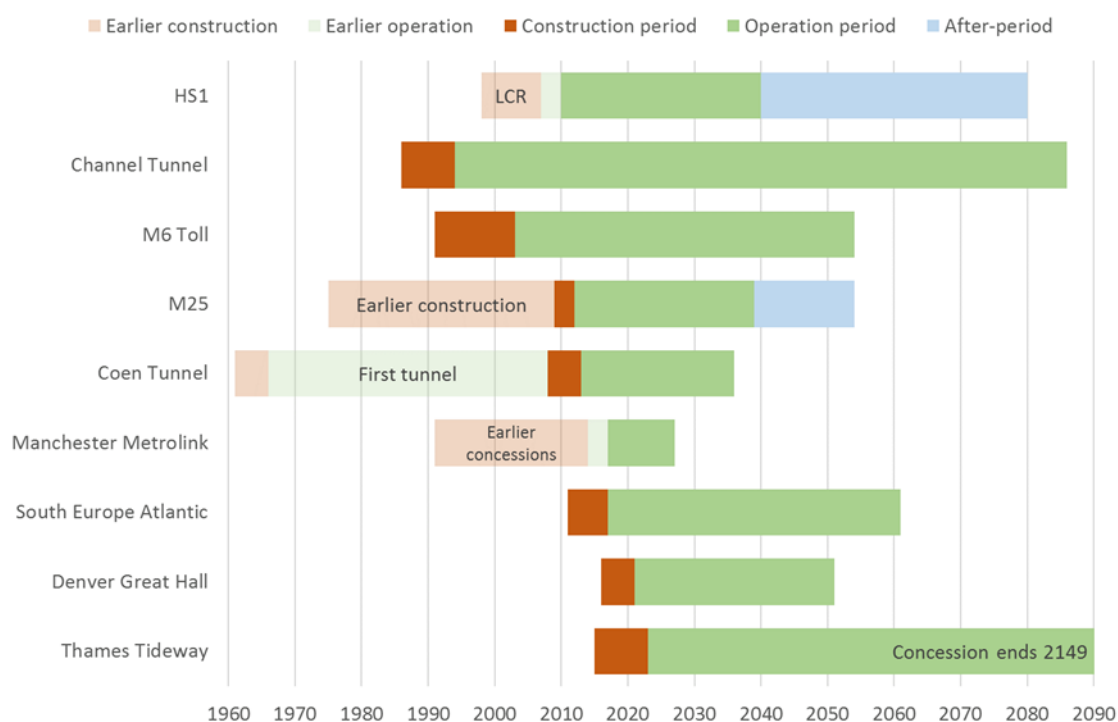
4.8 The smoothing of payments is a means of ensuring "intergenerational fairness", whereby the charges paid by operators for using the infrastructure are not unduly affected by the point in the concession life at which they operate services. Hence, renewals costs are distributed fairly between current and future users of the asset, and operators are protected from major fluctuations in access charges. Smoothing also protects the asset owner from the risk of operators withdrawing services during years of high charges, effectively refusing to contribute to the long run costs of the infrastructure⁹.

Selection of comparators

4.9 The comparators, selected in consultation with ORR, are summarised in Figure 4.1 and Table 4.1.

⁹ An analogous issue arises in the setting of charges at regulated airports. Other than a "hub carrier" based at the airport, many airlines providing only limited services to the airport could withdraw them, at least temporarily, if charges increased suddenly for even a short period. (Airports serving mainly leisure destinations are particularly vulnerable to this behaviour because tour operators and their airlines may be able to transfer business to alternative destinations.) This factor makes it difficult to find effective means of funding large new airport projects either in advance (airlines may be unwilling to pay for facilities which have not yet been built) or when open (airlines may be unwilling to pay large increases in charges, especially if they do not use the new facility).

Figure 4.1: Comparators: construction, operation and after-periods



Source: desk research, Steer analysis. Dates have been rounded to the nearest calendar year.

- 4.10 HS1 was constructed by the previous concessionaire, LCR, with construction work beginning in 1998 and the network opening in two phases (2003 and 2007). The current concession dates from 2010 and lasts for 30 years, ending in 2040 but, as discussed in Chapter 2, the concessionaire must take into account renewal requirements for a further 40-year “after-period”.
- 4.11 The comparators are shown in order of the start of the period of operation, beginning with Manchester Metrolink which opened in 1992 and the Channel Tunnel, for which a concession was awarded in 1987, opening was in 1994, and the current concession ends in 2085/6.
- 4.12 Three of the comparator concessions, the M25, Coen Tunnel, and Manchester Metrolink, relate to a contract for the operation and maintenance of existing infrastructure:
- The M25 involved widening of existing motorways, followed by operation of these and other motorways constructed in phases since 1975.
 - The Coen Tunnel involved duplication of a tunnel opened in 1966, followed by operation of both tunnels.
 - The Manchester Metrolink network was built in stages under previous concessions over the period 1991 to 2014 (with the minor addition of a Second City Crossing in February 2017) and the current concession, awarded to KeolisAmey in 2017, is for 7-10 years, with a potential end date in 2027.
- 4.13 Two of the comparators are still in construction:
- Denver Great Hall will not be completed until 2021.
 - The Thames Tideway will not be completed until 2023/4.

4.14 Other than for HS1, we have only identified an “after-period” for one other comparator, the M25 contract.

4.15 Table 4.1 sets out further details of the comparators, based on our research of publicly-available information.

Table 4.1: Comparators

	HS1	Manchester Metrolink	Channel Tunnel	M6 Toll	M25	Coen Tunnel	South Europe Atlantic	Denver Great Hall	Thames Tideway
Cost (billion) when built	£6.2	£1+	£5	£0.9	£1.4	€0.5	€6.2	£0.65	£4.2
Date of concession	2010	2017	1986/7	1991	2009	2008	2011	2016	2015
Construction phase	Earlier concession		Complete					●	●
Construction Escrow?	Yes	?	?	?	?	?	?	?	?
Opened	2003/7	1992+	1994	2003	2012/14	2013	2017	2021	2023/4
Operation phase	●	●	●	●	●	●	●	Not started	
Concession duration	30	7-10	99	53	30	30	50	30	125
Operation Escrow/MRA?	Escrow	?	No	?	MRA	?	?	MRA	?
Concession ends	2040	2027	2086	2054	2039	2036	2061	2051	2149
Customers	Few	Self	Self+Few	Retail	1	1	Few	1	1
Intergenerational fairness	Yes	No	Minor	No	No	No	Minor	No	No
After-period (years)	40	?	40	?	15	?	?	?	?
Seen Concession Agreement?	Yes	No	Yes	No	No	No	No	No	No
Seen Operator Agreement?	TBC	No	N/A	N/A	N/A	No	No	No	N/A

Source: desk research, Steer analysis.

4.16 The table shows an estimate of the cost of construction, as a guide to the relative sizes of each project, although we have not attempted to normalise these to a specific year or price base. It also includes the dates of any construction phase, as shown in Figure 4.1, and whether the project is under construction (●), complete or, in the case of HS1 and Manchester Metrolink, related to an asset which is already complete. Due to the commercial confidentiality of the agreements in place, we have not had access to documentation to confirm whether an Escrow account was used during the construction phase of any of the comparators from information in the public domain.

4.17 Where possible, we also identified:

- whether an MRA, Escrow account or other arrangement is, or is expected to be, in place during the operational phase of the project;
- the length of any after-period for which maintenance and/or renewal costs must be considered or provided for;
- the number of users of the infrastructure;
- whether there appear to be any issues of intergenerational fairness, as outlined in paragraph 4.8; and
- whether we have had access to the relevant Concession Agreement or, if applicable and available, an operator agreement between the concessionaire and another entity to which it subcontracts activities such as operations and maintenance.

4.18 We discuss each of the comparators in more detail below.

Manchester Metrolink

4.19 Manchester Metrolink is a light rail network constructed in stages since 1991, with a last major expansion in 2013/14, although a short Second City Crossing was opened in February 2017. The first two concessions involved the following construction activity:

- From 1992 to 1997, the initial network was built and subsequently operated by Greater Manchester Metro Limited.
- From 1997 to 2007, the network was expanded and operated by Serco.
- From 2007 through 2017, Stagecoach was responsible for the network which then sold the contract to RATP in 2011.

4.20 Construction costs of the various stages total just over £1 billion.

4.21 The current concession, awarded to KeolisAmey, began in July 2017 and continues for 7 or 10 years before ending, at latest, in 2027, but does not involve further construction.

4.22 We have not identified details of any MRA or Escrow arrangements. The concession involves not only maintaining the infrastructure but also operating the service, so the concessionaire itself is the only customer. There are no issues of intergenerational fairness, because the concessionaire as operator is tied to use the infrastructure throughout the concession with the ultimate public-sector asset owner (Transport for Greater Manchester) taking this into consideration, for example in the setting of fares.

4.23 In practice, we note that:

- Some of the infrastructure is now approaching 30 years old, and its condition and maintenance and renewal requirements are likely to be relatively well understood.
- If the forecast maintenance and renewals expenditure changes during the 7-10 year life of a concession, the change in net workload and funding requirement can be priced into the next concession.

4.24 Effectively, the concessionaire is expected to maintain and renew the infrastructure to a determined standard and specification, but Transport for Greater Manchester (TfGM) bears the ultimate risk of higher than expected maintenance or renewals costs.

Channel Tunnel

4.25 The Channel Tunnel concession originated with the 1986 Treaty of Canterbury, between France and the United Kingdom, and the 1987 Concession Agreement between the governments and The Channel Tunnel Group Limited, now trading under the name of Getlink.

4.26 We have not established whether an Escrow account was used during the construction phase, which ended in 1994, one year late, after expenditure of a total of £5 billion. This was funded through equity finance, raised in five stages from 1986 to 1994, the largest of which was a public issue in 1987, and debt from various sources including over 200 syndicate banks.

4.27 The concession agreement did not set an opening date, but required work to be completed within 10 years. The overall concession was extended to 99 years, and now ends in July 2086.

- 4.28 Getlink is subject to safety regulation but not to price regulation¹⁰, although as part of the initial arrangements it contracted to sell half its capacity to the national railways at an agreed price, which in practice it can undercut but not exceed. The capacity of the tunnel is used by:
- Getlink itself, to operate truck and passenger shuttle services and, through its Europorte subsidiary, freight trains;
 - Eurostar, to operate passenger trains; and
 - third party freight operators, to operate freight trains.
- 4.29 There is no passenger or freight Public Service Obligation (PSO) for international services and hence no obligation for either Eurostar or other operators to continue to use the tunnel.
- 4.30 Subject to safety regulation, it appears that Getlink ultimately bears the risk of operating, maintaining and renewing the tunnel, and the revenue it is able to raise from selling infrastructure capacity. Any issues of intergenerational fairness are muted by the fact that it is in Getlink's commercial interests to set operator charges that are predictable from year to year. It does this through 5-year OMR agreements with operators, paid in cash in that period so that there is no spreading of the costs or charges over time. There is no need for an Escrow account, because any failure of Getlink, or its shareholders, to fund operation, maintenance and renewal of the tunnel to a level which is safe would deprive it of revenues from shuttle and Europorte services¹¹. It should be noted though that any significant increase in renewals expenditure by Getlink could coincide with an increase in charges on HS1 following a OMRC periodic review which would have a disproportionate impact on Eurostar.

M6 Toll

- 4.31 The M6 Toll road, conceived as the Birmingham Northern Relief Road, is a private sector motorway around the north of the West Midlands conurbation. It was let as a 53-year concession to 2054 and awarded to Midland Expressway Limited¹². It opened a few weeks earlier than planned, in December 2003, with construction costs of £0.9 billion.
- 4.32 Unlike HS1, Manchester Metrolink and the Channel Tunnel, the M6 Toll sells capacity retail, direct to drivers and vehicle operators, rather than wholesale to one or more specialist operators of rail services. The concession agreement leaves the operator free to set prices, but it can only do so to the extent that individual customers are willing to pay¹³. There are therefore no issues of intergenerational fairness to consider, as the concessionaire is effectively incentivised to obtain the maximum revenue it can in the market from day to day.

M25

- 4.33 The M25 concession relates to the widening of the existing M25 to four lanes between junctions 16 and 23 and junctions 27 and 30, refurbishment of the Hatfield Tunnel, and

¹⁰ "The Concessionaires will be free to determine their tariffs and commercial policy and the type of service to be offered. In particular, laws relating to control of prices and tariffs shall not apply to the prices and tariffs of the Fixed Link." Concession Agreement.

¹¹ Getlink's 2017 revenue was just over €1 billion, 66% of it from shuttle services and 11.5% of it from Europorte services. Other users of the tunnel, dominated by Eurostar, contributed a further 32%.

¹² The link is currently branded M6toll.

¹³ Prices differ between weekday daytime, weekend daytime, and night, with a discount for using an electronic payment tag, but there is no option to buy a "season tickets" or multi-year access.

operation and maintenance of the M25 and the Dartford Crossing. The concession was awarded to the Connect Plus consortium in May 2009. Total construction costs for the new works were around £1.4 billion.

- 4.34 We understand that a Maintenance Reserve Account (MRA) was put in place at financial close and will be maintained for the life of the project debt. It is intended to cover 100% of first year, 66% of second year and 33% of third year maintenance costs, with provision for any (planned) spending of over £16 million on pavement in any one year.
- 4.35 The contract specifies that, when handed back at the end of the concession, the asset condition should be broadly no worse than at the beginning (as assessed by surveys carried out during the first two years of the concession). Handback is also on the basis that requirements for renewals and lane closures for the 15 years after handback will be no greater than those for the previous 15 years. This will be assessed six years before handback, and with provision for a reserve to cover any additional costs if these conditions are not met.
- 4.36 The M25 construction dates range from 1975 to 2014, a span of almost 40 years and, while the construction element of the concession was only £1.4 billion, the overall size of the asset portfolio is larger than that of HS1. The patterns of, and distinction between, maintenance and renewals on highway infrastructure are different from those of rail infrastructure. There are no issues of intergenerational fairness, as the concession output is “sold” to a single customer, the Highways Agency, throughout the life of the concession.

Coen Tunnel

- 4.37 The first Coen Tunnel in Amsterdam was built between 1961 and 1966 and is the oldest asset among the comparators. The DBFO concession, awarded in 2008, relates to the construction of a €500 million second tunnel, which opened in 2013, and operation and maintenance of both tunnels over a concession period to 2036.
- 4.38 There is a single customer for the tunnels, the Rijkswaterstaat. We have not been able to identify whether there is an after-period, or to gain sight of the concession documents.

South Europe Atlantic

- 4.39 South Europe Atlantic (SEA) is an extension of the French LGV (high speed line) network from Tours to Bordeaux, under a 50-year concession awarded from 2011 to 2061 to LISEA, with construction costing €6.2 billion and completed in 2017. The concession was let by RFF (Réseau Ferré de France), the national infrastructure manager and hence the French equivalent of Network Rail. The project was financed:
- 50% by the French State and local government; and
 - 50% by the concession-holder LISEA and SNCF Réseau, which has subsumed RFF.
- 4.40 Like HS1, the concessionaire is paid through access charges, specified in the original concession agreement, for the use of the infrastructure. These are broadly comparable to those for other French LGVs. It is unclear what the handback provisions are for SEA.
- 4.41 Concessionaire LISEA bears all design, construction and operations risks, including demand risk. Operators on the line include SNCF and, potentially, operators of open access services:
- Rights to operate international open access services have existed since 1 January 2007, through the Second Railway Package.

- Rights to operate domestic open access services, subject to measures to protect PSOs, will exist from 2 December 2019, through the Fourth Railway Package.

Denver Great Hall

- 4.42 Denver Great Hall, now under construction, is a project to create a new main concourse at Denver International Airport, the fifth largest airport in the United States. In 1996 the City and County of Denver, through its Department of Aviation, granted a concession to The Great Hall Partners, a consortium of Ferrovial (80%) and other parties. Construction costs are expected to be around £650 million.
- 4.43 The concession lasts for 34 years, including 30 years' operation from the scheduled opening date of 2021, after which the asset reverts to the Department of Aviation. During the operation period there will be an MRA covering 2½ years, required to cover 100%, 80%, 60%, 40% and 20% of projected maintenance requirements in each 6-month period. In practice, the costs of operations and maintenance are expected to be relatively small, and limited to the condition of the public circulation areas.

Thames Tideway

- 4.44 The Thames Tideway tunnel, now under construction, is a project to construct a 25-kilometre tunnel to capture, store and convey raw sewage that might otherwise overflow into the Thames. The concession was let in 2015 to Bazalgette Tunnel Limited (BTL), with construction now under way and due to be complete in 2023/4, at an estimated cost of £4.2 billion. Once complete, the assets will be transferred to Thames Water, regulated by Ofwat, but BTL will remain responsible for ensuring that the asset remains available throughout a 125-year operation period.
- 4.45 We understand that ongoing operation and maintenance costs have not yet been estimated. The scope for maintenance and renewal is limited, but there is provision for inspection on a ten-year cycle, followed by any maintenance found necessary.
- 4.46 BTL's revenue is determined by arrangements set out in its licence, granted by Ofwat:
- During the construction period, the primary revenue is a regulated return on the Company's Regulated Capital Value (RCV), effectively the value of construction to date. The allowed revenue for Thames Water, is billed to wastewater consumers to pass the revenue to BTL. BTL bears the risk of bills unpaid to Thames Water, but this risk is seen as low. However, payment of the revenue to BTL is deferred pending System Acceptance.
 - From completion to 2030, revenues are calculated as set out in BTL's licence.
 - From 2030 onwards, BTL is expected to be regulated through 5-yearly price controls.
- 4.47 In effect, the Thames Tideway concession appears to be a new regulated utility designed to keep most of the cost of the tunnel off the balance sheets of existing parties. One third of the cost is being contributed by Thames Water, with the remainder raised through private investors. The concession will supply sewerage services to a single customer, Thames Water, with the cost borne directly by retail consumers through a fee added to bills. These fees may begin to apply before opening, so that investors will benefit from an income from the start of the project.
- 4.48 The Board of BTL has approved a Schedule of Delegated Authority (SoDA) defining levels of authority for decisions related to funding and investment, contractual commitment and change, invoicing and payments, procurement, recruitment, treasury and the discharge of

consents. The SoDA authorises management to approve decisions up to specified limits, beyond which Board approval is required. The SoDA is reviewed each year (or by exception) by the Board. Certain decisions are also reserved to the shareholders.

Implications for HS1's Escrow arrangements

- 4.49 Although our review of comparators has covered a wide range of concession arrangements, we have not identified any contract that includes Escrow arrangements similar to those in place under the HS1 Concession Agreement that could serve as an example of good practice. This reflects the unusual, if not unique, nature of HS1 in terms of the contractual matrix defining its relationship with the owner and users of the assets as well as with the key supplier responsible for their maintenance and renewal. Nevertheless, the differences between the comparators and HS1 highlight a number of issues for the framework of relationships and incentives surrounding the Concession Agreement, all of which help to inform further consideration of the Escrow arrangements.
- 4.50 In particular, HS1's role as an asset steward selling network capacity to train service providers operating in a range of markets contrasts with that of the comparator operators:
- HS1 has limited incentives to provide for an efficient programme of renewals other than through the requirements of the Concession Agreement itself. By contrast, concession holders such as Getlink (holder of the Channel Tunnel concession), KeolisAmey (operator of Manchester Metrolink) and Midland Expressway (operator of the M6 toll) use the assets for which they are responsible to provide services to the public (and freight transport operators in the case of Getlink), although Getlink also provides capacity to train operators. Hence, there is more of a link between asset performance and income than for the HS1 concession. These concessions must manage renewals activity with a view to ensuring that the revenue generating services that they provide continue to operate reliably and in the knowledge that renewals costs are remunerated (at least in part) through passenger and freight customer revenues.
 - In cases where the asset steward also provides transport services or provides capacity to a single public-sector organisation (e.g. Highways England in the case of the M25 concession), there is no issue of intergenerational fairness. Where services are priced according to what the market will bear (e.g. taking account of competition from ferry services in the case of the Channel Tunnel, and the availability of road capacity nearby for which there is no charge for the M6 toll), there is no explicit consideration of how renewals costs should be distributed between different users over time. Alternatively, where there is a single public-sector purchaser of capacity, it is in a position to determine the distribution through the determination of the relevant payment (e.g. a shadow toll).
 - Patterns of required maintenance and renewals can vary considerably between different types of infrastructure, with the particular profile of renewals expenditure likely to arise on HS1 likely to reflect the scale of the network, the fact that it was constructed within a relatively short time period rather developed over several decades and the variety of traffic types using it. The ability to predict renewals expenditure may therefore be considerably less than in the case of, say, Manchester Metrolink, where some of the assets are 30 years old and the impact of the operation of a dedicated tram fleet better understood. Further, we would expect the profile of maintenance and renewal activity for a road to be even simpler to forecast given the range of experience and data available, making the parameters for operation of simple MRAs easier to determine. Furthermore,

most concessionaires are incentivised to have low charges in the early years to generate more customers and hence increase revenue.

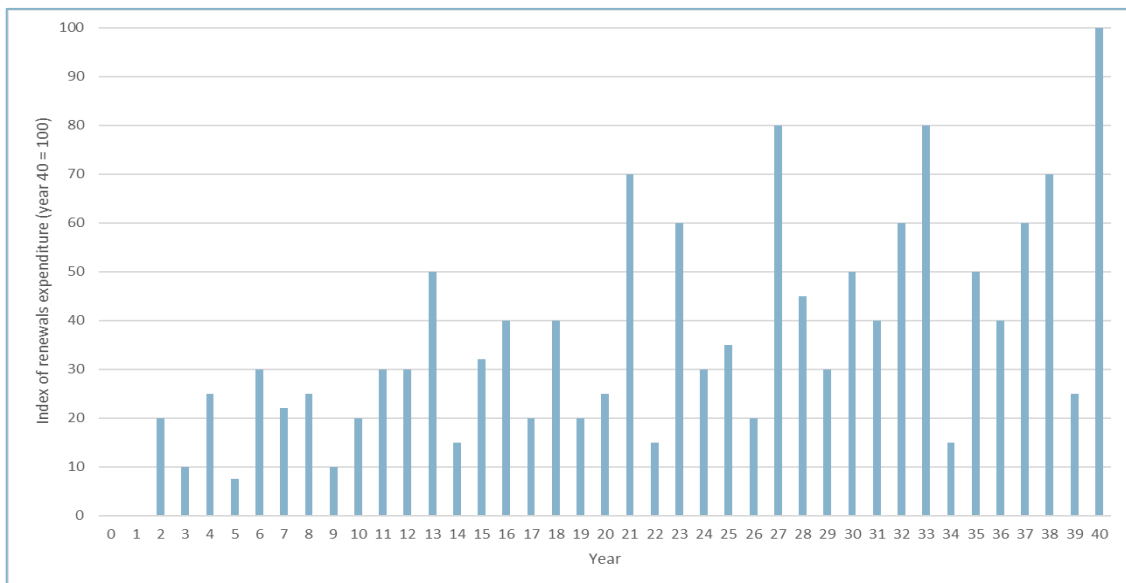
We consider these issues further in the discussion of our findings in Chapter 5.

5 Findings

Estimating the renewals profile

5.1 Efficient calibration of payments made to the Escrow account depends on the ability of HS1 and its key supplier, NR(HS), to correctly forecast the profile of renewals activity and associated renewals costs over a 40-year period. Based on our experience of advising on strategies for the efficient and effective stewardship of rail network assets, we would expect the level of renewals to follow a common profile, with a relatively low level of activity in the early years after the completion of the construction work and periodic spikes in activity as groups of assets require replacement. The level of renewals can be considerable around year 40, when a substantial proportion of track and signal assets become life-expired, as illustrated in Figure 5.1¹⁴. This is consistent with the cautious approach to projecting renewals taken by HS1 to date, as reflected in the limited planned renewals expenditure during both CP1 and CP2.

Figure 5.1: Illustration of annual renewals profile



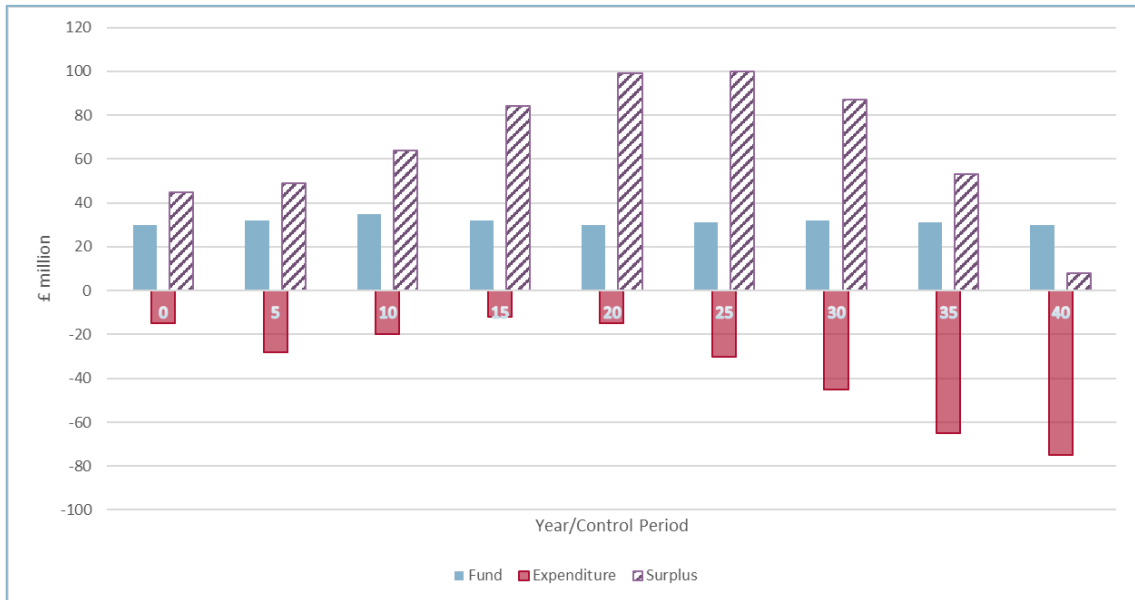
Source: Steer

5.2 Over the longer term (100 years or more), the renewals profile may become more stable and predictable as different groups of assets become life expired at different times and a ‘portfolio effect’ across different asset categories and vintages becomes established. However, given

¹⁴ Note that the figure is illustrative and is not intended to accurately represent the 40-year profile of renewals currently forecast for HS1, to which we have not access during this study.

HS1’s current position in the life cycle of its assets, Escrow payments must allow for significant variation in renewals expenditure from year to year and CP to CP, ideally anticipating expenditure with a view to matching the total available funding over a defined period (after allowing the accumulation of interest on available funds), as shown in Figure 5.2. Again, the values shown are illustrative and should not be taken as an indication of HS1’s expected level of renewals and funding over the next 40 years of the Concession.

Figure 5.2: Illustration of profile of renewals expenditure and matched funding over 40 years



Source: Steer

5.3

We note that in its response to ORR’s consultation exercise for the current review of HS1’s access charges, Eurostar indicated that it would expect HS1’s asset knowledge and hence its ability to forecast renewals to be greater than in previous CPs, allowing the level of payments to the Escrow account to be calibrated more accurately. However, we suggest that there is still likely to be significant uncertainty surrounding the annual level of renewals over the next five years and beyond for the following reasons:

- HS1’s asset history is relatively short, and the data available for estimating the relationship between network use and asset degradation limited. We note, for example, that HS1 does not have sufficient data to develop a tool for modelling asset wear and tear similar to the VTISM model used by Network Rail in estimating maintenance and renewals costs for the national rail network.
- Given the scale of HS1’s network and the fact that it was constructed relatively recently and over a short timescale (in comparison with the national network), renewals activity is likely to remain ‘lumpy’ for the foreseeable future. This is because a small, relatively new network cannot be expected to benefit from the portfolio effect described above to the same extent as a larger network developed over many decades (on which substantial expenditure in some areas will be balanced by small or even zero expenditure in others). A lumpy renewals profile will generally be more difficult to forecast than one in which the level of activity has stabilized at a broadly constant level, or at least increases and decreases only marginally, over time.
- Even where the overall level of renewals is reasonably predictable, unexpected asset degradation resulting in a need to change the profile of activity can occur. At one

extreme, this can arise as a result of a catastrophic event or series events, analogous to the unforeseen incidence of gauge corner cracking observed on the national rail network in 2000. However, it may be more limited, as in the case of the safety critical work on HS1's network brought forward to the current control period (see NR(HS)'s comments on risk allocation summarised in Table 3.1).

- 5.4 Against this background, it is important that the Escrow arrangements strike a balance between, on the one hand, providing the flexibility needed to accommodate unforeseen and necessary renewals activity and, on the other, underpinning a disciplined approach to planning and delivering renewals on the part of HS1 and its primary sub-contractor. We consider the effectiveness of the arrangements from this perspective in the following section.

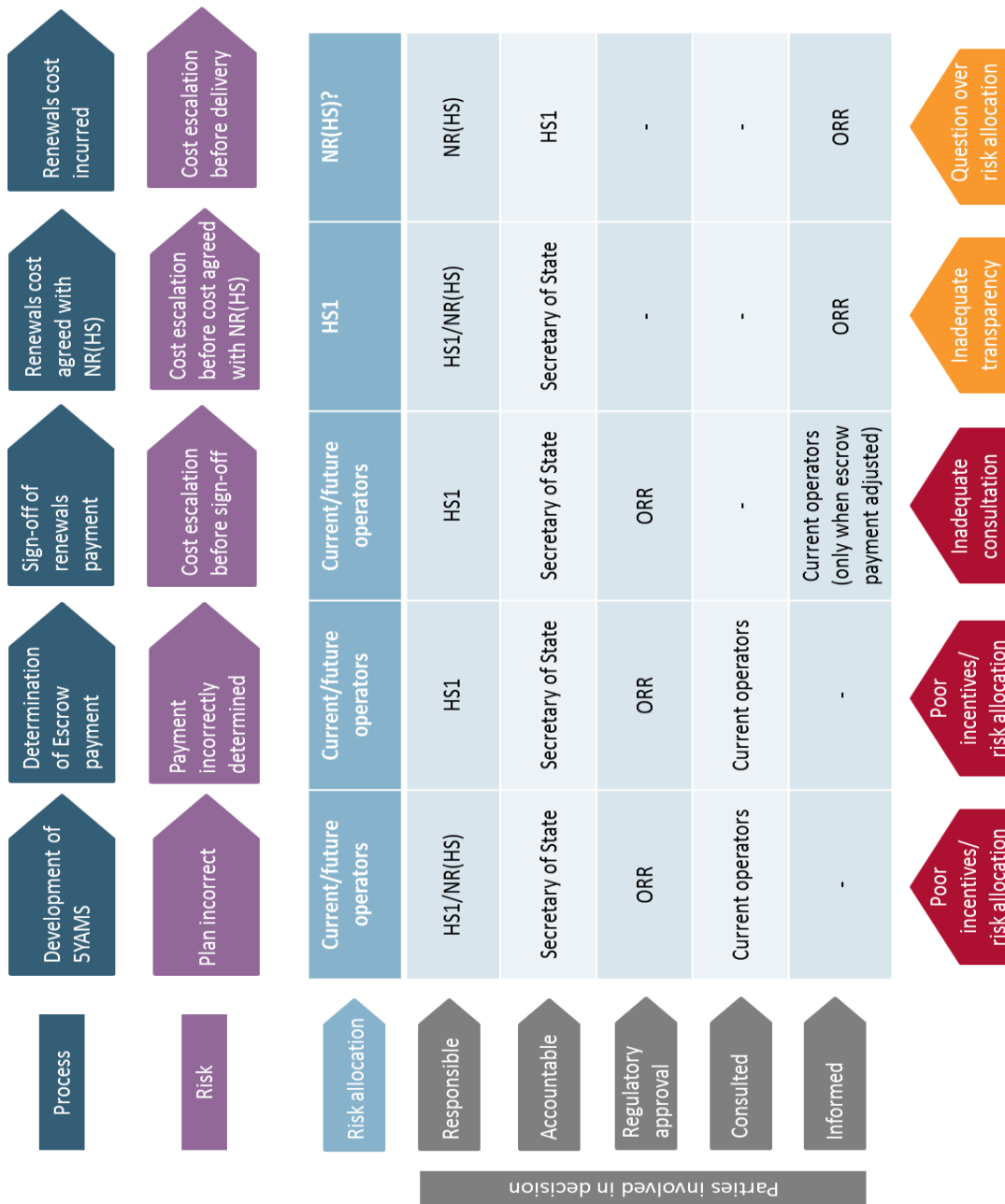
Allocation and management of risks

Planning and delivery of renewals

- 5.5 As discussed in Chapter 2, the Concession Agreement already allows for uncertainty in the level of renewals and departure from the forecasts developed by HS1 and NR(HS) during each periodic review. In particular, Schedule 10 (and Appendix 1 thereof, setting out the administrative arrangements for the Escrow account) permits additional expenditure, over and above that indicated by the 5YAMS, providing HS1 can demonstrate the case for incurring it to ORR. However, the scope for other stakeholders to review and challenge the need for additional cost is unclear, although we understand that more recently HS1 does hold regular quarterly as well as ad hoc meetings with train operators to discuss renewals plans and other issues.
- 5.6 As part of the current periodic review, ORR has already invited discussion of the effectiveness of the Escrow account and supporting administrative arrangements. In undertaking an initial review, it has highlighted the need to distinguish between risks arising at different stages in the process for planning and delivering renewals activity and agreeing the associated costs, notably:
- development of the 5YAMS, as required by the Concession Agreement;
 - calibration of the payments to the Escrow account to ensure that sufficient funds are available over the forthcoming CP and beyond (taking account of the potential to accumulate funds through investment);
 - the period between the determination of Escrow payments and the point at which the release of funding is signed off by the Secretary of State for Transport (SoS) under the terms of the Concession Agreement;
 - the period between the SoS approving the release of funds and HS1 and NR(HS) agreeing renewals costs; and
 - delivery of the renewals.
- 5.7 At each stage there is a risk of errors, unforeseen events or wider cost pressures that give rise to a risk of renewals costs exceeding expected levels. We have investigated whether the allocation of such risk is appropriate and whether it aligns with the role and participation of different parties in the decision-making process. Our approach is again based on the RACI analysis, previously described in Chapter 2, whereby we distinguish between parties that are Responsible, Accountable, Consulted and Informed, while taking account of the regulatory approval processes defined by the Concession Agreement. The results of this exercise are illustrated in Figure 5.3, which compares risk allocation with role/participation at each stage of the process for planning, funding and delivering renewals.

5.8 Note that the figure represents a considerable simplification of the different stages of the decision-making process as it relates to renewals. For example, we represent ‘sign-off’ of renewals payments from the Escrow account by the SoS as a single event, with the implication that each programme of work is sufficiently contained and well-defined to enable a simple, one-off approval of all related expenditure. However, we understand that in practice, it is often necessary to identify a series of programme elements and associated milestones, with each triggering further approvals as work progresses and the scope of specific activities and associated costs are crystallised. This reflects the complex way in which planning and delivery risks can arise and the associated challenges of the risk management process. It also suggests that the extent to which different parties are involved at different stages of the approvals process might vary, for example with operators engaged at some points but not at others.

Figure 5.3: Risks in the planning, funding and deliver of renewals



Source: Steer

- 5.9 While the figure is a simplification of real decision-making processes, it nevertheless highlights a number of concerns that go to the heart of the current risk allocation and Escrow arrangements that follow from it, and we discuss each of these in turn in the following paragraphs.

Incentives to plan and deliver an efficient profile of renewals

- 5.10 While there is a clearly defined regulatory process governing an increase in renewals costs arising from planning errors and/or errors in the calibration of Escrow payments, the allocation of this risk to current and future operators through a corresponding adjustment to the OMRC effectively reduces the incentive on HS1 to forecast renewals as accurately as possible. It also weakens DfT's incentive to challenge HS1 when approving the release of funds, notwithstanding that it is at least notionally accountable for the decision. Operators, while they are consulted on renewals plans during the periodic review, may or may not be in a position to challenge them effectively, depending on the information available to them and the level of engagement with them.
- 5.11 Note also that the risks arising from errors in planning may fall on future as well as, or even instead of, current operators. This can lead to an inter-generational misallocation of costs, since current operators have an incentive to see renewals expenditure postponed and may use their participation in the consultation exercise carried out by ORR during a periodic review to influence the profile of expenditure accordingly. Even where an operator such as Eurostar expects to operate over the long term, short-termism on the part of owners and managers, coupled with HS1's ability to pass on additional expenditure to operators in the future (who, by definition, cannot be consulted), may result in a sub-optimal outcome.
- 5.12 Perverse incentives of this kind can arise wherever the relationship between asset condition and asset performance is not sufficiently understood, such that performance requirements in a concession contract are not sufficient, on their own, to ensure that the assets are maintained and renewed appropriately, albeit HS1 have in place a performance regime with NR(HS) which mitigates this to some extent. In the case of HS1, the Concession Agreement sets out clear responsibilities in respect of asset stewardship (in particular in Section 1 of Schedule 10), but is silent on handback condition requirements and, more generally, on expectations for asset condition over the term of the contract. This is an important difference with some of the concessions discussed in Chapter 4, particularly those relating to major national infrastructure assets (e.g. the M25 concession), and other precedents of which we are aware¹⁵. During the consultation exercise for this study, DfT and NR(HS) suggested that there was a need for greater clarity on asset condition requirements, although HS1 considered that there was no need for further obligations in the Concession Agreement itself. It appears that the HS1 Concession Agreement has greater incentives to favour short term performance.

Efficiency and transparency of decision-making

- 5.13 Where cost increases arise after ORR's determination but before the release of funds is approved by the SoS, operators have less influence over the process, notwithstanding that additional costs incurred can be passed on through an adjustment to the OMRC. From our review of Schedule 10 and Appendix 1, it appears that there is no explicit requirement to

¹⁵ We note that the contracts underpinning the London Underground Public Private Partnerships included well-defined asset condition benchmarks for different categories of asset, and provisions for regular monitoring and reporting of condition over a 30-year term.

consult operators in these circumstances, although it is presumably open to ORR to seek their views before approving any change to funding. As already noted, HS1 holds regular quarterly meetings as well as ad hoc meetings with operators to discuss the planning and delivery of renewals work, and it has indicated to us that it is intending to involve them further in key strategic decisions affecting the volume of renewals activity (in particular, choices over the appropriate cost-performance trade-off).

- 5.14 However, we understand that operators are not present at meetings held to enable DfT to review proposals for renewals work prior to sign-off. Such meetings arise frequently, since DfT approval is required for each withdrawal of Escrow funds and, as already discussed, programmes of work may include various milestones, each triggering a separate requirement for funding. While it may not be appropriate for operators to be present at every DfT review meeting, there is a case for them attending key sessions in order to contribute to the debate over the cost of, and benefits from, the proposed work programme. This would allow DfT (and ORR) to test the need for, and cost of, renewals from the perspective of the principal users of the asset, making for more balanced decisions (for example, taking account of both the long term condition of the network and the shorter term operational considerations).
- 5.15 In addition, while we have not investigated the administrative arrangements supporting DfT's approvals role in detail, we question whether it is necessary for a DfT representative to review every variation to a renewals programme, regardless of its impact on funding requirements. In principle, DfT could be required to approve overall packages of work, allowing Escrow funds to be withdrawn as required as the activities progress. Under this approach, variations in funding could be subject to a defined threshold, with HS1 having delegated authority to access funds below the threshold to enable limited modifications to the programme. Similar mechanisms are frequently applied during the delivery of major engineering projects, as in the case of the SoDA arrangements governing funding and investment decisions during the construction and operation of the Thames Tideway tunnel (see paragraph 4.48).

Management of delivery risk

- 5.16 As shown in Figure 5.3, in principle HS1 takes the risk of any cost escalation arising after the SoS has approved the release of funds but before costs have been agreed with NR(HS). We question the extent to which this situation is likely to arise in practice, and suggest that it could be addressed by SoS requiring HS1 to obtain a firm bid from NR(HS) before releasing funds to reduce the incentive to NR (HS) to conservatively estimate costs. However, we recognise that events outside the control of both HS1 and NR(HS) could lead to the latter revising its view of the costs of a particular renewals project. Risk allocation is particularly unclear given that, regardless of the cause of the cost escalation, in HS1's view, it is possible to pass on any additional costs to operators, for example by initially agreeing a reduced scope of work with NR(HS) (within the ceiling defined by the release of funds) and including the overspend in a future application for funding. Similarly, although NR(HS) accepts delivery risk and the associated risk of costs exceeding the price bid for renewals work, there is a problem that if NR(HS) includes a contingency in pricing this work, then, as pointed out by the ORR¹⁶, this may not represent an efficient outcome. This suggests a need for greater transparency in the agreement of HS1's sub-contractor costs.

¹⁶ PR19 and financial risk: Exploring key issues, ORR presentation to HS1 and its stakeholders December 2017

- 5.17 In principle, the ORR could subject subcontractor costs to greater scrutiny with a view to ensuring that both HS1 and NR(HS) accept appropriate risk after the withdrawal of Escrow funds has been approved (and that the level of contingency included in NR(HS)'s costs properly reflects the risks identified). However, in practice undertaking greater investigation of subcontractor costs raises a number of concerns:
- It is not clear whether such scrutiny is permitted under the terms of the Concession Agreement. Clause 6.5 of Schedule 10 enables ORR to examine the case for variations in funding where the associated renewal and/or replacement work is not specified in the 5YAMS, but this does not appear to cover circumstances in which the scope of activity remains unchanged but costs rise for other reasons.
 - ORR does not have sufficient resources to undertake a full review of every transaction between HS1 and NR(HS), and this kind of detailed examination of HS1's subcontractor costs is anyway inconsistent with principles of good regulatory practice (requiring that regulators examine overall levels of efficiency rather than assessing the merits of a wide range of individual management decisions at a detailed level).
- 5.18 One approach that potentially addresses the second concern would be for ORR to request details of individual renewals projects, including associated costs and contracts, on a sample basis. Such a request would be in the nature of a random audit, analogous to the review of 'books and records and other supporting documentation relating to the Escrow Account' provided for under Clause 4 of Appendix 1 of Schedule 10. The scope for making such a request under the terms of the Concession Agreement would require further investigation, although it is possible that it could be justified under Clause 4 of Appendix 1 itself¹⁷.
- 5.19 NR(HS) has suggested that greater efficiency could be achieved by moving away from a fixed price approach to contracting for renewals, thereby allowing it to remove or reduce the contingency in costing the work. While it is for HS1 to determine the appropriate contractual arrangements for securing renewals work, we suggest that retaining a fixed price approach to maintenance while moving to a time and materials approach to renewals could give rise to perverse incentives. In particular, such an arrangement could encourage NR(HS) to change the balance between maintenance and renewals activity (in the expectation of greater financial reward for work under the renewals contract) in a way that may not be optimal. We therefore consider that the concerns relating to efficient management of delivery risk described in paragraph 5.16 should be addressed through greater regulatory scrutiny, albeit focused to minimise both the potential for intrusive regulation and the resource implications for ORR. It is worth noting that apart from ORR, other parties' interests in this area are predominantly short term.

Ensuring adequate accumulation of funds

- 5.20 The discussion of risk in the preceding paragraphs has focused on the potential for renewals costs to vary compared with levels forecast at the time of a periodic review. However, Escrow payments may also be miscalculated due to incorrect forecasts of the return on Authorised Investment (and hence of accumulation of funds in the Escrow account). As already noted in Chapter 2, returns on investment during previous CPs have been substantially below those originally anticipated, reflecting the level of interest rates available in the market in recent

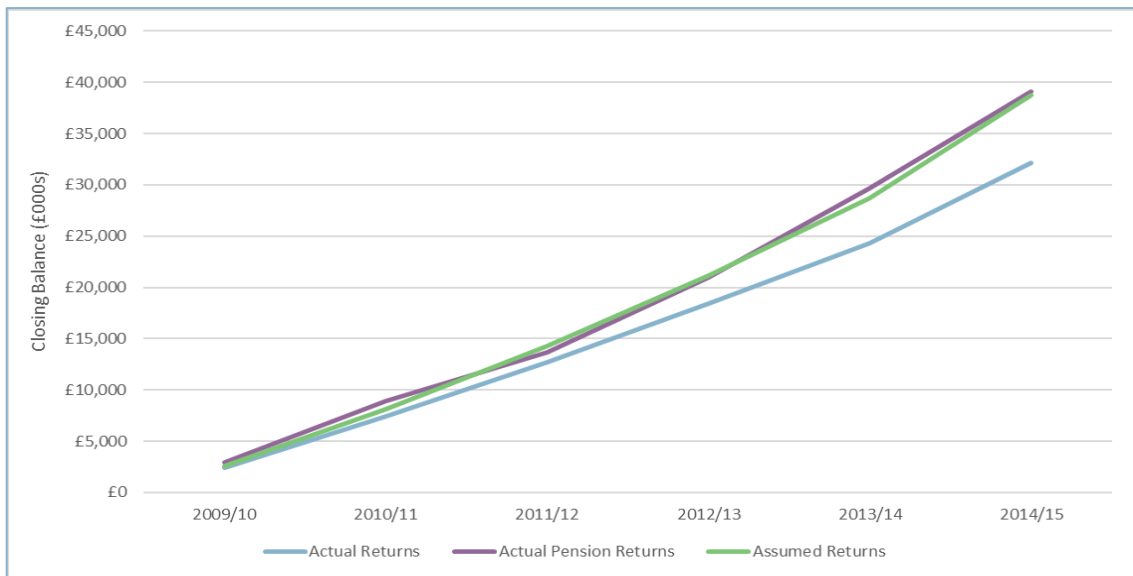
¹⁷ This would depend on the precise meaning given to 'books and records and other supporting documentation relating to the Escrow Account'.

years. This raises the question of whether the Escrow arrangements provide for sufficient flexibility to enable HS1 to manage Authorised Investment in a way that ensures maximum returns within an acceptable risk profile.

- 5.21 In Chapter 2, we outlined the terms in the Concession Agreement governing investment of funds in the Escrow account and noted that permitted investment is restricted to low risk assets such as bank deposit accounts and short term gilt-edged securities. The Concession Agreement also requires that investments are relatively liquid, allowing HS1 to access funds at short notice if required. Such constraints inevitably limit the returns available while ensuring that there is little or no possibility of an erosion of funds due to inappropriate investment in risky assets.
- 5.22 In our view, the management of the Escrow account can be usefully compared with the management of a defined benefit pension fund, since the latter shares a number of the same characteristics. In particular:
- it involves investment over the long term with a view to funding liabilities at different points in the future through a drawdown of the fund;
 - it requires careful forecasting of liabilities, based on factors that are open to investigation (e.g. the age profile and life expectancies of beneficiaries, which are analogous to the condition and life expectancy of assets), notwithstanding some uncertainty surrounding both the extent of the liabilities and the level of accumulated funds at any point in time;
 - parties responsible for the administration of the fund (trustees and fund managers) are required to maximise returns within a framework designed to discourage or prevent excessive risk-taking; and
 - there is a similar need for transparency and accountability in the decision-making process and an explicit regulatory framework (albeit of a more general kind than in the case of the HS1 Escrow arrangements).
- 5.23 We have therefore investigated the implications of replacing the specific constraints on investment in the Concession Agreement with more general obligations analogous to those under which managers of defined benefit pension funds operate. In principle, this could allow funds in the Escrow account to achieve at least moderately higher returns than under the current provisions. Figure 5.4 shows the accumulating balance of the account (including payments in and interest earned) under different assumptions about the rate of return available, more specifically:
- assuming the returns actually obtained during CP1;
 - assuming the returns originally forecast during CP1; and
 - assuming the returns that would have been earned if Escrow funds had been invested in a portfolio of assets similar to that represented by a typical pension fund¹⁸.
- 5.24 The figure suggests that had HS1 made Authorised Investments in line with the asset portfolio of the typical pension, the returns achieved would have been similar to those forecast and substantially above those actually observed.

¹⁸ The Financial Conduct Authority (FCA) has defined a typical portfolio for the purposes of preparing projections of rates of return. This is based on the following asset shares within the portfolio: 60% equities, 20% government bonds, 10% corporate bonds, 7% property and 3% cash and money markets. The resulting rate of return is projected to be 7.41%. See 'Rates of return for FCA prescribed projections', FCA September 2017.

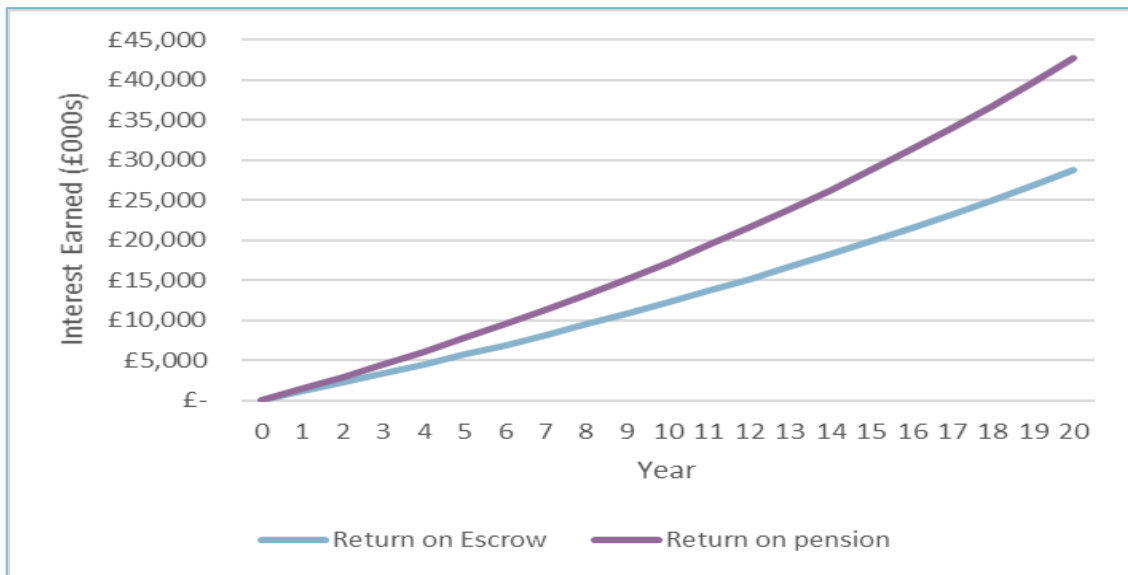
Figure 5.4: Historic returns earned on Escrow funds compared to pension fund returns and forecasts



Source: Steer, based on HS1 5YAMS and returns achieved by FCA typical pension portfolio

5.25 In Figure 5.5, we have extended this analysis by comparing the projected growth of Escrow funds in line with the assumption indicated in the 5YAMS¹⁹ with those implied by current market estimates of pension fund growth²⁰. As indicated, over a 20-year period the additional accumulation of funds in the Escrow account under an investment strategy similar to that employed by many pension funds would exceed £10 million.

Figure 5.5: Potential future returns earned on Escrow funds relative returns available to pension funds



Source: Steer, based on HS1 5YAMS and Monevator projection of average pension fund returns

¹⁹ 3.73%, as indicated in <https://highspeed1.co.uk/media/1915/hs1-ltd-five-year-asset-management-statement.pdf>

²⁰ 5%, as indicated in <http://monevator.com/pension-fund-returns/>

5.26 Introducing a change to HS1’s approach to investment of this kind would require changes to the Concession Agreement which, as already discussed, prescribes the assets in which funds may be invested. In our view, HS1 should be afforded greater flexibility, similar to that afforded to pension fund trustees and managers, with the Concession Agreement setting out obligations (supplemented by guidance) relating to Authorised Investment. These could draw on principles defined in legislation and guidance relating to defined benefit pension schemes, as summarised in Table 5.1.

Table 5.1: Principles governing pension fund investment

Principle	Application to defined benefit pensions
Governance	<ul style="list-style-type: none"> Define the role of the trustee board Work with investment advisers Work collaboratively with the relevant employer Establish a statement of investment principles (SIP) Establish an investment governance structure (with defined roles for different parties) Monitor the effectiveness of governance arrangements Establish stewardship policies (e.g. in relation to voting rights associated with assets held)
Investment to enable funding	<ul style="list-style-type: none"> Define investment beliefs (e.g. principles of risk taking and reward, views on impact of climate change) Establish factors to be taken into account in investment decisions (e.g. factors affecting financial performance as well as social or ethical issues) Set the investment strategy Assess the expected evolution of asset allocations and risk mitigations through ‘journey planning’ Understand different investment risks Use models to determine investment strategy
Matching assets	<ul style="list-style-type: none"> Use matching assets (e.g. identify assets that generate cash flows that coincide in timing and amount with expected outflows) Ensure assets are appropriately diversified Seek to ensure liability-driven investment
Growth assets	<ul style="list-style-type: none"> Include ‘return seeking investments’ in the asset portfolio Establish multi-asset funds
Implementing an investment strategy	<ul style="list-style-type: none"> Consider how the investment strategy can be most effectively implemented Identify operational risks arising from the management of the fund and consider how to mitigate them Undertake operational due diligence to understand risks and how to mitigate them Prepare and review fund documentation
Monitoring investments	<ul style="list-style-type: none"> Monitor performance against requirement and present results in a clear and transparent way

Source: Steer, based on adaptation of “Investment guidance for defined benefit pension schemes”, March 2017, published by the Pensions Regulator

5.27 In practice, adopting all of the elements of the investment guidance applying to pension schemes may be considered excessive, resulting in an administrative burden for HS1 that is disproportionate to the value of the Escrow funds. There is also a risk that this approach could increase the regulatory burden, giving rise to the need for additional scrutiny from ORR. Implementation of an approach allowing greater flexibility in the management of Authorised Investment would therefore required a balanced assessment of the costs and benefits, with the guidance to pension fund investors suitably adapted to reflect the role of the Escrow arrangements within the wider process for planning, funding and delivering renewals.

6 Recommendations

Overview

- 6.1 In our view, some aspects of financial risk are not allocated to those best placed to manage it and there is not enough clarity over who does take financial risk. It is difficult to fully address a number of the issues discussed in the previous chapter without modifying the allocation of risk prevailing under the current Concession Agreement. Given the relative bureaucracy of the process, lack of clarity on the handback condition and the restrictions on where investments can be held, it is difficult to fully reflect the issues with planning and charging for investment in a long-term infrastructure company.
- 6.2 While we recognise HS1's concern that the allocation cannot be changed without adversely affecting its investors (who acquired the asset in good faith and based on an understanding of the current terms), we nevertheless consider that appropriate changes should be considered with a view to implementing them over the long term. In the meantime, the effects of misallocation can be largely mitigated by measures to improve transparency and the involvement of train operators in key decision-making processes. The lack of transparency / high level approach to a number of areas of the Concession Agreement might have been appropriate in the early years; however, as time moves on it has become problematic.
- 6.3 We make a number of specific recommendations relating to our findings in the following paragraphs.

Key recommendations

Planning and delivering an efficient profile of renewals

- 6.4 In view of the concerns relating to weak incentives to implement an efficient quantum (and to a lesser extent, the profile) of renewals activity and the related issue of potential short-termism on the part of both the HS1 concession and train operators, we propose that discussions on handback condition requirements and intermediate asset condition benchmarks should be initiated. Ideally, these should be included in the Concession Agreement, but could otherwise be provided in the form of guidance to be applied by HS1 and NR(HS) in preparing the 5YAMS as well as in planning and delivering renewals within a CP. The benchmarks could also inform discussions preceding DfT approvals of expenditure on individual renewals projects and programmes. This is likely to impact the level of funding that goes into the Escrow account.
- 6.5 The development of appropriate requirements and benchmarks should draw on relevant asset engineering capability within both organisations and be subject to critical review by independent experts. This would build on the work that HS1 has done to date on getting a better understanding through its asset management plans.

Efficiency and transparency of decision making

- 6.6 To encourage greater transparency and ensure that discussions surrounding proposals for renewals activity are better informed, we recommend that train operator representatives are present at key meetings preceding DfT’s formal approval of withdrawals from the Escrow Account. DfT and HS1 should exercise judgement in deciding whether operator attendance would be beneficial in a particular case, taking guidance from ORR and building on the sharing of the AMAS to users by HS1. ORR’s view is that it is important for operators to see the AMAS before the start of the year (ideally in December of the preceding year) in time for HS1 to make any necessary amendments.
- 6.7 At the same time, we suggest that consideration be given to establishing a framework of delegated authority for approving renewals activity and the associated withdrawal of Escrow Funds, based on clearly defined thresholds. This would enable the approvals process to operate more efficiently.

Management of delivery risk

- 6.8 As identified in Chapters 2 and 3, there is an underlying concern whether the allocation of risk is optimum, particularly in setting the right incentives to keep costs down or reduce the risk of significant increases in the future to cover asset renewal uncertainties. We set out that operators are unlikely to be best placed to cover any planning risks around costs nor are they best placed to challenge HS1 and / or NR (HS) estimates on future costs. While we suggest this should be reviewed, we recognise that any changes would likely need to be agreed by the parties to the HS1 Concession Agreement so will need a clear demonstration of both the impact of the current risk arrangements and benefits of any proposed change. It is worth noting that some of the changes in risk allocation may have an impact on the IRC which was not part of the scope of the work we have undertaken.
- 6.9 Notwithstanding this, to ensure greater confidence in the management of cost risk following SoS approval of withdrawals, we recommend that ORR undertakes targeted reviews of particular renewals projects and programmes at short notice and on a sample basis. The frequency of such reviews would be for ORR to determine, taking account of the costs at risk at any given time and the resources available to undertake the work. However, they should be sufficiently frequent to ensure that HS1 and NR(HS) recognise the potential for review as real.

Ensuring adequate accumulation of funds

- 6.10 As discussed in Chapter 5, we consider that the provisions in the Concession Agreement limiting the range of assets in which HS1 is permitted to make Authorised Investments are too restrictive, and that HS1 should have greater flexibility to seek higher returns within an envelope of acceptable risk. We therefore propose that these provisions are replaced with general obligations, analogous to the legal requirements governing the activities of the trustees and managers of defined benefit pension funds. These should be supplemented with guidance based on a suitable adaptation of that published by the Pensions Regulator.

A Stakeholder Meeting Notes

To Stuart Nicholls
Cc Dick Dunmore
From Daniela Phillips
Date 06 July 2018
Project Study of HS1 Escrow Arrangements

Meeting note

Project No. 23336101

DfT interview

1. We assume that the role of the arrangements is (broadly):

- To make sure that DfT gets an asset back in good condition
- To ensure that money paid for renewals is not used elsewhere

Have we missed anything?

- DfT confirmed that their role is to ensure the asset is maintained and handed back in good condition and that the funds are not misused.
- DfT explained that they currently underwrite the HS1 charges for the Southeastern franchise, but this is likely to change in the next franchise competition.

2. Are you aware of any other Escrow arrangements elsewhere in the rail industry or have you had an experience with them? If so, do you have any comments on the approach adopted by HS1 and the alternatives?

- DfT are not aware of any other Escrow arrangements but explained that a small number of operator franchises (with FRI station leases) pay a percentage of their revenue into station maintenance accounts which is signed off by DfT. However, these 'Escrows' last only until the end of the franchise.

3. The restriction on the investment period constrains returns? Could HS1 take greater risks? What is the materiality associated with any restriction? How is this expected to change over time?

- DfT recognised that investment is an issue for HS1 and know they are keen to loosen the constraints. DfT explained that they are open to widening the options for investment as long as HS1's credit rating is maintained as part of a wider assessment.

4. What is the workload at DfT in managing HS1?

- DfT usually has one full time person managing HS1 but this has increased to 1.5 for the next control period (CP) review. Work typically involves managing the monthly station Escrow process, attending meetings and releasing funds on an ad hoc basis for projects.
- The station meetings are monthly, whereas route meetings are quarterly, but the process is the same for both: HS1 lay out the plans for the project they want to deliver; prices and charges are determined and approved each year through procurement; ORR (route) and DfT (stations) scrutinise the project milestones and spend; and DfT are the signatory to release the funds from the Escrow (with ORR providing a recommendation to DfT for route expenditure).
- DfT explained that there are change mechanisms in place if work is more expensive than envisaged. Network Rail (HS) tells HS1 the cost and DfT will release the funds. Other projects may be underspending which means there is not such a big difference across the portfolio. Ultimately, if Network Rail (HS) finds the costs are higher than expected, DfT still has to release the funds.

5. Do the Escrow arrangements create any specific workload, constraints or delays?

- DfT confirmed that if something was safety critical and needed doing, other things could be deferred to the next CP.
 - HS1 have started procurement for an innovation system that is larger than the budget. DfT explained that there is an option to draw down from authorised investments to ensure delivery in the short term. This is a risk in the long term and DfT have asked for more transparency in CP3 of what the short- and long-term consequences for investments.
6. Would you welcome clarity of what condition HS1 should hand the concession back in?
- DfT would welcome clarity and a specification of what that might look like.
7. Do you think the 40-year concession period is the correct length?
- DfT is open to exploring a rolling contract to avoid the concessionaire looking only at the short term.
8. Do you consider that there are other issues that we should take into account?
- DfT explained that the payments into the Escrow for CP3 have been adjusted to reduce the gap that has been identified. It is anticipated that new technologies and efficiencies will reduce costs in maintenance but this won't be known until the end of CP3.
 - DfT believes the concession agreement works and provides an understandable mechanism. Something could be done to improve the transparency, particularly in the decision-making process. DfT suggested inviting TOCs to meetings or sharing minutes/actions so that they have more assurance that ORR and DfT are holding HS1 to account.
9. What levers did DfT have to pull if it thought that the Escrow account was going to be empty?
- DfT reported that the operators didn't like the CP1 (based on crude assumptions) to CP2 (based on emerging knowledge) jump, so the step was made smaller which resulted in a hole being created. If the money ran out, options include:
 - Defer other work (which has been done between CP2 and CP3)
 - Draw down an Authorised Investment (which presumes that some have been made, and which would create a longer term hole)
 - The model partly on an assumption that technology will reduce the cost of renewals, but in the end, this is difficult to forecast. Similarly, with the end state. It is hard to be sure that "40 years" is the right period, but something had to be decided when the Concession Agreement was written.
 - DfT reported that an increase in operators on the network would be good as costs rise more slowly than traffic which would mean reduced average costs to all.

To Geoff Jones
Cc Michael Colella
From Daniela Phillips
Date 05 July 2018
Project Study of HS1 Escrow Arrangements

Meeting Note

Project No. 23336101

HS1 questions

1. In your PR19 consultation response to ORR you discuss two areas that are critical to shareholders (allocation of risk and indexing OMRC to inflation) what would be the consequences if this was reviewed?
 - HS1 explained that shareholders have less risk if OMRC is indexed to CPI inflation than if RPI inflation was retained. If the IRC charge was to change, the impact would have a significant impact on shareholder value.
2. You mention presenting 'strategic choices' to operators on cost differences and service offerings – what would this involve?
 - HS1 have yet to develop what this might mean in practice but choices are likely to be around whether a fall in performance (currently around 10 seconds) would be worth the financial gain and not in the area of the Escrow. Stakeholder consultation has indicated that performance is more importance. In the longer term, decisions around introducing ERTMS or new station development could utilise this approach as used in other infrastructure providers such as airports.
3. Would you find it useful to have guidance on what state the concession needs to be returned in?
 - HS1 are comfortable with the level of information in the concession agreement surrounding their role at present.
 - HS1 explained that there is an opportunity to market test their renewal agreement with Network Rail (HS) and this option was explored in 2012. HS1 decided to keep the contract with Network Rail (HS) with a cost reduction and an agreement there wouldn't be another market test for 10 years. HS1 must give three years notice for termination of the contract which suggests that this could be reconsidered in 2022.
4. You mention that you have devised ways to better involve operators in key decisions – what ways have you involved them?
 - HS1 meet with Southeastern and Eurostar treasury teams every quarter in the investment group which has been running for two to three years. In this, and other forums, HS1 have shared the documents for PR14 and CP2, the AMS document and documents on station communication system renewals.
5. Is the 40 year timescale for the concession correct in your opinion?
 - HS1 believes the concession agreement length is about right.
6. Does the guaranteed domestic service have an impact on investment decisions?

- Although Southeastern brings in two thirds of HS1's revenue this does not have much of an impact on investment decisions.
7. What would be the impact to HS1 of reducing the amount going into Escrow on basis that if renewal costs increase in the future, HS1 appear to be protected as the increased costs will pass onto the operators/users?
- HS1 do not believe there would be any real impact.
8. Are you aware of any other Escrow arrangements elsewhere in the rail industry or have you had an experience with them? If so, do you have any comments on the approach adopted by HS1 and the alternatives?
- HS1 were not aware of any other Escrow arrangements though will provide contact details from the French LISEA consortium.
9. Do you think that the restriction on the investment period constrains returns?
- HS1 believes the restrictions in the concession agreement constrains investment significantly. They would prefer to see a mechanistic process where there is clear identification of who makes the decisions. HS1 does not believe it is appropriate for them to make decisions in terms of risk and reward.
 - HS1 highlighted that the investment restrictions generally do not have an impact on their thinking.
10. What are the arrangements for permitting investments in other things, and what things?
- HS1 explained how they also have a role in commercial activity which are outside the regulated income generated by rail infrastructure related charges. Income that is classified as Dual Till and outside regulation includes such activities as retail, advertising and car parking. Although a lot of these are joint ventures (for example London & Continental Railway or Ebbsfleet Development Corporation), the amount gained from these investments is not insignificant.
11. Do you consider that there are other issues that we should take into account?
- HS1 would find value in having the current Escrow arrangements and its purpose set out in a transparent document. They would welcome recommendations on possible changes to processes and behaviours.
 - HS1 agreed it would be useful to compare what interest rates a pension fund would generate.

To Anthony Barnes
Cc Dick Dunmore
From Daniela Phillips
Date 06 July 2018
Project Study of HS1 Escrow Arrangements

Meeting Note

Project No. 23336101

Network Rail (HS) questions

1. What is your role in the Escrow arrangements, and how do they affect you?
 - Network Rail (HS) is a subsidiary of Network Rail Infrastructure Limited and employs around 450 people. In some respects it is like a Network Rail route, but has a much smaller network. Network Rail Infrastructure Ltd is also an adjacent infrastructure manager and supplier of Network Rail (HS). ORR's regulatory mechanisms are designed to ensure that there is no cross-subsidy between Network Rail (HS) and the Routes, or vice versa.
 - Network Rail (HS) doesn't have a direct relationship with the Escrow, they have a commercial arrangement with HS1. However, Network Rail (HS) are aware of the checks and balances in place to facilitate payment for any renewals.
 - Operations and Maintenance (O&M) work is carried out by Network Rail (HS) and is covered by the control period (CP) funding arrangements for a fixed price based on ORR's determination of what is efficient. Renewals are more complex and each project and stage is approved on an emerging basis and often subject to challenge by HS1.
 - Network Rail (HS) makes it clear that they have a duty under their safety authorisation to carry out safety critical work but that there is a risk that HS1 might not pay if the work wasn't in the CP plan.
 - Many early S&T renewals are driven by obsolescence, where parts or spares are no longer available. Track and catenary renewals are planned for future control periods. There has been no rerailing yet, albeit short lengths have been replaced to remove rail defects
 - Comparing Network Rail with Network Rail (HS):
 - Network Rail (Infrastructure) Ltd has a longer term work bank which they can accelerate or defer based on priorities without reference to stakeholders.
 - The Escrow process is not good for works which straddle CPs, such as where work originally considered for CP3 was brought forward to CP2 on safety grounds at only 8 weeks' notice. ORR did not have an opportunity to approve in advance, so Network Rail (HS)+HS1 did the work at risk.
2. Do payments from the Escrow all come to Network Rail (HS), or do some go direct to contractors?
 - Network Rail (HS) do not routinely use labour only sub-contractors per se. Occasionally for renewals work they will contract specialists from the supply chain. All payments from HS1 Ltd are paid to NR (HS) in the first instance. NR (HS) noted that non-payment would be a problem as HS1 have a pay when paid approach, despite this being non- contractual – this transfers further risk to NR (HS).
3. What happened at the end of CP1 which resulted in a need to increase Escrow payments?
 - Three issues:
 - The assumed interest rates of (informally advised of) 7+% were based on the concession sellers financial modelling, rather than experience in the market.
 - The entire work bank was not adequately covered.

- 40 year Estimates were based on non NR engineering judgement /manufacturers recommendations about asset lives and frequencies, rather condition-based estimates.
 - Network Rail (HS) are removed from decisions regarding Escrow payments. In regard to the 40-year work bank, they were responsible for pricing the first five years and HS1 is responsible for estimating the next 35 years.
 - Network Rail (HS) believes that assumptions could have been made that were done in isolation of engineering knowledge and experience of HS1
4. Has the Specific Upgrades process been used, and how did it work?
- Network Rail (HS) has not used the process and believes it requires clarification, in particular how a modern equivalent asset (MEA) is treated as renewal and/or enhancement.
 - The process may have been used for GSM(R) in CP2
 - It might be needed if, for example, someone wanted regenerative braking.
5. Are there any lessons from REBS (Eurostar takes part) for HS1?
- Anthony was not aware of REBS. This is not something that is on Network Rail (HS)'s radar. There are performance mechanisms for operation and maintenance (50/50 outperformance share with HS1 and operators from year 3 CP2) but nothing for renewals.
6. Are you satisfied with the arrangements for developing the five-year renewal plan?
- Network Rail (HS) find the incremental approach to renewals not ideal and that the five-year work banks, approved on both a project and stage create uncertainty and as such long term planning resources, plant and access is inefficient.
7. Given the constraints of the Concession Agreement, what are your views on the allocation of risk between Network Rail (HS) and HS1 Ltd?
- Network Rail (HS) recognise that they hold the (O&M) risk in terms of cost, safety and train performance and that the operators hold the risk in terms of renewals.
 - As a supplier, they are carrying out projects at fixed price which could lead to inefficiencies (risk and contingencies built into the cost). Sometimes this is appropriate, but having the flexibility to not always carry out work on a fixed price basis could mean a more sophisticated and collaborative approach to the market.
 - Network Rail (HS) explained that unplanned renewals work can offer risks. Eurostar services cover a lot of non UK track kilometres which has a greater consequence if there is an inbound delay and work has to be cancelled.
8. What happens at the end of the Concession. Has this been thought through?
- Network Rail (HS) believes clarity on the handback condition would be beneficial
9. Are you aware of any other Escrow arrangements elsewhere in the rail industry or have you had an experience with them? If so, do you have any comments on the approach adopted by HS1 and the alternatives?
- Network Rail (HS) are not aware of any other Escrow arrangements.
10. Are there other issues that we should take into account?
- Network Rail (HS) have calculated that the work bank for CP3 will be approximately £150 million which is more than is currently in the Escrow. They recognise that this should be challenged and scrutinised but that the work bank covers work needed for safety and performance.

- There have been assumptions made by a HS1 consultant on the level of productivity and plant use in the future control period renewals. Network Rail (HS) is concerned that this could be a risk to Escrow payments if these levels of performance are not achieved. It could also mean that Network Rail (HS)'s submission on CP4 costs will be compared to optimum productivity figures not currently achieved in the UK
- NR (HS) liaises with SNCF and Infrasppeed (in the Netherlands), who have similar assets (HSL-Zuid is about the size of HS1).
- Network Rail(HS) is exposed to volume risk if additional train services are added.

Control Information

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