Stewart Review

Major Transport Projects Governance and Assurance Review:

The HS2 Experience

Published: 18 June 2025

Author: James Stewart

1. Contents

2. Chair's Foreword 3

3. Navigating this Review 5

4. Executive Summary 6

- 4.1 Findings 7
- 4.2 Recommendations 12

5. Governance 16

6. Assurance 49

7. Cost, Schedule and Benefits 61

8. Capability and Culture 82

9. Main Works Civils Contracts (MWCCs) 96

10. Euston 96

11. Wider Lessons Learnt 102

12. Appendices 118

- 12.1 Appendix A: Collated Recommendations 118
- 12.2 Appendix B: Key Terminology 124
- 12.3 Appendix C: Evidence Base 127
- 12.4 Appendix D: Phase One MWCCs Diagram 129
- 12.5 Appendix E: My Review's Terms of Reference 130

2. Chair's Foreword

In September 2024, the Secretary of State for Transport asked me to conduct an independent review into how the Department for Transport (DfT) governs and assures delivery of its major projects, with a particular focus on High Speed 2 (HS2). The Terms of Reference for the Review are set out in Appendix E.

In summary I was asked to cover:

- Effectiveness of HS2 Ltd's corporate governance
- Effectiveness of DfT's governance, sponsorship, and oversight
- The wider Government system in which HS2 operates
- The effectiveness of the assurance programme
- The effectiveness of the cost, schedule, and benefits forecasting
- Capability and culture
- The Main Works Civils Contracts (MWCCs) and
- Euston

I was also asked to make recommendations on wider lessons for other major projects. The majority of my Review covers the period since Notice to Proceed in 2020. I have had to go back further for my review of the MWCCs. This Review does not and was not intended to comment on the scope of the HS2 Programme.

I have had great support from the Department for Transport (DfT) client team for this Review, the HS2 Ltd nominated support team, and a review team made up of individuals from Arup, Agilia Infrastructure Partners, Gardiner & Theobald, and VA Rail. It has also been my privilege to talk to numerous brilliant people, many of whom know much more than me about the subjects I have been asked to cover. These have included people involved in HS2 both currently and in the past, and people from major programmes where there are useful comparisons to draw. I thank them all for their insights, time, and open and honest conversations in helping me get to

grips with a project as far reaching and complex as HS2. A summary of the organisations that I have spoken to is included in Appendix C.

The findings, conclusions and recommendations are all my own and should be treated as such. They are based on the information and evidence that has been made available to me during the course of this Review and my own personal experience in the major infrastructure projects market. Time has been at a premium and the scope of this Review has been daunting at times. I have sought to offer solutions (for example amendments to governance) alongside recommendations but inevitably in some areas I have had to highlight issues for further consideration. Any errors or omissions in this Review are all my own.

James Stewart
January 2025

3. Navigating this Review

3.1 Structure

This Review has four parts:

1. Executive Summary sets out my summary findings and recommendations.
2. Governance; Assurance; Cost, Schedule and Benefits; Capability and Culture; MWCCs; and Euston are sections of the Review where I summarise my Findings (F) and provide future Recommendations (R). These are numbered to allow the Programme to incorporate and synthesise recommendations with existing activity and other reviews in progress.
3. Wider Lessons Learnt sets out some wider lessons learnt drawn from my review of HS2 and my other experience that I believe would be of benefit to other major projects in both transport and other sectors.
4. Appendices include Collated Recommendations (A), key Acronyms and Glossary (B), my Evidence Base (C), Phase One MWCCs Diagram (D), and my Review's Terms of Reference (E).

3.2 Context

The HS2 Programme (HS2, the Programme) aimed to construct a new high-speed, high-capacity railway between London, Leeds and Manchester, via the West Midlands. In October 2023, the Government announced decisions to complete Phase 1 (London to the West Midlands) and cancel the remaining sections of Phase 2 and HS2 East. The Secretary of State for the Department of Transport (DfT) has the role of funder, shareholder and sponsor for the Programme[1]. High Speed Two Limited (HS2 Ltd) is an Arm's Length Body (ALB) of the DfT, responsible for the delivery of the Programme and the operational railway.

[1] HS2 Development Agreement, 2022

4. Executive Summary

In the late 2000s, the UK set out to deliver a high-speed rail project of a size and scale that had not been done before. The ambition was to build the best and fastest high-speed railway in the world, connecting first London and the North of England and then subsequently Scotland with increased capacity being at the heart of the vision.

Unfortunately, the HS2 Programme has failed to deliver on this original vision with the current scope now restricted to building the line from Euston to the West Midlands. The cancellation of Phase 2 and HS2 East confirmed the end of the original vision of the Programme but was preceded by other descoping.

There is no single explanation for the failings of the HS2 Programme. External disruptors (Brexit, the war in Ukraine, Covid-19 and a high inflationary period) have undoubtedly had an impact, but fundamentally a combination of the Government, DfT as Sponsor and Shareholder, HS2 Ltd as the delivery entity, and the private sector supply chain have failed to be able to deliver a project of the original scale and size of HS2.

We must learn the lessons from HS2 and make changes if the UK is going to deliver the programme of infrastructure that the Government has in its plans.

Below I have set out my principal findings and a summary of my key recommendations. Within the main document I have set out further findings and recommendations which relate to the individual areas of the scope of the Review: governance, assurance, cost, schedule & benefits, capability and culture, the Main Works Civils Contracts and Euston. The last section covers wider lessons for the delivery of major infrastructure projects.

4.1 Findings

1. Politics and the pace of political decision-making have been a disruptor and there has been no buffer.

Any project of this size and scale delivered across multiple decades is going to be impacted by politics. When I looked at comparator projects – Tideway, Sizewell C, even Crossrail – there was a buffer to the politics, either with external shareholders, regulators or joint sponsors. The HS2 Programme has had no such buffers and has been subject to evolving political aims, which pushed forward on the schedule before there was sufficient design maturity and caused progressive removals of scope. The fundamental tenet of a successful project is the clarity and stability of requirements and scope, and this has rarely been the case for HS2, further impacting schedule, cost and benefits.

The pace of political decisions has also caused delays. This is evidenced further in the Governance and MWCC sections.

2. Schedule has been prioritised over cost.

I have found many examples of key decisions having been driven by schedule rather than cost, i.e. the Phase 1 Hybrid Bill[2] and letting of Stage 2 of the MWCCs. I have heard a range of reasons for this but pressure from politicians to maintain momentum, fear of HS2 being cancelled, and the belief that costs will increase as a result of delay have featured strongly.

There is a golden rule in major project delivery that was characterised by Bent Flyvbjerg[3] as “Think Slow, Act Fast”; i.e. time taken in the planning, development and design phase will have a big pay-off in the delivery phase.

[2] High Speed Rail (London – West Midlands) Act, Hybrid Bill, February 2017

[3] ‘How Big Things Get Done: The Surprising Factors That Determine the Fate of Every Project, from Home Renovations to Space Exploration and Everything in Between’, Bent Flyvbjerg and Dan Gardner, February 2023

There is another saying that “projects don’t go wrong, they start wrong”[3]. HS2 has failed to follow either of these mantras, both of which are viewed as essential best practice by the most experienced deliverers of major projects across the world.

3. There is a need to change the culture on cost and affordability.

The delivery of the HS2 Programme has been dominated and driven by the desire to build the best. Whilst this Review principally covers from 2020 onwards, it is impossible to escape the early decisions and the stated vision to build the best and fastest railway in the world. This vision, which was embedded in the 2013 Business Case[4] and the Phase 1 Hybrid Bill that immediately followed, drove the scope and dramatically increased cost. It also took the project away from the initial premise of increasing network capacity.

Many people argue that there is a culture of “gold plating” on UK infrastructure projects, i.e. going for iconic designs and state of the art civil engineering solutions. In my view this has been evident on HS2. Steps had to be taken to counteract this culture and behaviour. The top-down vision of building a railway that would be the best and fastest has been a major factor in undermining attempts to introduce a culture of cost control.

4. A bespoke approach is required to deliver a programme of the size and complexity of HS2.

The HS2 Programme is of an unprecedented scale and complexity in the UK. However, the delivery, governance structures and the wider government system in which the project operates have followed a relatively standard approach. It should have been recognised that a different approach was needed.

Also, there has been insufficient capability in some key areas particularly in HS2 Ltd but also within DfT. The governance has been over stretched, and the funding

[4] HS2 Outline Business Case, DfT, 2013

mechanisms have broken down due to the sums involved, the cost overruns that have occurred, and wider fiscal pressures.

Other sectors, like nuclear and water, have benefitted from a bespoke approach. A bespoke approach for HS2 is still needed and should be introduced.

5. Trust between stakeholders needs to be restored.

In a project of this size and complexity, there will always be strains in relationships. However, the significant and consistent cost overruns that have been a feature of the project have undermined trust in HS2 Ltd. In summer 2023 matters escalated after more cost increases (primarily attributed to the MWCCs) and trust was further eroded between DfT and HS2 Ltd. Since then, some steps have been taken to help restore trust but there is still a long way to go. If this breakdown in trust is allowed to continue, it will undermine the future delivery of the Programme and the confidence of wider stakeholders.

The restoration of trust has to be at the core of the reset and revised governance structure.

6. The inability to arrive at reliable cost and schedule estimates has undermined the delivery of and the confidence in the Programme.

There has been a consistent inability by HS2 Ltd to produce reliable cost and schedule estimates for the Programme and then to deliver within the agreed funding envelope. A consequence of this is the current disagreement on the Estimate at Completion (EAC) between HS2 Ltd and DfT. This disagreement has led to the inability to develop a new baseline and the breakdown of the performance management system operating between DfT and HS2 Ltd. It has also contributed to the absence of a long-term funding control period and a reliance on annual funding settlements, although other fiscal factors have also had an impact. It has also put further strain on relationships and undermined the confidence of wider stakeholders (including the public) in the project.

A successful reset of the project is reliant on a resolution of the disagreement on the EAC.

7. The failure of The Main Works Civils Contracts (MWCCs) to deliver reliable outcomes within the affordability framework has been a persistent problem for the Programme.

Cost overruns on the MWCCs are by far the most significant contributors to the overall cost increases.

HS2 Ltd must take the prime responsibility for the performance of the MWCCs. It selected the contractual approach and is responsible for the contract management. However, many other public sector stakeholders were involved, particularly pre-contract award. The contracts were subject to significant assurance, including external experts, prior to contract award of Stages 1 and 2 and went through a protracted scrutiny and approval process involving DfT, HMT and other wider government stakeholders.

The supply chain also has to take its share of the responsibility as it has largely failed to deliver under the partnership agreements and contracts it signed up to. Therefore, the MWCCs are a collective failure. They are a failure of HS2 Ltd and the supply chain, but the responsibility widens to include the assurance and approval bodies as well.

There is still considerable uncertainty associated with the completion of the contracts. Getting these contracts into a place where they are performing reliably is essential to successful delivery of Phase 1.

8. HS2 Ltd and DfT as the Sponsor have been consistently underpowered in performing their roles.

HS2 Ltd has lacked the capability to deal with the size and complexity of the HS2 Programme. This is especially true of the commercial and delivery resources. The

'lean' client model has proved to be the wrong model and there was a failure to change course when problems arose. There has also been a capability issue with the DfT Sponsor team, particularly with commercial and delivery experience and acting as client on major infrastructure projects.

9. The governance structure is not fit for purpose and needs to be changed.

The majority of the people that I have spoken to have said that the governance structure needs to change. It is too complicated, multi-layered, blurs accountabilities and perhaps most importantly doesn't recognise the role of Government as the Financial Shareholder, i.e. holding the financial equity risk in the project.

The governance and leadership also need to evolve as the project progresses to systems integration and into operational service. This should have happened as the Programme moved from design to construction. This is an important lesson from Crossrail.

10. Euston needs a delivery plan, agreed funding and a governance structure.

It is good news that the Government has approved the tunnels into Euston. However, the funding, scope, governance and delivery model have not yet been agreed for the Euston Programme. This needs to be addressed as soon as possible to avoid further delays to the opening of the HS2 central London terminus.

11. The balance between advocacy and criticism/challenge needs to be restored.

The project is currently under constant criticism and challenge both within Government and in the public domain. Whilst this is inevitable given the recent history and the cancellation of Phase 2 and HS2 East, it is paramount that the project begins to demonstrate successful steps towards delivery. The objective is to deliver a high-speed railway from Euston to the West Midlands. All stakeholders

involved, including Government Ministers, need to reaffirm and advocate for the benefits of HS2. They must focus on driving HS2 into service within an acceptable cost envelope. Continued criticism is demoralising and a return to advocacy would help attract and retain talent into the Programme and increase employee engagement.

4.2 Recommendations

1. The Programme requires a fundamental reset.

For all the reasons stated above, the project is in a state of flux and uncertainty. A fundamental reset is required to drive the project into service. Some actions have been taken to start the reset but there is still much more to be done. There are two events which should help this: the project scope is now more certain following the cancellation of Phase 2 and HS2 East, and Mark Wild has just arrived as the new CEO.

Therefore, a key recommendation of this report is to complete a reset of the Phase 1 Programme (the “Reset”) as a matter of priority. This must include:

- An agreed and fixed scope
- An agreed baseline/ Estimate at Completion
- A long-term and ring-fenced funding settlement
- The restoration of trust between HS2 Ltd and DfT
- A revised and simplified governance structure
- A commercial reset of the MWCCs
- A capability uplift of HS2 Ltd and Sponsor teams

2. The Programme requires a new governance structure.

I have set out proposals for a new governance structure. The main changes are:

- The creation of a Shareholder Board to reflect the importance of the Government Financial Shareholder role
- The closing down of the Sponsor Board and the creation of a new Programme Board with independent members
- The creation of new specialist sub-boards under the HS2 Ltd Board

3. The wider system of government in which HS2 operates needs to be adapted.

I have set out a potential solution for how the wider system of government can be changed. This involves the HS2 Programme being given its own DEL, a 5-year funding control period, the flexibility to move money between years, and DfT having a first loss equity position.

4. The approach to Assurance and Reviews should be overhauled.

I am recommending the re-instatement of the Integrated Assurance Group with an enhanced and wider mandate and responsibility for the Integrated Assurance Plan. Both will cover the assurance activities of all stakeholders.

There has been a multiplicity of external reviews recently. As part of the Reset, a prioritised list of actions should be drawn up and included in the transformation plan that Mark Wild and the SRO will implement.

5. Agreement on the Estimate at Completion and a new Baseline are required as well as changes to the way that cost estimates are produced.

I have made a series of recommendations around cost and schedule. These include changing the culture on cost control, introducing a better cost challenge to design proposals and the consequences of environmental and planning consents, improved project controls, using ranges rather than point estimates and finalising the scope of Phase 1. However, the biggest priority is to agree a new EAC and baseline for the

Programme going forward. This new EAC should recognise the inherent future risks around system integration.

6. HS2 Ltd and DfT need a plan to restore trust.

Restoring trust is a key objective of the Reset. This will take time. The arrival of Mark Wild as CEO will help, and I have structured my recommendations around governance with this objective in mind. The new Programme Board is intended to be a forum for collaboration and problem solving, and with the addition of independent members, is there to support the restoration of trust. I am also advocating a much greater level of transparency of data. The main priority is to restore trust between HS2 Ltd and DfT, but this must also extend to wider stakeholders in Government.

7. Capability of both HS2 Ltd and DfT should be reviewed.

The capability of HS2 Ltd and the Sponsor needs to be reviewed and enhanced. There have been too many barriers put in the way of recruiting the necessary calibre of people, particularly in HS2 Ltd, and protracted approval processes. I have made recommendations addressing these issues.

8. Redacted for commercial confidentiality

9. Euston governance should be based on the proposed Phase 1 governance structure.

I have given my perspective on the immediate priorities on Euston. I am proposing that the governance structure follows a similar approach to the one I have recommended for Phase 1, i.e. a Shareholder Board, Programme Board and a Delivery entity. In addition, the Sponsor capability needs to be reviewed and enhanced and a delivery model needs to be agreed.

In the Wider Lessons Learnt section, I have captured lessons learnt, and where appropriate, made recommendations. I have not sought to repeat the lessons learnt in other reviews but have focussed on particular points that come from my review of

HS2 and my wider experience. Many of the recommendations go much wider than HS2 and transport projects; stakeholders other than DfT need to decide whether and how they should be implemented.

I have made several recommendations which are aimed at NISTA including:

- Stewardship of the UK Infrastructure market
- Review of the capability and capacity of the civils construction sector
- The establishment of a team of commercial/delivery specialists

5. Governance

There has been a consistent message from all stakeholders that the current HS2 governance structure is not effective, and that change is needed. In this section I make recommendations on the governance structure for Phase 1. Euston is covered in section 10.

I have also looked at the wider government system in which HS2 operates. In my view, putting HS2 into the standard system has presented real constraints to the effective delivery of HS2 and a bespoke solution is required.

My recommendations are a combination of suggested improvements to existing parts of the governance structure and proposed changes.

In arriving at my findings and recommendations, I have applied the following criteria:

- Simplicity and reduced duplication
- Restoration of trust
- Clarity as to where the “holding to account” responsibility lies
- A need to establish a forum for problem solving and collaboration
- Greater clarity of how the Accounting Officer roles fit in
- The need to recognise the roles of DfT and HMT as Financial Shareholders
- Clearer definition around delegations between and accountabilities of the different governance layers
- Recognition that the levels of delegation need to be dynamic and evolve as trust is restored
- Greater clarity on where decisions are made on the requirements, scope, design and consents (planning and environmental)
- More efficient and effective approvals processes

- Expert challenge closer to the detail in HS2 Ltd
- The right mix of capability and calibre of people in governance forums

5.1 Proposed Governance Structure

I am recommending a three-tier approach for the Governance, which builds on the approach taken on the 2012 Olympic and Paralympic Games, Parliament Restoration and Renewal and Sizewell C. I have also sought to give greater definition and more clarity to the executive chain which is where the day-to-day sponsor interactions will take place between the Sponsor and the HS2 Ltd executive.

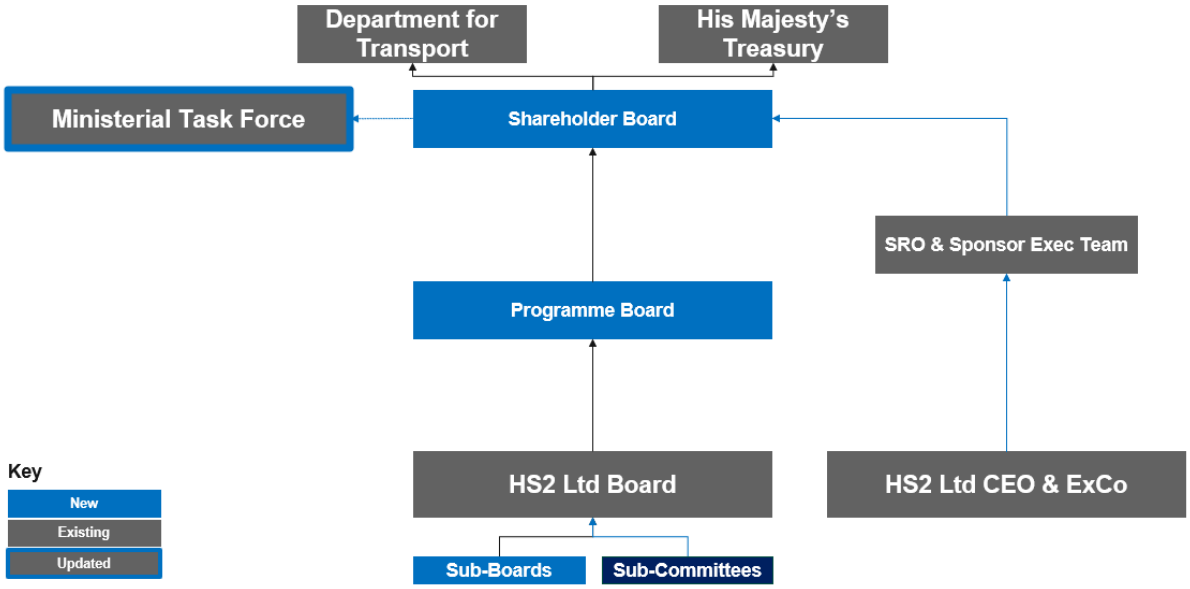

Figure 1: Proposed Governance structure

The component parts of this structure are described in more detail below after I have explored some cross cutting themes.

The main changes to the governance structure are:

1. The creation of a Shareholder Board to reflect the importance of the Government Financial Shareholder role

2. The closing down of the Sponsor Board and the creation of a new Programme Board
3. The creation of new specialist sub-boards under the HS2 Ltd Board

The key governance arrangements for HS2 are set out in the Framework Document[5] (FD) and the Development Agreement[1] (DA). The FD states that these two documents should be considered together to understand the controls environment and the operational relationship between HS2 Ltd and its sole shareholder and sponsor, the Secretary of State for Transport. However, it should be noted that HS2 Ltd are currently in default under these agreements and so some elements have been disapplied.

5.2 Cross-Cutting Themes

5.2.1 Trust and behaviour

F1. Trust between the various stakeholders on the project has eroded as a consequence of internal and external pressures on the Programme.

F2. There is insufficient shared ownership of problems between organisations and no governance forum which brings together HS2 Ltd and DfT to collaborate and jointly solve problems.

F3. The balance between advocacy and criticism/challenge needs to be restored.

HS2 is a large, complex and very difficult project to deliver and tensions between stakeholders are inevitable. However, very significant pressures on the Programme have caused trust to break down.

The key is to have mechanisms to manage and diffuse tension. What has not helped is the binary nature of the relationship between HS2 Ltd and DfT in contrast to most

[5] HS2 Framework Document, August 2022

other projects which have multiple stakeholders, e.g. Crossrail had two sponsors (Transport for London (TfL) and DfT), and Sizewell C has EDF as co-shareholder to Government as well as Ofgem and third-party financiers.

Regarding this binary relationship, I think it would be helpful to introduce more "independent/non-executive" representation into DfT/HS2 Ltd forums to help with rebuilding trust and bringing other expert voices to the table.

There needs to be a shift in the balance between advocacy and criticism. The pendulum has swung almost entirely to criticism, and this is undermining relationships, confidence in the Programme, and the ability to attract and retain talent.

Dispute resolution and problem solving are well understood attributes of a good governance structure. I can find no evidence of a forum within the current governance structure that performs this task. The Sponsor Board is more of a forum for holding to account and performance management.

If you look at other programmes, there is often a "programme board" with representatives from the delivery body and the sponsor. A good example of this was the Olympic Board Steering Group for the 2012 Olympic and Paralympic Games.

I believe that a Programme Board should be set up for HS2. This would replace some of the activities of the Sponsor Board. More details on this are set out below.

R1. All stakeholders to remember the importance of advocacy for the HS2 Programme going forward.

R2. Establish a Programme Board.

R3. Bring more independent/non-executive representation into the governance structures.

5.2.2 Role of DfT

F4. There is a blurring and misunderstanding of the different roles of DfT in the governance structure.

The Framework Document and Development Agreement set out the responsibilities of DfT and show that the DfT has multiple roles (i.e. Sponsor, Funder, Policy owner, Client and Shareholder).

I have found that different people have different understandings of these roles (particularly Sponsor and Shareholder) and the lines between them are blurred.

I believe that there needs to be clearer definition of the various DfT roles and my recommendations in this section seek to address this issue. The redefinition needs to take into account that HS2 Ltd is currently in default under both the Framework Document and the Development Agreement and that the role of the DfT will evolve and change once the Reset is complete and particularly a new EAC is agreed.

5.2.3 Politics

F5. Politics and the pace of political decision-making have been major disruptors to the delivery of the HS2 Programme.

Since 1st Jan 2020 there have been four Prime Ministers, six Chancellors, five Secretaries of State for Transport and HS2 has been operating in a period of unprecedented political instability.

Between 2020 and 2022 a dedicated HS2 Minister was appointed. My understanding is that this HS2 Minister spent 80% of his ministerial time on HS2. Feedback on this period of more dedicated ministerial leadership has been positive.

This ongoing political instability and the regular replacement of ministers is perhaps one cause of the failure of Government to align behind a single unified position regarding HS2. There have also been influential voices calling for the Programme's cancellation which has been very disruptive and impacted the culture and behaviours across all levels of DfT and HS2 Ltd.

Another consequence of the politics has been a difficulty in making decisions, leading to major delays and additional cost.

One mitigant for political disruption is to ensure that there is a buffer or challenge. This and other mitigants are explored further below and in the Cost, Schedule and Benefits section.

5.3 HS2 Ltd and HS2 Ltd Board

The HS2 Ltd Board has been in operation since 2009. I believe that the Board has an important role to play in the governance structure and that it should retain its status. However, some changes and improvements are required.

F6. There are many different views on the role of the HS2 Ltd Board and the Terms of Reference are out of date.

I think that the term Arm's Length Body (ALB) to describe HS2 Ltd is misleading. It may be technically correct that HS2 Ltd is a separate limited company, but ALB implies independence and separation and there is a risk that this is taken too literally. I would prefer to describe HS2 Ltd as a "delivery body". The HS2 Ltd Board is responsible and accountable for delivery of the Programme on behalf of DfT overseeing such matters as capability, culture and systems. However, its decision-making authority is limited to specified legal obligations, such as Health and Safety, and matters delegated to it by the Sponsor. For all other decisions it is advisory, acting as the last line of defence in HS2 Ltd before decisions go to DfT for approval.

Depending on who I spoke with, I received different views as to the role of the HS2 Ltd Board. The Terms of Reference date back to 2015 and roles and responsibilities need clarifying and updating.

To my mind, the HS2 Ltd Board's main roles are:

- Ensuring that HS2 Ltd delivers its obligations under the Development Agreement and the Framework Document
- To provide expert challenge to the CEO and Executive team
- To oversee the operational effectiveness of HS2 Ltd including holding the executive to account for matters including the culture, capability, systems and Management Information (MI) of the organisation
- To oversee relations with stakeholders and commercial partners
- To have accountability for matters which are the direct responsibility of HS2 Ltd (e.g. Health and Safety) or are delegated to HS2 Ltd from the DfT
- To make decisions on matters delegated to HS2 Ltd
- To act as the last line of defence within HS2 Ltd for non-delegated programme delivery issues and make recommendations to the DfT

These responsibilities should be documented in a new Terms of Reference for the Board and set out in an updated Development Agreement and Framework Document.

It needs to be recognised that, with the Programme in its current state of flux and no agreed baseline or funding settlement, the level of delegation to HS2 Ltd and its Board is much more limited. Therefore, the revised Terms of Reference, Development Agreement and Framework Document need to reflect the current status quo, and then be amended and evolved as the Reset progresses and the level of delegation increases.

R4. Review and agree new Terms of Reference for the HS2 Ltd Board.

R5. **Review terms of the Development Agreement and Framework Document, relevant to the HS2 Ltd Board, to reflect the current position of the Programme.**

R6. **Evolve the HS2 Ltd Board ToR, and the terms of the Development Agreement and Framework Document, relevant to the HS2 Ltd Board, as the Reset progresses.**

F7. **There is confusion between the role of the Accounting Officer for HS2 Ltd (i.e. the CEO) and the legal duties of the non-executives as company law directors.**

The role of Accounting Officer is defined by the Government's 'Managing Public Money'[6] guidance. There are two Accounting Officers on the HS2 Programme as set out in the Framework Document. The Permanent Secretary of the DfT is the 'Principal Accounting Officer' and the CEO of HS2 Ltd is the 'Accounting Officer'. The Principal Accounting Officer is tasked with ensuring that Ministers and Parliament receive appropriate advice on the financial performance, budget and integration of HS2.

At the HS2 Ltd Board level, I have found confusion and a lack of understanding around the respective roles of the CEO as Accounting Officer and the statutory duties of the Board members as Directors under the Companies Act (2006). It would be helpful to clarify the different roles and set them out in the HS2 Ltd Board ToR.

R7. **The revised Terms of Reference for the HS2 Ltd Board should set out the respective responsibilities and accountabilities of the Accounting Officer and the non-executive Directors operating under the Companies Act (2006)**

[6] Managing Public Money, HM Treasury, May 2023

F8. The size of the HS2 Programme and the breadth of activity have been too much for the bandwidth of the Board. There has not been sufficient capacity to provide the necessary expert challenge and scrutiny to the component parts of the Programme.

A key part of the HS2 Ltd Board's role is to provide expert challenge and to hold the Executive to account for delivery. The breadth and size of the Programme means that HS2 Ltd Board's ability to do this at an individual project level within the Programme is reduced. This same issue also occurs for significant operational issues in HS2 Ltd such as producing a reliable cost estimate.

You could compare HS2 Ltd to a large private sector conglomerate. A common practice here would be to establish subsidiary or special purpose boards to cover individual businesses or particular issues.

It is also worth comparing HS2 to Thames Tideway in terms of the level of Board scrutiny. The Thames Tideway project is smaller than any MWCC contract, yet it has a very experienced management team and a Board with significant project delivery experience as well as experienced financial investors.

The HS2 Ltd Board does have a committee structure but this covers the traditional corporate functions (i.e. risk and assurance, people etc.) as well as an Investment Committee and a more recently established Finance and Performance Committee. These are working well within the limits that they have the capacity to operate, but neither the Board nor the sub-committees have the time to deep dive into project or major operational issues.

Therefore, I believe that there is great merit in establishing new sub-boards to deal with selected individual project or operational issues.

The sub-boards:

- Should be time-limited

- Should cover the development, procurement and delivery phases for projects within HS2
- Should have one or two representatives from the HS2 Ltd Board to ensure connectivity with the main Board
- Include independent members with relevant expertise

These sub-boards should be used in a limited and targeted way. I believe that the immediate priorities are the MWCCs (one sub-board for all the contracts) and the cost estimate/project controls.

R8. The HS2 Ltd Board should establish sub-boards to provide more granular oversight of selected projects and targeted operational issues, starting with one for MWCCs and one for the cost estimate/project controls.

F9. The HS2 Ltd Board has been underpowered, lacking the required skills and expertise to oversee the delivery of the Programme; in particular there has been a shortfall in major project delivery skills.

F10. HS2 Ltd Board appointments have taken too long.

F11. The DfT and HMT representatives on the Board have been a positive development.

The Programme is currently in the project delivery phase and as such the Board needs significant skills and experience in major project delivery. The current Board has some skills in this area but, in my view, not enough. I understand that a process was run earlier this year to fill this skills gap, and three candidates were recommended by the Chair of HS2 and Senior Responsible Owner (SRO) for appointment. The recommendation was not acted upon, and no appointments made. This project delivery skills gap needs to be filled as a matter of urgency.

There have been difficulties with the Board appointment process, and I have received different answers about who controls this process. The Chair appointment

must be managed differently and will always require political input and approval. The DfT and HMT representatives are Ministerial appointments but should be done in consultation with the Chair.

However, accepting that all Board appointments are ultimately subject to Secretary of State approval, I think that control of the process for other appointments should be with the Chair of the Board. The Chair should run the process, consulting other Board members and working with the DfT and HMT representatives and the Senior Responsible Officer (SRO). In theory this is the current process, but I don't believe that this has always been the case in practice.

I have had very positive feedback on the roles played by the DfT and HMT representatives on the Board. They have added value to the Board discussions and acted as a vital link back to their respective stakeholders. However, they have been in a position of influence and not power, and as such their ability to intervene in a significant way is limited. Accepting that they carry the responsibilities of being legal directors of HS2 Ltd, my recommendation is that they are renamed "Shareholder Representatives" in line with the recommendations below on recognising DfT and HMT as Financial Shareholders. I would hope that this gives them more traction in the overall system of governance.

Board appointment approvals have also taken too long, getting lost in very extended approval processes. If my recommendations are followed, appointment processes should be much shorter.

R9. Appoint at least two new Board members with major project delivery experience as soon as possible.

R10. Document a new Board appointment process which confirms the Chair as the lead for all appointments other than the DfT and HMT representatives.

5.4 Sponsor Board, Sponsor Executive and Programme Board

This section covers the proposed changes to the Sponsor Board, SRO/Sponsor Exec responsibilities, and the establishment of a new Programme Board.

F12. The Sponsor Board role is operating in a different way to its defined Terms of Reference, and the role recommended in previous reviews, and is not effective.

I have heard different views on the current role of the Sponsor Board ranging from a stakeholder engagement forum to a decision-making body, holding HS2 Ltd to account.

I am proposing that the Sponsor Board is closed down and its activities and responsibilities split between:

- The Programme Board
- SRO and Sponsor Exec team

There has also been confusion between the Sponsor and Shareholding functions within the DfT. My proposals for the Shareholder function are set out below.

R11. The Sponsor Board to be closed down and responsibilities split between the newly formed Programme Board and the SRO and Sponsor Exec team.

F13. The role of the SRO and Sponsor team needs to be clarified and defined.

The SRO reports directly to the Principal Accounting Officer and is accountable to the Secretary of State, the Minister of State for HS2 (currently sitting within the Minister of State for Rail portfolio) and Parliament for meeting his responsibilities.

Stewart Review

Currently the SRO and Sponsor team is supported/overseen by the Sponsor Board in fulfilling its functions. A review of the Sponsor function was carried out in 2022. This review provides a helpful analysis of the Sponsor function and makes some good recommendations.

I would define the role of the Sponsor under two headings:

1. **Sponsoring the driving of the Programme into service**

   In the future, the majority of this role should be done by the Programme Board. However, the Programme Board is not an approval-making body and so will be making recommendations and giving advice to the Sponsor where Sponsor approvals or decisions are required.

2. **Fulfilling the obligations and accountabilities of DfT:**

- as Sponsor of the Programme
- supporting the shareholder, approval and funding responsibilities of DfT and Government as a whole
- the performance management of HS2 Ltd and holding it to account

For this second role the responsibilities will include:

- Reviewing the performance of HS2 Ltd against its obligations under the DA, setting and agreeing performance targets for HS2 Ltd – including for cost and schedule and holding it to account for delivery
- Supporting Ministers to define the vision, objectives, strategy and policy intent for the HS2 Programme, including the frameworks within which it operates, such as its scope, cost, benefits and schedule targets and other performance indicators
- Setting and communicating the Sponsor's requirements and the statement of work delegated to HS2 Ltd

- Wider strategic policy matters such as the integration of high-speed rail with conventional services and service integration
- Ensuring Parliamentary and Government approvals for the Programme
- Keeping the business case for HS2 up to date
- Ensuring that funding and the funding structure is in place for the Programme
- Supporting timely decision-making for all approvals including delivery strategies, and procurements

The SRO and Sponsor team will have the accountability and responsibility for holding HS2 Ltd to account for delivery and therefore challenging cost and schedule. The Programme Board will also receive and review Management Information (MI), including the latest costs and schedule information; but it is not its role to hold HS2 Ltd to account for delivery.

The SRO and CEO of HS2 Ltd will need to agree how they and their teams are going to engage with each other given the closure of the Sponsor Board. As Mark Wild has only just arrived, I don't think it is my role to make recommendations on this, but any arrangements need to support the rebuilding of trust.

It also relevant to think about the governance that sits above the Sponsor when it comes to approvals. Recommendations on the wider approvals process are covered below. This section deals with the approval bodies in DfT. There are currently three DfT entities involved in approvals:

- **Tier 1** – Investment Portfolio and Delivery Committee (IPDC) is responsible for all funding approvals but does delegate down to Tier 2/3 boards
- **Tiers 2 and 3** - Major Rail Projects Group (MRPG) Tier 2 (up to £100m) and Tier 3 (up to £30m) boards in the DfT centre have delegations from IPDC. This is intended to speed up approvals and prevent IPDC from having too many different items to approve

- **CAB** - The Commercial Assurance Board which provides assurance to IPDC

Given the size of HS2, most of the major contracts have gone through all of the above approval levels. This is a burdensome process which does not include the SRO and Sponsor teams' own scrutiny. I recommend a structure that involves fewer layers and less duplication.

R12. The Framework Document and the Development Agreement to be amended to reflect the closing down of the Sponsor Board and the revised role of the Sponsor.

R13. Review the governance that sits above the Sponsor with the objective of removing at least one layer of approval.

F14. A Programme Board needs to be set up with the objective of driving the Programme into service.

The Programme Board's main objective will be to oversee the delivery of the Programme and drive it into service. However, it will also fill a gap as a forum for collaboration and problem-solving and be a key component of the initiative to restore trust. It is not designed to be an approval body or the entity that holds HS2 Ltd to account for delivery to cost and schedule. This is the responsibility of the SRO and the Sponsor team; the setting up of the Programme Board does not give HS2 Ltd a licence to bypass the SRO and Sponsor team. However, the Programme Board will make recommendations and give advice. This advice could be for the Sponsor, HS2 Ltd, or other approval bodies.

In its role of overseeing the delivery of the programme, the Programme Board will need to receive regular updates on the progress of the programme and have access to the appropriate information. Activities in this area will include:

- Receiving and reviewing Management Information (MI), including discussion of the latest costs and schedule information received from HS2 Ltd

- Reviewing the resources available to support the Programme
- Managing HS2 Ltd's use of contingency held by HMG, including receiving updates from HS2 Ltd on its intent to use and actual use of such contingency, and reviewing requests from HS2 Ltd to draw down such contingency

However, the agenda will need to be flexible, as a major part of the Programme Board's role will be to respond to issues escalated by either HS2 Ltd or the Sponsor. Examples of these might be:

- Agreeing the cost estimate
- Issues relating to the MWCCs
- The approach to systems integration

I propose that the number of formal members of the Programme Board should remain limited although subject matter experts will attend for specific items. I propose that the membership should consist of:

- DfT SRO and another member of the Sponsor Exec leadership team
- HS2 Ltd CEO and another member of the HS2 Ltd senior executive
- The DfT and HMT Shareholder representatives (i.e. Ian King and David Goldstone)
- 2-3 Independent Members

The Independent Members are there to provide specialist knowledge and experience, upholding the best interests of the Programme with no vested interest of their own. They are also there to play an important role in facilitating the relationship between HS2 Ltd and DfT and helping the restoration of trust. They are separate from the HS2 Ltd Board non-executives.
I would suggest that in looking at candidates for the Independent Members, knowledge of the delivery of major projects should be a high priority, and at least one should have prior experience of public sector projects. It may be that the National

Infrastructure and Service Transformation Authority (NISTA) can be helpful in providing or sourcing people.

I am not proposing that an HMT representative is a member of the Programme Board. HMT's place in the governance is at the Shareholder Board level. However, this does not mean that HMT officials will not have significant interaction with the SRO and Sponsor team and the HS2 executive. The way in which this works needs to be reviewed in light of the closing down of the Sponsor Board which HMT used to attend.

The role of Chair of the Programme Board is especially important in the initial period as trust is being restored. My recommendation is that one of the Independent Members takes the role as Chair and they are recruited on this basis.

R14. Agree a Terms of Reference for the Programme Board and amend the Framework Document and Development Agreement to reflect its role.

R15. Recruit 2-3 Independent Members to the Programme Board with one acting as Chair.

F15. Stakeholder engagement is still an important activity.

I am conscious that I have not yet focussed on stakeholder engagement in this review. This is a very important and necessary activity given the nature of the Programme. To some extent the Sponsor Board held a role here. Given my proposed abolition of the Sponsor Board, the Programme Board and the SRO should take steps to ensure that there is an engagement plan with the relevant stakeholders.

A particular issue is the interface with the rest of the UK railway and therefore engagement with Network Rail and Great British Railways. I am aware that there are other engagement forums with wider stakeholders, e.g. the Tripartite Cooperation Board (TCB), a non-decision-making forum comprising DfT officials, Network Rail and HS2 Ltd CEOs. The current engagement forums should be reviewed

considering the new governance arrangements and then regularly reviewed as the Programme moves towards operations.

R16. Review the stakeholder engagement forums in the light of the new governance structure and then undertake regular reviews as the Programme progresses to operations.

5.5 Shareholder Board

This section covers the establishment of a Shareholder Board and giving greater clarity to the shareholder role.

F16. The DfT role as a financial shareholder is not recognised sufficiently in the current governance structure and needs to be defined and managed.

F17. The financial risks of the HS2 Programme are too big for the DfT to bear on its own and therefore the Treasury needs to be recognised as a joint financial shareholder with DfT.

The current DfT shareholder role is defined in the Framework Document and is primarily structured around managing the corporate relationship with HS2 Ltd, e.g. Board appointments and appointments of leadership positions within HS2 Ltd. To avoid confusion, I refer to this shareholder role as the “Corporate Shareholder”. The prime responsibility for this lies with the DfT Shareholder Team. However, currently there is some duplication of activities with the Sponsor Team; for example, on the approvals of HS2 Ltd senior staff appointments. I recommend that DfT reviews how the DfT Shareholder Team and the Sponsor Team work together in respect of the Corporate Shareholder role.

However, there is another shareholder role: the financial shareholder that carries the funding and equity risk in the project. I refer to this as the “Financial Shareholder”. The Financial Shareholder role is referred to in the Framework Document but is not recognised sufficiently in the current governance structure.

The equity risk manifests itself in the management of the contingency but extends further when the contingency is insufficient to fund cost overruns. The way in which the HMG contingency has been managed and the way in which it has been funded are not clear to me. Going forward, more robust and clear arrangements need to be put in place to reflect the role of the Financial Shareholder.

If you look at other projects the Financial Shareholder role is clearly defined. For example, on Sizewell C, the project has moved from a 100% private sector shareholding to the current Government/EDF mix, whereby the Government is the majority shareholder. Government is required to sit alongside EDF as a shareholder and manage its shareholding position and shareholder capability accordingly. Representatives from DESNZ and UK Government Investments (UKGI) represent the Government shareholding on the Board and there are agreements in place which identify the roles and responsibilities of each party. Government, despite holding many responsibilities on Sizewell C, has clear differentiation between its role as a Financial Shareholder (for which it is granted the same rights as other investors) and its other roles, e.g. policy holder.

I believe that HS2 would benefit from a third-party financial challenge. The leadership on other projects, including Sizewell C and Thames Tideway, have stressed the benefits of having regular, independent third-party challenge from financially competent professionals. It was reported to me that financiers play a key role in controlling cost. The expertise and challenge that external financiers bring to an infrastructure project is worth trying to replicate in some form on the HS2 Programme.

However, DfT should not be the only Financial Shareholder on HS2. In reality HMT, on behalf of the Government, carries a very significant financial risk on the HS2 Programme both as funder and shareholder. Although HMT has had significant involvement in the HS2 Programme, this has often been reactive, and one step removed.

The main way in which HMT currently recognises its shareholder role is by appointing an HMT representative on the DfT Board. Recognising HMT as a

Financial Shareholder confirms that HMT has a vested interest in the success of HS2 and that any overruns over and above the DfT contingency go directly to HMT for funding.

R17. Recognise the distinction between the HS2 Ltd Corporate Shareholder and the Financial Shareholder.

R18. DfT to review how the DfT Shareholder Team and the Sponsor Team work together in respect of the Corporate Shareholder role.

R19. Establish DfT and HMT as joint Financial Shareholders.

F18. Governance needs to be established around the Financial Shareholder role.

There is relatively little governance around the Financial Shareholder role. This needs to be reviewed and new arrangements put in place. The Framework Document refers to the Secretary of State for Transport as the “Sole Shareholder” and responsible for accounting to Parliament on all matters concerning HS2 Ltd and the HS2 Programme. My proposals do not seek to change the role of the Secretary of State, the Principal Accounting Officer or the role Treasury Ministers play in the Programme. My proposals relate to how the Financial Shareholder role is carried out under the jurisdiction of these parties.

A Shareholder Board needs to be established. This needs to be a joint forum between DfT and HMT.

The Framework Document set outs some of the roles attributable to the Financial Shareholder. These include:

- Ensuring that HS2 Ltd is guided and monitored in the public and taxpayer interest
- Approving the amount of capital contribution to be paid to HS2 Ltd and securing Parliamentary or HMT approval if necessary

- Holding the HS2 Ltd Board to account for its governance of HS2 Ltd and its performance
- Ensuring that HS2 Ltd has the approvals and resources required by Government to deliver the Programme into service and integrate it into the wider transport network

I would add another very important role, which is to make decisions and recommendations with regard to the requirements and scope taking into account cost and schedule considerations. The Financial Shareholders should be applying an “equity” lens to these decisions.

Some decisions may be delegated to the Shareholder Board but, in practice, many decisions made will form recommendations for approval by DfT and HMT Ministers and/or the Principal Accounting Officer.

I considered whether the Shareholder Board and the Ministerial Taskforce could be merged into one, with Ministers on the top Board and then an executive committee below to take on the majority of the work burden. I took soundings on this option, but it was felt that two separate bodies would be more effective.

I propose that the membership of the Shareholder Board should be:

- The Principal Accounting Officer, i.e. DfT Permanent Secretary
- A senior HMT official
- The DfT Shareholder Representative
- The HMT Shareholder Representative
- 2 Independent Members nominated by the DfT and HMT
- Chair of the Programme Board
- Chair of HS2 Ltd Board

I suggest that the Shareholder Board is chaired by the Principal Accounting Officer and that one of the Independent Members is appointed as Deputy Chair. There will be times where the Principal Accounting Officer may have a vested interest in an issue, and it would be appropriate for the Deputy Chair to take over as chair.

The DfT and Treasury will benefit from bringing in outside skills and experience to help manage the Financial Shareholder role. This is the idea behind the Independent Members. Candidates should be targeted from those with infrastructure equity investment/shareholder expertise. The Infrastructure Fund industry would be a good place to look for this expertise.

It is worth noting that in other contexts UKGI provides shareholding expertise. For example, a UKGI representative sits on the top Sizewell C Board. I think that Government should consider establishing an infrastructure shareholder capability. UKGI's (originally the Shareholder Executive) prime focus is shareholding in companies/arm's length bodies. I think an infrastructure project/programme is different and requires different skills and experience. An enhanced capability could be hosted in UKGI or NISTA. (See Wider Lessons Learnt).

A Shareholder Agreement will need to be drawn up between HMT and DfT to reflect the joint and respective responsibilities as well as the allocation of risk. This should include detailed provisions on how the HMG contingency is managed.

R20. Establish a Shareholder Board with independent representation.

R21. Amend the Terms of the Framework Document and Development Agreement to reflect the new governance arrangements relating to the Shareholder Board and the role of the Financial Shareholders.

R22. Put in place a Shareholder agreement between DfT and HMT including detailed provisions for the management of contingency.

5.6 Ministerial Taskforce (MTF).

F19. The Ministerial Taskforce plays an important role.

The Ministerial Taskforce has functioned intermittently. It was established in 2020 and met regularly for a few years, but then has only met twice since the cancellation of Phase 2 and HS2 East. One meeting took place in January 2024 and the second, under the new Government, on 22nd October 2024.

Stewart Review

In some senses the Ministerial Taskforce plays a similar role to the Programme Board but at a higher level, i.e. it is there to drive the Programme into service and be a forum for collaboration and problem solving at Government wide level. However, I do not see it as part of the formal approvals process. It can play a very useful role in terms of making recommendations for Ministerial approval and offering support and advice to the Shareholder Board.

In the past the Ministerial Taskforce has been chaired by the Secretary of State for Transport, with ministerial representation from Treasury and the Cabinet Office. Other attendees have included No. 10 representatives, DfT and HMT Shareholder representatives, HS2 Ltd leadership, the CEO of the IPA and officials from the DfT and HMT.

The current Ministerial Taskforce Terms of Reference include the following roles:

- Ensure that delivery of HS2 supports the realisation of the Programme benefits in relation to capacity, connectivity, and carbon reduction
- Oversee delivery performance of HS2 Ltd against the agreed budgets and contingency
- Oversee delivery performance of HS2 Ltd against the agreed schedules and contingency
- Coordinate work across government departments to support delivery of the HS2 Programme and its benefits, to mitigate risks, and to remove obstacles to successful delivery

And recently added:

- Guide the end-state passenger requirements to ensure simplicity and accessibility for rail users and integration with the wider railway network
- Provide a non-binding recommendation in advance of any significant cross-government decisions on the HS2 Programme when necessary (this supports the fact the MTF is not intended to be an approval body)

I would emphasise the importance of the whole of government coordination in the existing ToR and make one addition:

- Provide support and advice to the Shareholder Board where appropriate

The consensus from my discussions is that the Ministerial Task Force should have the following representation:

- **Members** – SoS for Transport, Chief Secretary of the Treasury and potentially a Cabinet Office minister
- **Standing attendees** – Principal Accounting Officer, SRO, the Chair of HS2 Ltd Board and the HS2 Ltd CEO

In the past a Cabinet Office minister has attended. If a Cabinet Office Minister is appointed to oversee NISTA and/or the delivery of major projects and programmes in Government, then it may make sense for them to be on the MTF. The Principal Accounting Officer is the chair of the Shareholder Board, so this link is established.

I anticipate that other people will be asked to attend including the DfT and HMT Shareholder representatives.

R23. Ensure that the Ministerial Taskforce has a permanent role in the governance of the Programme and meets regularly.

5.7 Delegations and Approvals

There is a direct relationship between delegations and approvals: the greater the level of delegation the shorter the approval process should be.

F20. The system of delegations needs to be reviewed in light of the recommended changes to the governance structure.

F21. The system of delegations needs to evolve as trust rebuilds and agreements are reached on the EAC and funding settlement.

I have not attempted in this Review to design a new system of delegation. I would however make a few comments.

The system of delegations should flow down two chains:

1. “Board” - From Ministers to the Shareholder Board to HS2 Ltd Board
2. “Executive” - From Ministers to the Shareholder Board to the SRO to HS2 Ltd Executive

Trust is very low, there is no agreed baseline, and the Programme is operating in the absence of a long-term funding settlement. As a result, the current level of delegation is constrained, with extensive approvals required often going to the highest levels. HS2 Ltd has full delegation approval to award contracts below £50m, but for any contracts above this, DfT approval will be required (and often HMT and Cabinet Office). For the HS2 Programme most contracts exceed £50m.

One of the problems with extended and multiple approval processes is a dilution of accountability. Also, if changes are enforced as part of an approval, then it is very important that HS2 Ltd are consulted on the change as they are the ones who are accountable for delivery.

A key objective of the Reset must be to achieve a situation where HS2 Ltd, as the subject matter expert, is trusted and a higher level of delegation is achieved, thus reducing approval times, creating more accountability and greater effectiveness. Realistically it is going to be difficult to achieve significant progress until a new base line and longer funding settlement is agreed. However, I don’t think that should stop a review of more easily achievable targets to ease the burden immediately.

An essential ingredient for greater delegation is increased transparency of information. Some people can interpret increased delegation as a licence to share

less information because “I am being given the independence to get on with it”. In my experience the reverse is true. Transparent sharing of information will unlock greater delegation as it gives confidence and a higher level of trust to the party providing the delegation. Any delegation system should recognise that there is not a strict set of rules to adhere to; rather, there should be a spirit of openness and checking in with issues at the margin, and that anything novel and contentious should fall outside the delegated authority.

R24. The system of delegation should be reviewed in light of the new governance structure and evolved over time to take into account the Reset.

F22. Approvals for all decisions take too long and need to be streamlined and shortened.

This applies to all kinds of decisions. Executive appointment decisions are dealt with in the Capability and Culture section. This section deals with commercial contract approvals.

The evidence shows that approvals of commercial contracts take between 6 to 9 months. The Systems contract is the latest to go through the process and has just been approved. The whole process took 8 months with the DfT/Government part of the process taking 6 months.

The suite of Systems contracts has been through eight levels of approvals including two within HS2 Ltd, four within the DfT and two in HMT and the Cabinet Office. The approvals for DfT and HMT include a Ministerial sign off but exclude briefings and discussions in meetings and working groups before formal governance processes.

The number of approvals makes it very difficult to predict the time that it will take to receive a final green light for project decisions. One consequence is that work on the procurements can be rushed to expedite the start of the procurement process, another is that the number of approvals compromises the commercial engagement with tenderers.

F23. There is a lack of trust in the approval process, resulting in duplication.

Evidence shows that different assurance is carried out for the different stakeholders in the approvals process and that there is a second guessing of findings. As covered in the Assurance section, I am recommending the reinstatement of an Integrated Assurance and Approval Group and the development of an updated Integrated Assurance Plan. Integrated, for this purpose, means between HS2 Ltd, DfT, HMT and the Cabinet Office. From an approval's perspective, one assurance process which everyone relies on would save a lot of time and demonstrate a restoration of trust.

I also understand that different papers are written for each approval's forum. I question whether this is necessary and whether the base HS2 Ltd advice could be used with a short covering note from the Sponsor for cross government approvals.

The Cabinet Office also approves procurements informed by its Commercial Spend Controls Function which provides assurance on HS2 Ltd procurements against 'six tests' prior to endorsement. Whilst I can see the logic of Cabinet Office involvement for contracts where the relevant Department lacks the necessary expertise, I question the need for it on HS2 going forward once the new governance structure is in place.

The approvals process needs to be reviewed with the aim of simplification and shortening of the time taken, and greater certainty of timing.

5.8 Other Issues

F24. The interventions of the HS2 Ltd Board and the DfT have not had the desired impact.

In the DfT and IPA's 'Lessons from Transport for the Sponsorship of Major Projects'[7] one of the lessons learnt under the theme of "Behaviour matters more than process" was:

[7] Lessons from Transport for the Sponsorship of Major Projects, DfT and IPA, April 2019

> **“**Act decisively when in exception - If the considered evidence identifies delay or cost escalation sponsors need to act decisively, despite the presentational consequences, rather than hoping the situation can be recovered later**.”**

There have been many interventions by HS2 Ltd and DfT to try to address problems, but many have not had the desired impact. The HS2 Ltd Board acts as the last line of defence before DfT and so should be first to intervene. However, some people have felt that too often problems are referred upwards to the Sponsor rather than the Board taking action. Another issue that has impacted the effectiveness of interventions has been the lag in information becoming available about the scale of cost and schedule pressures on the programme. In future, greater transparency of Management Information would help this issue.

I would argue that the interventions have not been sufficiently aggressive: if you look at best practice in the private sector, an intervention might involve an injection of specialist resource (a SWAT team). Restructuring firms are often used in this way. This approach has not been taken on HS2.

Another example would be around the use of a Delivery Partner. Initially it was decided not to use a Delivery Partner on the MWCCs. When it became clear that the contracts were running into problems and the HS2 Ltd client resources were inadequate, no move was made to bring in additional resources akin to a Delivery Partner, either at the instigation of HS2 Ltd or DfT.

I have heard that there is a lack of clearly defined and graduated powers for DfT to intervene. The Development Agreement gives DfT ‘step in’ rights for specified circumstances. In practice these can represent what are viewed as drastic options and there is an understandable reluctance to exercise them. There are other rights, such as removing the Chair/CEO, but these are relatively blunt instruments.

The introduction of the Programme Board should facilitate more meaningful interventions.

R25. Follow the advice of the DfT Lessons Learnt document to 'act decisively when in exception'.

R26. Give the Programme Board a specific remit around interventions.

F25. The governance structures need to be agile and evolve as the Programme progresses through development, construction, systems integration to operation.

Although this is a point that has been made in previous reviews, it is worth repeating and emphasising. Governance needs to evolve over the Programme's life.

The need to evolve governance is referred to in:

- *Oakervee Review*[8]- HS2 Ltd's governance arrangements need to evolve and strengthen to reflect the project's complexity and scale as the project moves through its various phases in the coming decades
- *Lessons from Transport for the Sponsorship of Major Projects*[7] - Evolve governance and personnel across the lifecycle stages – the nature of sponsorship should evolve over the project lifecycle and failure to do so can mean previously successful approaches fail in the next stage
- *Lessons Learnt from Major Programmes*[9] - However, once a programme is under way, we have found that these governance arrangements tend to remain similar throughout the remainder of the programme. This is despite the fact that the different stages – for example civil engineering, systems testing and preparing for use – all have different risk profiles, require different skills to oversee, and might require engagement with different stakeholders

[8] Oakervee Review, Douglas Oakervee, February 2020

[9] Lessons Learned from Major Programmes, National Audit Office, November 2020

The Programme has still yet to go through two major stages: system integration and end state operation. Experience on Crossrail has shown that these stages carry high risk. Currently the West Coast Partnership Development is the shadow operator for HS2 but with the creation of GB Rail this could be subject to change. I think that a review should be carried out on the preparedness and approach to achieving the end state operational railway.

R27. Conduct periodic reviews of the governance structure to ensure that it is fit for purpose for the stage the project has reached.

R28. HS2 Ltd to carry out a specific review on the preparedness and approach to achieving the end state operational railway.

5.9 Wider government system and potential solution

In the Executive Summary I discuss that a bespoke approach is required to deliver a programme of the size and complexity of HS2. This includes the wider government system in which HS2 operates. I believe that the wider government system is directly relevant to the successful delivery of HS2 or any other programme of sufficient scale.

My understanding of the system in which the HS2 Programme operates is as follows:

- The HS2 Programme forms part of the DfT's Departmental Expenditure Limit (DEL). The HS2 funding has been ring-fenced within the DfT budget but at critical points the ring-fenced funding has been insufficient, and significant pressure has been put on the remainder of the DfT DEL to fund cost increases or the impact of inflation
- There has been an optimistic and ultimately incorrect view that DfT could absorb cost pressures from the HS2 Programme within its overall budget
- There is currently no long-term funding settlement in operation and the programme is operating on annual funding settlements alone

- As referenced in the Cost, Schedule and Benefit section, it is almost impossible to manage such a large project on annual funding settlements alone. A longer-term funding control period needs to be reinstated, and my view is that a five-year period would be appropriate, i.e. longer than a 'normal' three year spending review period. This would align with practice in the regulated utilities sector
- In practice there is limited scope to manage funding between years. This is a very significant constraint of effective project delivery
- Using historic prices causes confusion. For example, prices are currently being communicated in 2019 Prices both internally and externally. This is because the last agreed baseline was 7.1, which is based on August 2019 data. There is a constant need to restate 2019 figures in real terms (and cash) and this causes confusion in managing funding and communicating figures publicly
- During the period since 2020, the DfT has been required to manage the risk of inflation, i.e. the risk that inflation outturn is greater than the assumptions made at the beginning of a fixed control period. There has been no formal re-opener on inflation with HMT. There was a complex negotiation which resulted in some money being forthcoming, but elements of the Programme scope had to be deferred to cover some of the cost. My understanding is that there is a historic precedent in government for an agreed re-opener on inflation, albeit a long time ago
- HMG retained contingency of £5bn at the time of Notice to Proceed, managed on a dual key basis by DfT and HMT. £100m of this was allocated to DfT as part of the 2020 Spending Review. It is not clear to me the extent to which funding was set aside to cover the remaining contingency or what the mechanisms were to access the contingency.

It is interesting to compare the arrangements for the 2012 Olympic and Paralympic Games where the UK government had guaranteed the financial risk and there was a fixed delivery date. There was a bespoke approach, and this meant that the whole

government was aligned and had a financial interest in a successful outcome with a fully funded contingency and clear governance arrangements to access it.

5.10 Potential solution

Below I have suggested a potential solution. This will need further discussion but, in my view, would provide a funding and governance system leading to a greater chance of successful programme delivery. I recognise that this solution cannot be put in place until a new baseline cost estimate and schedule are agreed.

- The HS2 Programme to be given its own DEL which is separate from the DfT DEL. The HS2 Programme DEL would cover the costs of HS2 Ltd and the relevant apportioned cost of DfT. The DfT Permanent Secretary could remain Accounting Officer for both DELs
- As a result, the HS2 Programme DEL would be ring-fenced from the DfT DEL, i.e. neither underspends nor overspends go directly to the DfT DEL
- The HS2 Programme to be given a five-year (or longer) funding control period
- The long-term funding settlement should have agreed provisions to allow flexibility to move money from one year to another
- Within the separate DEL, arrangements should be put in place to manage inflation risk. HS2 Ltd should be required to manage a degree of inflation risk using the supply chain to mitigate some of the risk, but there should be a re-opener on inflation if it falls outside a given range. The inflation risk above the given threshold becomes a risk retained by the Financial Shareholder and, in my view, should be allocated to HMT
- It is proposed that DfT takes a first loss “equity” position funded from its budget (excluding inflation risk). This approach was taken on Crossrail where DfT and TfL were joint shareholders, and it was agreed that TfL would take the first loss position. This was designed such that one of the shareholders had control over a first intervention in the time of a crisis

which should enable more agile and fast action to be taken, as well as clear accountability

- HMT, as shareholder, would be positioned as the reserve equity and ultimately the funder of last resort
- Contingency would be held within the HS2 Programme DEL, DfT (first loss "equity") and HMT. All these contingency/equity pots need to be funded. I recognise that this is difficult particularly in HMT, but rapid access to contingency funds is essential if quick action is to be taken and cost mitigated
- Access to the HMG contingency would be managed by the Financial Shareholders

5.11 Summary of proposals

- The HS2 Programme to be given its own DEL with flexibility to move money between years
- Following the Reset, the funding control period should be for at least five years
- There should be a re-opener on inflation and HMT should hold this risk
- DfT to take a first loss position as Financial Shareholder

6. Assurance

The HS2 Programme employs the industry standard ‘three lines of defence’ model to conducting assurance. HS2 Ltd uses this ‘three lines of defence’ model to deliver assurance, which increases confidence to stakeholders in the Programme’s ability to deliver the railway to a high standard, to budget and schedule and in a manner which ensures safe delivery.

HS2 Ltd’s three lines of defence (LOD) can be summarised as follows. Operational Assurance (first line, LOD1) is conducted by the teams doing the work, such as within IPTs or individual Directorates. Business Assurance (second line, LOD2) is conducted by the HS2 Ltd Quality and Assurance Directorate. Strategic Assurance (third line, LOD3) is conducted by independent parties. LOD3 reviews include reports by the Independent Assurance Panel (IAP) who are commissioned by HS2 Ltd Board or the HS2 Ltd Board Audit and Risk Assurance Committee (ARAC). The Project-Representative (P-Rep) is commissioned to provide advice and assurance to the DfT and to act as one of the DfT's own Lines of Defence.

Government Internal Audit and Assurance (GIAA) reports separately on both HS2 Ltd and DfT processes. The Programme is also subject to external reviews by the Infrastructure & Projects Authority (IPA), Major Projects Review Group (MPRG), National Audit Office (NAO) and other third-party reviewers. The Programme is additionally held to account through Ministerial and Cabinet Office oversight.

The LOD model is connected to HS2 Ltd through the ‘Risk – Control – Assure’ framework. HS2 Ltd uses a risk-based approach to escalate the highest risk items for Level 2 internal reviews or Level 3 Strategic assurance. Within the Sponsor, individual assurance commissions are managed through their respective Sponsor teams within MRPG. These teams are supported by dedicated internal resource and the P-Rep.

I believe good practice assurance programmes should be underpinned by characteristics which:

1. Develop an integrated view of programme activity
2. Contribute to a system of challenge and advice
3. Are proportionate to the scale of work and are prioritised by risk
4. Provide outcomes which improve programme operations

6.1 Integrated Assurance

F26. The HS2 Programme lacks an integrated assurance plan, and the Integrated Assurance Group has been disbanded. As a result, there are multiple layers of assurance supporting the many approval levels. This leads to duplication, inconsistencies and delays to approvals.

The Integrated Assurance Group (IAG) last met in November 2022. The Group's remit was to co-ordinate assurance activity for all phases and across all parties, drawing in representatives from DfT, HS2 Ltd, GIAA, P-Rep and IPA. The Group was established to ensure the avoidance of gaps, optimise timing and sequencing of assurance activity, and prevent unintentional duplication or overlap of work.

The IAG owned the HS2 Ltd Assurance Strategy, reviewed the Integrated Assurance and Approvals Plan (IAAP) for major decision points for each phase, and was guided by the DfT Integrated Assurance Strategy. The IAG was not formally superseded by an equivalent group, but individual conversations do still occur at working levels. The IAAP has continued, being owned by HS2 Ltd and being produced every year and is approved by ARAC.

I recommend that the IAG is re-established but with a new remit that is wider and goes beyond the coordination role of the previous IAG; i.e. it should be able to have a meaningful influence on the assurance activities of the various stakeholders. It should also own the Integrated Assurance Plan. However, as is set out below, the Programme Board should have overall responsibility for overseeing and actioning the output of assurance reviews.

Currently, there are multiple external bodies giving assurance. For example, P-Rep and IAP have both conducted reviews of Rail Systems activity in the last two years, although these do not have a direct overlap of scope and will have used different methodologies representative of the P-Rep and IAP commission scopes. DfT also use the DfT Centre of Excellence to provide assurance when decisions are escalated from Tier 2 up to IPDC. I believe having a cross-programme view of assurance activity can only be beneficial to providing decision makers with the most timely and accurate information.

The multiple layers of assurance are a symptom of a lack of trust with individual layers of governance seeking to validate its own decision rather than trusting in a single set of assurance (see Governance). A more coherent and integrated view of assurance would allow for individual assurance activities to better accommodate the requirements of each of the Programme's stakeholders. It would also allow for the sharing of assurance scopes, methodologies of how these assurance activities are conducted and the circulation of findings between all parties.

There are examples of connectedness, for example GIAA and HS2 Ltd's assurance plans along with individual approvals procedures within DfT. However, there is no overall integrated assurance plan. The need for an IAAP was highlighted in Lessons from Crossrail[10] which suggests that Sponsors should request more regularly updated integrated and assurance plans.

I recommend that an IAAP is put in place, covering all assurance activities for all stakeholders.

R29. An Integrated Assurance and Approval Plan should be developed to reduce the multiplicity of assurance processes, limit duplication of assurance commissions, and build trust across all parties in the information provided.

[10] Sponsoring a Major Project: The Crossrail Experience, DfT and IPA, March 2024

R30. The Integrated Assurance Group should be re-established with a wider mandate than its predecessor that allows it to exert greater influence over all assurance activities. The Integrated Assurance and Approval Plan should be owned by the IAG and managed in conjunction with HS2 Ltd and the Sponsor.

F27. LOD 3 assurance has concentrated on the period leading up to contract award and has been very limited at assuring the implementation phases of these contracts.

For the MWCCs, there were eight IAP reviews prior to contract award, with only one (in two stages) post award relating to a Design Cost Review. Whilst other forms of scrutiny of MWCC performance have taken place since contract award, I would have expected to see greater IAP involvement and/or other LOD3 strategic assurance. Post contract award assurance reviews would also be able to follow up on recommendations or caveats previously raised which are applicable to the implementation of the contracts.

I understand that this gap has already been recognised by HS2 Ltd and steps are being taken to put in place extended assurance across each contract stage. An immediate opportunity to act on this could be the Rail Systems contracts which have seen both P-Rep commissioned and IAP reports and have just been approved for award.

R31. Include in the Integrated Assurance and Approval Plan a programme of assurance post contract awards.

R32. Review all relevant LOD3 commissions to assess implementation of recommendations or caveats applicable to the post contract award period.

6.2 Operating in a system of challenge & advice

F28. In HS2 Ltd, too much reliance has been placed on assurance, in the absence of dedicated expert advice and expert challenge.

As referenced in the Governance and in the Capability and Culture sections, good project delivery is reliant on four inputs:

1. Delivery teams with high capability and expertise who are suitability resourced
2. Access to expert advice to supplement the core knowledge and expertise of the Delivery Team as appropriate
3. Expert challenge from the governance structure which is embedded within the Programme's operations
4. Timely assurance underpinned by accurate information

In my experience, even high calibre teams benefit from external expert advice in situations where there is a skills gap or a need for surge resources to deal with a problem, e.g. to move back on schedule or to resolve cost implications. Whilst the HS2 Ltd delivery and commercial teams have taken external advice, this has been less than I might have expected (particularly commercial and strategy advice) given the problems that have occurred. This is despite my finding that these teams have been underpowered (see Capability and Culture section). When advice has been sought, I am not sure it has always been from the right place. For example, I find it surprising that HS2 Ltd used members of the P-Rep to give it advice on the MWCC renegotiations.

The Programme is also lacking expert challenge in the frontline working environment. If you look at Thames Tideway, there is a level of expert challenge from the Thames Tideway Board that is not present for the constituent parts of HS2 Ltd. The HS2 Ltd Board and current sub-committees do not have the bandwidth or capacity to provide an equivalent challenge. See the Governance section for my proposed solutions.

The Capability and Culture section sets out recommendations to resolve areas of HS2 Ltd that have been historically underpowered. My concern is that the issue of underpowered HS2 Ltd capability in the delivery and commercial teams has been highlighted in various internal and external assurance reviews but has not been acted upon. This is a significant omission given the consequential impact.

6.3 Assurance and MI

F29. The assurance programme covering the internal processes and controls of HS2 Ltd is well structured and well managed, however the current approach as applied prevents adequate assurance of the content of information provided.

The assurance of internal processes is well run and joined up between HS2 Ltd and GIAA. However, with the regard to MI, I do not believe that the LOD model as applied within the HS2 Programme provides HS2 Ltd with sufficient scope to challenge.

Through running a ‘check and challenge’ approach, HS2 Ltd has focussed on the processes used to arrive at MI, rather than providing a top-down challenge to the data. This means HS2 Ltd is unable to appropriately scrutinise the information, such as cost estimates, provided to them by the IPTs. This has led to an erosion of trust regarding the accuracy of information within the Programme.

I believe that the MI provided for external review has not been challenged sufficiently at LOD1 and LOD2 in HS2 Ltd. A view has been expressed to me that the LOD1 work is insufficient in scope and the priority of the LOD2 work has too often been focussed on reviewing process rather than assuring outcomes/costs. I have also been told that, when LOD2 reviews have been performed on supply chain costs, the recommendations and findings have not always been properly followed up in HS2 Ltd. There are other examples where the scope of the LOD2 reviews has not been sufficiently broad to identify the basic shortcomings, or where no LOD2 reviews have been commissioned. An additional issue is effective assurance of the Tier 2 outputs

into the IPTs due to the additional distance between the Tier 2 and the LOD2 assurance.

Of course, assurance activity should be tailored to the areas of most impact, but I believe strengthening the ability of HS2 Ltd to challenge MI at lower levels will increase transparency and visibility across the Programme.

R33. HS2 Programme resources should be strengthened to allow sufficient dedicated expertise to challenge the content, not just the process, of information passed up through the Lines of Defence model.

6.4 P-Rep

F30. The P-Rep role has changed and needs to be clarified.

The P-Rep was originally appointed in 2016 to provide assurance services to DfT on key decisions, produce briefing notes on specific advice or assurance evidence, and highlight key issues across the Programme to MRPG. This service provides DfT with greater capability and extended access within HS2 Ltd and provides assurance on key programme milestones.

Therefore, the primary requirement in the original P-Rep contract was assurance but it was subsequently felt that DfT would benefit from additional advisory services alongside assurance with the intention of encouraging the P-Rep to suggest solutions to the issues occurring across the Programme. The emphasis on advice was reinforced when the P-Rep contract was re-tendered in 2022. In the Invitation to Tender four roles were identified:

- Embedded assurance of HS2 Ltd progress and decisions
- Direct advisory support from P-Rep to DfT
- Advisory support from P-Rep to HS2 Ltd (when requested by DfT)
- In the field assessments of construction progress

It is important to note that it is common practice for P-Rep to share advice provided to DfT with HS2 Ltd. This is positive and consistent with a spirit of transparency.

P-Rep has, alongside HS2 Ltd's advisers, advised HS2 Ltd on the MWCC sharing its expertise and views with DfT and HS2 Ltd on good practice and on potential approaches.

In my view the P-Rep should be cautious where it gives advice directly to HS2 Ltd. There is the potential for conflicts and the constrained resource may be needed elsewhere to deliver crucial support to the Sponsor. If HS2 Ltd needs significant advice it should procure it from other independent sources. I saw evidence that there are clear protocols in place to manage conflicts of interest if advice is being given to HS2 Ltd.

On balance, I believe that it is better for P-Rep to focus on advisory as opposed to assurance. DfT needs direct, solution orientated and impactful input from P-Rep. This is more likely to come from strategic advice rather than assurance. This is consistent with findings from previous lessons learnt reviews including the DfT and IPA's report[7].

R34. The P-Rep role be reviewed and updated to take into account the current status quo with advisory services remaining a priority over assurance.

F31. The P-Rep has been undersized for a Programme the size of HS2.

I have looked at the size of the P-Rep team compared to other projects. My understanding is that P-Rep comprises the equivalent of 6 full time employees (FTE) within their core team of technical experts. This has been compared with a select number of industry comparators and appears to be significantly undersized. For example, Crossrail's P-Rep constituted five FTE. Thames Tideway has a P-Rep of four FTE for a programme of work which is significantly smaller in cost, significantly simpler in complexity and with a dramatically higher starting point for design maturity.

I think that the size of the P-Rep team should be reviewed considering the revised scope and assuming that Euston is included.

R35. The DfT should consider the future scope of the P-Rep role in terms of Phase 1 and Euston and assess whether the current 6 FTEs is sufficient.

6.5 Assurance review language and degree of follow up

F32. The language used in assurance reports and papers to approval bodies can be written in such a way that the intended meaning is not understood and it therefore does not have the necessary impact and influence.

F33. P-Rep recommendations have not been appropriately followed up.

The 'Lessons from Transport'[7] report highlighted that programmes should recognise that there is a limitation to independent assurance, advising caution when accepting assurance findings which are carefully caveated. I fully endorse this sentiment.

Progressive assurance, as practiced by P-Rep and the IAP, uses ongoing and varied types of assurance to contribute to a more comprehensive picture over time. It is the outcome of a series of engagements rather than a single review of documentation provided.

The vast majority of IAP reports provide 'Reasonable' or 'Moderate' assurance which represent the middle two assurance ratings. However, these reports have not been without caveat. IAP, for example, has clearly stated that items should be raised to the HS2 Ltd Board, or resolved by individual HS2 Ltd Directors before approval is granted for the content being assured. However, it is not clear whether sufficient weight is given to these recommendations, caveats or observations in the decision-making process or whether the recommendations led to changes.

There is a mixed picture on the follow up of recommendations and actions from assurance reviews. The process is relatively good within HS2 Ltd and its ability to respond to GIAA assurance activity. As stated above, the position on IAP recommendations is less clear. There is also a backlog of P-Rep recommendations which have not been followed up and actioned within the Programme. There seems to be a number of reasons for this including a lack of joint ownership of P-Rep recommendations by the Sponsor and HS2 Ltd and a lack of reinforcement of P-Rep recommendations by the Sponsor when they relate to HS2 Ltd.

Due to the cross-cutting nature of these programme challenges, it is unrealistic to expect any single party to resolve all issues. I recommend that the proposed Programme Board (see Governance section and Integrated Assurance recommendations) has overall responsibility for overseeing and actioning the output of assurance reviews working in conjunction with HS2 Ltd and the Sponsor. The Sponsor will retain the overarching responsibility for holding HS2 Ltd to account for delivery of actions.

It needs to be recognised that despite all the assurance that has taken place, this has not been sufficient to prevent the problems that have occurred on the Programme.

R36. Assurance reviews should use a common and transparent approach to communicate risk. Decision makers should read into the findings to ensure that the full meaning and messaging is understood.

R37. The Programme Board has overall responsibility for overseeing and actioning the output of assurance reviews but should delegate where appropriate to HS2 Ltd and the Sponsor.

6.6 External Reviews

F34. The number of reviews has been a distraction to HS2 Ltd.

Stewart Review

Within this section, I am talking about external reviews as opposed to LOD3 HS2 Programme assurance; for example, a review of HS2 Programme corporate governance, a cost methodology review, IPA and MPRG reviews, the Oakervee Review, and this Review. I started this Review in September. I am aware of at least four other reviews that either overlap or are taking place at the same time. These are the external cost estimation and programme control review, an IPA Review, an Independent Panel Review on Euston and a review by the incoming CEO. There was also a Public Accounts Committee (PAC) hearing just before Christmas 2024.

Whilst reviews are inevitable and expected in a public sector environment, the number of reviews has placed a massive burden on HS2 Ltd. This is particularly true at a leadership level, disrupting delivery when the Programme is in a significant state of uncertainty. It also puts HS2 Ltd in a continually defensive frame of mind.

The DfT has been less of a focus for reviews and the impact of wider government stakeholders has barely been covered at all. The capability and effectiveness of the DfT as Sponsor and Financial Shareholder and the wider system of governance within the Government are vital for the effective delivery of the Programme and should be subject to appropriate review and challenge (this is covered in more detail in Governance and in Capability and Culture).

R38. Seek to reduce the number of external reviews on HS2 Ltd and ensure that reviews are coordinated, additive and complementary to existing knowledge.

F35. The recommendations of previous external reviews have not had sufficient traction and have not been sufficiently incorporated and actioned into subsequent programmes.

One of the problems with too many reviews is that recommendations and actions may conflict between reviews (both external and internal LOD3) and the key messages can get lost in the noise.

If value is to be taken out of external reviews, then an immediate exercise should be conducted post review to develop an action plan. Recommendations should not be taken as read but challenged and considered in the context of other reviews and current management actions. As part of the Reset and the transformation plan that the new CEO and SRO will lead, it would be beneficial to do a stocktake of all recent reviews (including this one) and identify a prioritised set of actions.

The outputs of reviews should be transparent to all relevant stakeholders. For example, IPA reports are provided to the SRO but are not always shared in full with HS2 Ltd. It is not clear why this is the case. I think this should be rectified in the spirit of transparency and trust.

R39. As part of the Reset, include in the transformation plan, led by the CEO of HS2 Ltd and the SRO, a prioritised set of recommendations and actions from the various reviews that have taken place.

7. Cost, Schedule and Benefits

The fact that the cost estimates for HS2 have been continually too low and unreliable is well documented and the subject of many previous reviews. In summary the funding envelope for Phase 1 (including all contingency and risk) has gone from £21.9bn (2011 Prices) in 2013[4], to £45bn (2019 Prices) in 2020[11] to the latest assured Estimate at Completion of between £45bn and £54bn (DfT) and £49bn and £57bn (HS2 Ltd) (both 2019 Prices).

My Terms of Reference asked me to look at "*the effectiveness and reporting of forecast, cost, schedule and benefits*". In hindsight this should have included a reference to requirements and scope which are inextricably linked. The primary ownership for cost and schedule lies with HS2 Ltd but the requirements and scope are ultimately owned by DfT.

There have been two recent reviews relating to cost estimation: the National Infrastructure Commission's (NIC) public report on 'Cost Drivers of Major Infrastructure Projects in the UK'[12] and a co-sponsored (by the DfT and HS2 Ltd) external review of the current approach to cost estimation and programme control by HS2 Ltd.

The NIC report is a comprehensive report with a rich vein of data underpinning it and I endorse its findings. It describes the critical drivers of project cost as:

- a failure to iterate effectively between a concept design which ensures desired outcomes and affordable budgets
- a failure to plan projects well and build them fast
- a failure to enable repeatability of projects which can drive down cost
- a failure to invest in innovation

[11] Full Business Case, High Speed 2 Phase One, DfT, April 2020

[12] Cost Drivers of Major Infrastructure Projects in the UK, National Infrastructure Commission, October 2024

The NIC Report also identified four root causes which lead to these systemic failures: a lack of clear strategic direction, challenges with project clients and sponsors, inefficient consenting and compliance, and a constrained supply chain.

I have picked up these points in my Review and given my take on them. However, I recommend that the findings of the NIC Report should be considered alongside this Review.

I have not sought to duplicate the comprehensive work of the recent external cost estimation and programme control review. This report contains 57 detailed actions. I generally endorse these conclusions and recommendations and have used them to inform my own thinking and recommendations below.

This section looks at:

- The culture of cost control and affordability
- Factors outside the control of the Sponsor team and HS2 Ltd leading to the high costs of the HS2 Programme
- Programme factors
- Current issues
- The assessment of benefits

7.1 The culture of cost control and affordability

F36. A culture of driving down cost to manage affordability has been absent from the Programme.

Most people I have spoken to have blamed the original vision for HS2 and the resultant requirements and scope for the high costs. A railway that was originally intended to increase capacity became a vision to build the best and fastest high-speed railway in the world. This effectively ruled out the cost savings expected from utilising HS1 design, which was tried and tested, and a completely new design was required.

The Business Case (2013)[4] locked in the requirements and scope which required a straight line between London and Birmingham and a design that enabled 17 trains per hour at speeds in excess of 320kmph.

More importantly, this initial vision set a tone from the top-down from the outset, i.e. building the best was more important than building the most affordable. In my opinion there is a history of gold-plating in railway projects in the UK, especially compared to international benchmarks, and steps need to be taken to counteract this culture. However, on HS2 attempts to do this was undermined by the top-down vision.

The culture of cost control and managing affordability must come down from the top and be present at all levels. It needs to be led by Ministers, owned and driven by the Financial Shareholders, managed by the DfT SRO and Sponsor team, enforced and implemented throughout HS2 Ltd, and embraced by the supply chain.

Safety, regulatory and environment requirements must be adhered to, and I am not suggesting otherwise. However, there has to be an appropriate cost challenge and rigorous process to ensure that these requirements are not implemented regardless of cost.

R40. A culture of cost control and affordability must be established and prioritised on HS2 and any infrastructure project. This must be led from the top.

7.2 Macro Factors

F37. Starting from scratch in terms of design put significant, and at times unmanageable, risk and cost on the project.

The pursuit of a scope and design which had never been done before in the UK, let alone anywhere else in the world in a comparable environment, put massive additional risk on project delivery and has contributed very significantly to the

increase in cost. I have been told that, if a design similar to HS1 had been adopted, albeit with a slower speed, then risk and cost would have been lower.

In the nuclear sector the experience of Hinkley Point and Sizewell C has clearly shown the advantages of having an established design.

R41. Any decision to choose a new scope and design should be robustly challenged against alternatives based on an existing design that may be less desirable but offer a lower risk and cost.

F38. There was no opportunity to iterate the scope and design to reduce cost.

In 2013 the Hybrid Bill[2] was launched off a business case with a very low design maturity. I understand that this was 4%. The decision to launch the Hybrid Bill at such an early stage of design and the constraints of taking a Hybrid Bill through Parliament meant that there was no ability to iterate the requirements, scope, cost and schedule to achieve a more affordable railway. A consistent theme of past lessons learnt reviews, and the point made to me by the most experienced major project practitioners, is that if you hurry the planning and development phase and make decisions off the back of immature design, you will regret it.

The NIC Report[12] said **"**using an iterative, structured design process can deliver multiple project benefits without adding cost and complexity, including arriving at project specifications that are deliverable within a given budget. Getting the design stage right will also enable the development of an effective procurement strategy, as clients will better understand the risks inherent in their projects**"**.

R42. In future, time should be allowed in the Programme to iterate requirements, scope, design and cost so that affordability can be managed, i.e. Rail Systems.

F39. The cost of building high speed rail is high compared to international benchmarks.

The NIC Report[12] makes the following comment in relation to UK High Speed Rail compared to international benchmarks:

"The UK's experience of high speed rail has been uniquely high cost. A number of countries have examples of high speed rail projects delivered for around £90m per single track kilometre, similar to High Speed 1, but most have also delivered projects at far lower cost. At around £145m per single track kilometre, High Speed Two is on course to be more expensive than any other high speed rail line in the world, including Japan's Hokuriku to Tsuruga line which cost £140m per single track kilometre and had 98 per cent of its length in tunnels or on viaducts and bridges.**"**

My conclusion from this is that we have much to learn from our international colleagues. Our desire for the UK to be different and the best is driving up cost.

F40. The UK planning and environmental regime is burdensome and adds costs.

I have heard much about the impact of onerous planning and environmental processes and consents and have been quoted a figure of over 8,000 consents on HS2, despite the project being taken through the Hybrid Bill process. Not surprisingly, the NIC Report identifies "Inefficient consenting and compliance" as a major driver to increased cost in the UK in comparison to other countries.

The schedule and contract assumptions were baselined against an approval period of 56 days. In practice, consents have taken far longer and, in some cases, over a year. There have also been consequential scope changes. The overall project has been subject to a significant number of Judicial Reviews. All these processes create uncertainty, risk, delay and additional cost.

Without significant reform to the UK planning consenting process HS2 and other major infrastructure projects will continue to face cost and schedule delay. I am not

seeking to undermine the importance of democratic planning processes and environmental considerations, but we should learn lessons from other countries (like France) so that we can lessen the impact on project deliverability. I fully endorse the review announced in September 2024 by the Government on proposed reforms to the National Planning Policy framework.

F41. Political decision-making has led to delays which have significantly impacted schedule and caused cost escalation.

Political decision-making has both accelerated and delayed the schedule. On the one hand, political pressure to maintain momentum and push ahead has forced the schedule, at times, ahead of where it wanted to be. On the other hand, the slowness of political decision-making has caused significant delays which have disrupted the Programme and led to rising costs.

The situation has not been helped by the turnover of Ministers (as detailed in the Governance section). This has led to a lack of continuity and delays as new Ministers get up to speed and put their own stamp on the Programme.

Perhaps the biggest example of political disruption was the decision to cancel Phase 2 and HS2 East. However, there are other examples. Many times, the catalyst for a delay has been a significant cost increase but then the slowness of political decision making, sometimes compounded by a change in Ministers (including the Prime Minister or Chancellor), has caused significant additional disruption.

Part of the solution is reinforcing the role of Ministers in respect of ownership of the Programme and managing affordability. In the Executive Summary, I referred to the lack of a political buffer as an issue on HS2. This is discussed further in the Governance section. A political buffer could be provided by having stakeholders who are prepared to challenge politicians when they are making decisions. In other projects this point of view and discipline is brought by other stakeholders like third party equity, debt or regulators. In HS2, it can come from the Financial Shareholder

as described in the Governance section. It should be recognised that it is a difficult role for civil servants to fulfil.

R43. Use the Financial Shareholder to act as a challenge to political decision-making which impacts the Programme.

7.3 Programme Factors

F42. There has been a failure in cost control over the life of the project.

In late 2023, the HS2 Ltd management team recognised that the project controls within HS2 Ltd were not fit for purpose and implemented an Improvement Plan for Project Controls (IPPC) and brought in new leadership.

The recent external cost estimation and programme control review identified some improvements to the IPPC and further actions that needed to be taken. One observation was that the cost estimate is too much of a product of the inputs coming from the supply chain and that the HS2 Ltd team is not taking a sufficiently top-down view to challenge the results.

A further issue stems from the opaque nature of the project's controls process and production of the cost estimate: they are relatively impenetrable for anyone in the governance chain. Conversely, there is the example of Thames Tideway where the Board and Exec team spent 3 days going through the cost estimate before it was embedded in the contracts as the base line for contract performance, i.e. there was intensive expert challenge. Under the current governance structure, it is not possible to replicate this level of scrutiny or challenge.

I propose that a new sub-board is established for overseeing the cost estimate and project controls with external experts alongside two HS2 Ltd Board representatives (outlined in Governance). Other projects have benefitted from the views of external financiers on cost control and agreeing estimates. It would be good to include this skill set on the sub-board**.** The sub-board would have two objectives:

- Oversee the implementation of the IPPC
- Scrutinise and challenge the Cost Forecast

Another objective of the setting up of the sub-board would be to build trust in the cost estimate and the project control processes. For this to be successful the DfT and other stakeholders would need to have confidence in the sub-board and its views and recommendations and avoid duplicating the scrutiny it provides.

R44. Incorporate the findings and actions of the cost estimation and programme control review in the Improvement Plan for Project Controls immediately.

R45. Set up a Project Controls HS2 Ltd sub-board to oversee the implementation of the IPPC and to scrutinise and challenge the Cost Forecast.

F43. Schedule has been prioritised over cost throughout the Programme.

Despite affordability being the biggest challenge throughout the Programme's life, major decisions have been driven by the objective to preserve schedule. Examples of these are:

- The launch of the Hybrid Bill when the design was nascent
- The signing of Stage 1 and Stage 2 MWCCs when the design maturity was insufficient

In my discussions many reasons have been given for schedule being given greater priority. The four that stand out are:

- The guiding principle that schedule delay adds to cost because of the fixed costs extending over a longer period
- The desire to maintain programme momentum – often blamed on politicians

- The fear of project cancellation if delays are seen to be introduced with a perceived additional cost attached
- The need to counteract the delays from lengthy approval processes, i.e. there were delays of a year leading up to Notice to Proceed approval and therefore a desire to press on

There is more evidence for the priority given to schedule in the MWCCs where more of the incentive payment is linked to schedule than cost. Increases in cost meant that any cost incentive was removed relatively early on. This meant the JVs were and are incentivised to preserve schedule with little consideration to cost. In fact, the JVs get more money as more is spent. If you take the argument that schedule is a big driver of cost, I do not see why a cost incentive doesn't incentivise the management of schedule.

The need to take time when it is needed was characterised in the first chapter of Bent Flyvbjerg's principles of **"**Think Slow, Act Fast". Despite the fact that the Programme extends over a very long period, this golden rule of major project delivery has not been applied at points when it was most critical to do so.

R46. Ministers, via the Ministerial Taskforce, the Financial Shareholders and the Sponsor, must give time and space for proper planning and development.

F44. The uncertainty and constant changing of the requirements and scope have undermined management of cost.

In my experience, HS2 has had far more scope uncertainty than other mega infrastructure projects. Part of this comes with the territory with the different phases of the project following different timelines. But even with Phase 1 the scope has been constantly evolving. Obviously, the biggest example of this was the cancellation of Phase 2 and HS2 East.

Stewart Review

Recent lessons learnt reviews have highlighted the importance of a stable scope in managing cost. The overarching responsibility for the requirements and scope is with the DfT Sponsor, and this is why the management of cost has to be a collaborative exercise between HS2 Ltd and the DfT.

The problems with changes in scope have been compounded by the slowness of decision-making and, sometimes, a total lack of dialogue.

An essential part of the Reset is an agreed scope for Phase 1. I am unclear on how much progress has been made to descope Phase 1 to take into account the cancellation of Phase 2 and HS2 East. Anecdotally I have been told that more can be done. Connected with this is the issue of the extent of future-proofing in the scope and design for a possible Phase 2. An example of a future-proofing decision is the number of platforms at Euston Station.

Agreeing a final scope for Phase 1 with the Sponsor should be an early priority for Mark Wild. The final decision is clearly one for the Financial Shareholders and Ministers.

R47. Agree the scope of Phase 1 as part of the Reset including decisions on future-proofing and descoping.

F45. The cost consequences of scope, design, policy and environmental decisions have not carried sufficient weight.

Many of the decisions on scope have been influenced by politics and often local issues, particularly during the Hybrid Bill process. Petitions were made against the Hybrid Bill which had to be opined upon by the Select Committee. It was up to a combination of DfT and HS2 Ltd to make representations on the cost implications of any changes to scope, but the final decision lay with the Select Committee. NAO

suggested in their 2020 report that although a figure of £245m had been estimated to deal with these types of issues, the outturn figure is closer to £1.2bn[13].

I have tried to ascertain where design decisions get made and where the challenge comes from within the governance and decision-making system. I have struggled to get to a definite answer and my conclusion is that it is not clear and not consistent. One of the problems is that there are many influencers on design. In addition to the Sponsor, HS2 Ltd and the designers themselves (within the supply chain), the two most important bodies/processes seem to have been:

1. The Hybrid Bill and particularly the Select Committee process
2. The Independent Design Panel

The Independent Design Panel was set up in 2015, at the request of the DfT, to provide professional expertise and advice to HS2 Ltd on 27 Key Design Elements. The panel acts as an advisor and a critical friend to HS2 Ltd, in an independent non-executive capacity. It does not make design decisions but offers impartial recommendations and advice. Part of the Independent Design Panel's remit references affordability and there are mentions of the use of design in cost control.

My concern is that statements made in the Hybrid Bill or by the Independent Design Panel become embedded and there is not sufficient challenge from a cost and affordability perspective. For example, on the Colne Valley Viaduct, the specimen design given to the designer responds to the aspiration for the design to reflect the "international significance" of the viaduct, "a sympathetic and imaginative design for the local community" and to be "a suitable symbol of the country's future high-speed network"[14]. The result for the Colne Valley Viaduct has been described to me as an "iconic" design.

[13] High Speed Two: A Progress Update, National Audit Office, January 2020

[14] House of Commons Select Committee Report, 2016

I recommend that the decision-making process for design is clarified and embedded in the governance structure and that there is challenge process to manage cost and affordability. For Phase 1, the opportunity to address this has largely passed, but it is applicable to Euston and other major projects.

On environmental issues, the HS2 Phase One Environmental Statement (ES)[15] was published in 2013 with some elements coming later. HS2 Ltd and its supply chain are required to adhere to the arrangements within the Environmental Minimum Requirements (EMR) in the design and construction of the project.

The controls contained in the EMRs, along with powers contained in the Hybrid Bill[2] and the Undertakings and Assurances given by the Secretary of State, will ensure that impacts which have been assessed in the ES will not be exceeded. Further to this the 'New Significant Effects' process provides additional exceptions that were not foreseeable at the time of the ES. The ES does make mention of mitigations "in so far as these mitigation measures do not add unreasonable costs to the project".

Therefore, many other bodies with a remit for safeguarding the environment (Natural England, Environment Agency, etc.) have a high level of influence over the scope and requirements of the project but do not have accountability for the project cost or affordability. This can cause issues and escalating costs. The notorious bat tunnel (the Sheephouse Wood Bat Protection Structure) is the most quoted example.

Like design, the governance structure has to cover explicitly environmental issues and there has to be a clear mechanism for challenging the solutions proposed. Given that different parts of the Government and wider public sector are involved, the Ministerial Taskforce should get involved where necessary. The decision-making process for design needs to be embedded within the governance structure to ensure effective challenge to the management of cost and affordability.

[15] HS2 Phase One Environmental Statement, November 2013

R48. The governance structure explicitly covers environmental issues and there is a clear mechanism for challenging the solutions proposed. It also needs to be recognised that whole government decision-making may be required.

F46. There has been continual optimism in the development of the cost estimate.

There has been considerable research carried out on the fact that cost estimates for major infrastructure projects constantly underestimate the outturn cost.

Rail projects have a mean cost overrun of 39%[3] and UK high speed rail projects are amongst the most expensive in the world. McKinsey reported that 98% of megaprojects experience cost overruns of more than 30%[16].

At the 2020 Full Business Case[11], in setting the funding envelope and Target Cost, DfT relied primarily on Reference Class Forecasting (RCF) as the most objective means of assessing risk and so informing the level of contingency. RCF has the benefit of using an external rather than internal data set.

The total funding envelope was £45bn. The funding envelope was set at the point estimate of £35bn with an allocation of £10bn for overall contingency based upon a P75 delivery confidence. All figures are 2019 Prices. The split was therefore:

- Point estimate - £35bn
- Target cost - £40bn (RCF P50) including £5bn of contingency held by DfT and delegated to HS2 Ltd
- Total funding envelope - £45bn (RCF P75) including £5bn of contingency held by HMG

[16] 'The Construction Productivity Imperative', McKinsey & Company, July 2015

HS2 Ltd was expected to deliver the Programme within the Target Cost of £40bn. It is also worth noting that the £5bn contingency held by HMG was under the dual control of DfT and HMT.

I have been led to understand that HMT guidance for the HS2 Programme was to use P50 values for the Target Cost and P75 for the overall funding envelope. In my view there are two problems with this approach:

1. It does not seem logical to apply the same P value to the different parts of the Programme which are at different levels of maturity; Phase 1 vs Phase 2, Civils vs Systems
2. Based on the third-party evidence of cost overruns, P50 seems an overly optimistic value to use for the Target Cost and P75 optimistic for the overall Government funding envelope

Compounding this problem has been the desire to present an “affordable cost” to get the project through major approval milestones.

I would suggest that generally P70 is a better number for the Target Cost and P95 for the total funding envelope.

The MWCCs are a good example of cost optimism. The MWCCs were a major input into the Notice to Proceed decision. The baseline costs put into the contracts were driven down to what was perceived to be affordable and the retained risks were increased to reflect the list of exclusions and assumptions. History has proved that the assumptions around productivity gains and the retained risk cost estimate were very optimistic.

The use of RCF P50 and RCF P75 values to inform the funding settlements has undermined the management of the Programme. Using values that are too low, and which become unrealistic to achieve in a short period of time, means that performance measures start to be ignored and the pressure to manage cost is removed.

R49. Review the use of P50 and P75 for the Target Cost and overall funding envelope and consider adopting different values for different parts of the Programme taking into account their maturity.

F47. There has been a reliance on point estimates rather than ranges which has led to an over dependency on early cost estimates.

At the early stages of the project there was a need to produce cost estimates whilst there was a limited design maturity in order to secure funding at business plan stages. These estimates were provided as point estimates, or single figures, with contingency amounts added on to reflect risk.

Unfortunately, the use of a single figure rather than a range of likely costs has led to an over-reliance on the figures produced. The public and other stakeholders fixated on these, which has led to distrust as figures have gone up as designs have progressed and costs have increased.

The National Audit Office (NAO) set out in 'High Speed Two: A Progress Update'[13] the recommendation that the Government should set ranges for cost estimates and completion dates that reflect uncertainty, with point estimates within this range set to help delivery bodies and Programme sponsors manage performance. This point was corroborated by the NAO's 'Survival Guide to Challenging Costs in Major Projects'[17] report.

In major projects it is expected that costs can fluctuate particularly where scope is not fixed. The use of ranges can help to communicate costs more effectively and recognises the risks and uncertainty inherent with early stage estimates more effectively than point estimates. My understanding is that ranges are now used on the HS2 Programme and this has been the practice since 2020.

[17] Survival Guide to Challenging Costs in Major Projects, National Audit Office, June 2018

R50. In line with the NAO recommendation, Government should use cost ranges rather than point estimates particularly in the early stages of a project's life.

7.4 Current Issues

F48. There has been no official update in baseline cost and schedule since 2020 (Baseline 7.1).

F49. Currently there is a difference in opinion on the cost estimate for the Programme between HS2 Ltd and the DfT.

These two findings are linked. The last available assured figures (November 2023) that I have been given for Phase 1 are £49-57bn (HS2 Ltd view) and £45-54bn (DfT view), all figures in 2019 Prices. The HS2 estimate predated the decision to cancel Phase 2 and HS2 East and did not reflect the Government's decision to secure private investment for Euston. DfT did not accept the HS2 Ltd assessment and came up with a different range because the HS2 estimate was developed prior to the Network North announcement and because it was believed that more cost risk could be addressed.

The HS2 6-Monthly Report to Parliament (December 2024) refers to HS2 Ltd providing an interim update in June 2024 to the HS2 Ltd Board of a range of £54bn to £66bn (2019 Prices). The Report to Parliament states that DfT do not think the figures are accurate or reliable, remain highly uncertain and subject to further assurance, and are not approved by the HS2 Ltd Board or DfT.

The absence of an agreed baseline is a failure of governance and means that there is no basis on which the Sponsor can manage the performance of HS2 Ltd. It also undermines the confidence of wider stakeholders and the public in HS2. It goes without saying that a key part of the Reset is to agree a new baseline cost and schedule.

I have identified a number of reasons for the disagreement of cost but, at its simplest, I believe that that this comes from two things: a lack of confidence in the EAC that is being put forward and a belief on the part of the Sponsor and the Financial Shareholders that any increased funding envelope will not be spent without due regard to cost control.

The solution will come from addressing both these issues together, i.e. this is not just about the cost estimation methodology. It is also about rebuilding trust and confidence in cost control.

I have discussed and made recommendations on how to improve confidence in the accuracy and reliability of the cost estimate and project controls under F42. I welcome that a senior group has been set up to resolve the differences on the cost estimate and the new Programme Board will also have an important role in this. The other essential factor is to achieve a commercial reset on the MWCCs that will increase the reliability of and confidence in the output costs from these contracts.

R51. As part of the Reset, agree a new baseline cost and schedule and a date when this will next be updated.

F50. Estimates being quoted using historic prices causes confusion.

Quoting historic prices is unhelpful and confusing. The current prices in use are 2019 Prices. This stems back to the fact that there has been no revised baseline since 2020. Using historic prices is particularly misleading when communicating the cost of the project publicly and creates unnecessary issues, both internally and externally to the Programme, when prices are revised to account for inflation. More recently this problem has been exacerbated by the long period since the last baseline and the extremely high rates of inflation, particularly in the construction sector (30.9% from 1Q19 to 4Q24 BCIS General Building Cost Index).

It also makes managing cost more difficult as there is a continual need to convert historic prices into contemporary prices. This creates distraction and inevitably

impacts cost control. Finally, it increases the difficulty of managing inflation and allocating the consequential risk.

I recommend that a different methodology is adopted for quoting prices for infrastructure projects which extend over a long period of time.

R52. Review the way in which historic prices are used in infrastructure projects and consider whether a bespoke solution is required.

F51. The absence of an effective mechanism to deal with inflation risk has undermined cost control and led to in year affordability constraints.

F52. Annualised funding arrangements have made it impossible to manage the Programme effectively.

These two findings are linked but it is important to state that the cost pressures that the Programme came under were not just as a result of inflation. There were many other reasons including genuine cost overruns, Covid-19, the consents regime, and dealing with other Exclusions and Assumptions.

The proposed methodology for managing inflation risk is discussed in the Governance section. If there isn't an effective and transparent mechanism for managing inflation, then the whole performance management system can be compromised as other cost increases are thrown into the inflation bucket. The same principle would apply to other risks that are retained by the Financial Shareholders.

In the autumn of 2022, when the full impact of all the cost pressures became clear, HS2 Ltd formally wrote to the DfT to inform them that they would be unable to operate within the Target Cost imposed on them. Although the DfT was able to cope with the in year excess in 2022 by reallocating money from programmes that had underspent, in reality the sheer size of HS2 in relation to the overall Departmental budget meant that this approach was unsustainable. For example, HS2 Programme spend was planned to be 29% of DfT capital spend during 2022-23. In autumn 2023,

HS2 Ltd formally notified the DfT that the Phase One EAC would likely exceed the funding envelope.

The combination of these issues and the absence of a multi-year spending review moved the Programme to a position of annual funding settlements with no long-term funding control period in operation. Final annual budgets were often notified relatively late in the day. This all led to scope deferments, cancellations and supply chain uncertainty. It also undermined HS2 Ltd's negotiating position with suppliers.

R53. Annual funding control periods must be avoided as they undermine effective management of the Programme.

7.5 Business Case and Benefits

All government projects are required to produce a business case as part of the appraisal and approval process. The business case methodology is governed by the Green Book.

In my experience business cases for mega projects tend to be handled differently to smaller projects. The tendency is look to at the individual case for the mega project with the aim of producing a stand-alone benefit cost ratio. For smaller projects business cases can be more easily used to compare the merits of alternative projects so choices can be made. Appraisal methodology may also focus more on supporting the scrutiny of benefits than cost.

There has been considerable debate on the methodology for calculating benefits for transport projects and particularly the wider economic benefits (i.e. jobs, economic regeneration) and consequential reinvestment.

From my conversations with experts, my understanding is that wider economic benefits can be derived from estimating average effects (on which much has been written) or estimating the likelihood of such effects in the context of specific projects (on which there is very little research). Wider benefits do not follow instinctively from

delivery of a rail project in the way that time savings do; there is unavoidable uncertainty over whether/how economic activity will adjust to a new rail service, and this is 'assumed away' in the current approach to business cases, which bases its estimates of wider economic benefits on the average effects of past schemes.

Linked to this, the realisation of benefits will heavily depend on other complementary investments (skills, housing, new agglomerations forming, existing agglomerations expanding). This complementary investment can only be delivered by working with other relevant government departments or regional/local authorities.

The existing methodology struggles to deal with these uncertainties.

We must also consider that HS2 is part of a wider vision for the UK in terms of rebalancing the economic geography of the country (the “levelling up” agenda). I cannot find any evidence that the contribution of HS2 to this objective was specifically compared to other alternative rebalancing projects. It is a good question as to who should be responsible for enabling such comparisons – maybe NISTA as part of its role to produce the National Infrastructure Strategy?

The guidance on Wider Economic Impact was reviewed substantially in 2019/2020 and, following a recommendation in the Oakervee Review, further changes have been made since. I would suggest that it is time to update the guidance again (particularly in a post Covid-19 environment) and the focus could be:

- enabling decision makers to explore their appetite for risk in relation to the realisation of wider economic benefits
- improved consideration of the complementary investment in order to better understand the associated benefits

Early on it seems apparent that the business case was a significant driver of the requirements and scope; i.e. speeds over 320kmph and 17 trains per hour were necessary to drive the benefits case. However, the cost implications of this scope were completely underestimated.

Stewart Review

The 2013 business case which was based on a very low design maturity (I understand this was 4%) had a capital cost estimate of £22bn (2011 Prices) for Phase 1. This proved to be far too low.

This underestimation of the costs at the business case stage had significant consequences. Firstly, it supported a decision to go with the high speed/high capacity scope when, if the cost estimate had been more realistic and higher, alternatives would have been considered. At the very least it would have forced scope, design and cost to be iterated. Secondly, these costs formed the cost estimate that set the initial funding envelope and set the project off on the wrong foot in terms of stakeholders and the public understanding of the full cost.

As a final point the Business Case has not been updated since 2020. This is despite the cancellation of Phase 2 and HS2 East, and Covid-19 altering travel patterns and the way people work. This must impact the value of time, which plays a major part in the benefits calculation.

R54. For projects like HS2, where it is contributing to a wider regeneration, create a business case for the overall vision such that different options can be explored in terms of programme/projects mix.

R55. Update the guidance for wider economic benefits in transport infrastructure projects, noting the progress that has been made post a similar recommendation in the Oakervee Review.

R56. Revise guidance on the cadence of Business Case updates for programmes that extend over a long period.

8. Capability and Culture

This section looks at the capability of the HS2 Ltd Executive and the Sponsor Team. The Governance section covers the capability of the HS2 Ltd Board and other stakeholder groups. The general consensus from my discussions has been that both HS2 Ltd and the Sponsor Team have had insufficient capability for most of the Programme's life. There are many reasons for this, but this prompts the question as to why it has not been addressed given that it has had a direct impact on the deliverability of the project?

I was also asked to look at culture and behaviour. I have not done an exhaustive investigation on the culture or behaviours within HS2 Ltd or the Sponsor. I have focussed mainly on the issues of trust and transparency.

8.1 HS2 Ltd

F53. Over the last four years, at any one time, HS2 Ltd has often been without either an independent non-executive Chair or a permanent CEO.

F54. Since 2020 there has been continual attrition and gaps in the senior HS2 Ltd team.

HS2 Ltd has had a significant degree of turnover at the very top of its leadership since the issue of Notice to Proceed in 2020. In particular, the CEO and Chair roles have been subject to much movement. Allan Cook stood down as chair in July 2021 and was replaced by Ian King on an interim basis. Sir Jon Thompson took over as Chair in February 2022, and following the departure of Mark Thurston in September 2023, has been acting Executive Chair, returning to his original role as Chair of the Board in September 2024 when Alan Foster was appointed interim CEO. Mark Wild took up the CEO role in early December 2024. On 18 December 2024 Sir John Thompson announced that he would step down as Chair in Spring 2025.

Stewart Review

The leadership challenge at HS2 Ltd is extensive and having both an independent Chair and a CEO in place is vital to effective delivery. The independent Chair is there to lead the Board, support the CEO and executive team and manage stakeholder relationships. The CEO also interacts with stakeholders, but their prime role is to provide executive leadership to the company and the delivery of the Programme.

These roles are of a magnitude and significance which mean they should only be combined as an emergency measure. I welcome the recent appointment of Mark Wild as CEO which will allow the reinstatement of an independent Chair and Alan Foster to focus on the CFO role after a 14-month interregnum. However, it is vital that a new Chair is appointed to replace Sir Jon Thompson as soon as possible to provide Mark Wild with the necessary support. I would suggest that this is done by a direct appointment as a full recruitment process will take too long.

Four members of the senior executive team have been in post for less than two years, and a number have only had their permanent role confirmed this year, including Mark Wild who has just taken up the CEO role. Meaning HS2 Ltd has had to rely on interim roles (not approved by the Government, but with the intention for a permanent hire) or consultants (day rate) to fill roles. This has clearly had an impact on HS2 Ltd capability to deliver the Programme. It also reduces the corporate memory of the company, relying on a few key individuals to remember key decisions, and creates a sense of uncertainty for employees. This has all also made it more difficult to maintain a consistent and productive relationship with DfT.

Succession planning has been an ongoing action by the HS2 Ltd, and it has established a robust process. HS2 Ltd has plans in place for each Executive and Senior Leadership Team member. This includes emergency cover requirements and a pipeline of internal candidates that have the potential to fill senior roles across a one to five year period respectively (as demonstrated by the appointments to cover the CEO and CFO roles). Despite a plan being in place, managing succession has proved challenging. One contributing factor has been the protracted processes to approve senior hires by Government.

R57. Mark Wild should be given the freedom and funding to put in place a high calibre and enduring leadership team and this should be a top priority for the Reset.

R58. The use of consultants and interim roles in the senior leadership team should be a last resort.

F55. The HS2 Programme has not been seen as an attractive place to work and it has been difficult to attract talent.

As Europe's largest infrastructure project, HS2 Ltd should be a magnet for talent across the infrastructure spectrum, from rail and civil engineers to procurement and commercial specialists. In fact, 60% of those who joined HS2 in 2024 stated they joined because they were inspired by the Programme. However, from the most recent employee survey, 26% of all employees indicated they wanted to leave within 12 months, of which 26-29% were mid-senior level leaders. These numbers were in part due to the cancellation of Phase 2, announced as the survey was completed. My interviews have also confirmed that without Phase 2, there is less of a clear career path for employees of HS2 Ltd.

72% of those leaving in 2024 stated it was because of the rescoping. Prior to the removal of Phase 2, the spectre of cancellation hung over the project, undermining morale. The Programme has also been subject to continual external criticism. This undermines morale further and makes it much more difficult to attract talent. I am sure this was a contributing factor to the difficulties in recruiting a permanent new Chair between July 2021 and February 2023. One of my Key Findings is that **"**The balance between advocacy and criticism/challenge needs to be restored**".** This is essential if the Programme is to attract and retain the right talent and capability.

R59. HS2 Ltd and the Sponsor must work together to build the brand of the Programme and make it an attractive place to work.

F56. There has been significant turnover of HS2 staff, resulting in a dilution of accountability, a lack of corporate memory and lack of continuity.

Attrition at HS2 Ltd is currently around 13.5% (as of November 2024), which is in line with the UK Public Sector. In the last 12 months, 11 senior leaders have all gone to the private sector. Staff turnover has had a large impact on morale and knowledge management. Subsequently, the Company has had to rely on a small number of individuals within the ecosystem to be the corporate memory. I observe that there are also no retention mechanisms in place to mitigate the risk of key staff leaving. Statutory redundancy Terms and Conditions provide HS2 Ltd with no leverage to retain people (that may want to stay).

The length of a megaproject, and the different phases of the project mean that turnover is an inevitable part of the organisation. A best-in-class knowledge management system can be a very effective enabler for maintaining corporate memory and capturing lessons learnt. Crossrail was a very good example of a project that invested in lessons learnt and made the findings public, and I note HS2 Ltd has invested in a similar resource. It is critical that sharing and acting upon the lesson learnt from HS2 (and wider) should reach beyond their programme boundaries.

R60. Review how lessons learnt are captured and shared on the HS2 Programme.

R61. Review the effectiveness of the Knowledge Management system as an aid to corporate memory.

F57. The setting up of a brand-new delivery vehicle has made building capability far more difficult.

The Major Projects Association report[18] makes the point that it is inherently difficult for a start-up client to develop organisational capability because a new organisation

[18] Cancellation of Major Projects: Perspectives on Rethinking the Approach to Major Projects – Inspired from HS2 Phase 2 Lessons, Major Projects Association, September 2024

limits the ability to build on past experiences and there is no continuity of staff. In the rail sector we have had multiple new special vehicles set up to deliver projects including HS1, Crossrail, and East West Rail.

It is interesting to note that Network Rail has not been used to deliver many major rail projects, although it is delivering the TransPennine Route Upgrade. This is in stark contrast to France, where SNCF delivers all the major railway projects.

On Thames Tideway c. 50% of the delivery team came from Crossrail; this was a deliberate strategy to recruit employees with a specific project delivery capability. Within the public sector the roads programme has seen the benefits of having a consistent and experienced team doing multiple projects.

On HS2, it is worth noting that HS2 Ltd undertook a comprehensive lessons learnt exercise on Phase 1 to inform the approach to Phase 2a. Some significant changes were made, including the appointment of a Delivery Partner. One of the big disappointments with the cancellation of Phase 2 in HS2 Ltd was that, as an organisation, it felt much more confident in its delivery capability and approach with the benefit of the Phase 1 experience.

I think this would be a useful topic for the future NISTA to consider and address. In the short to medium term, I think the solution should be to build teams with specialist capability that can be transferred from project to project. The aim would be to invest in capability and retain staff over the long-term. Examples of such teams could be: civils, rolling stock, stations, and systems integration. Station capability is an interesting issue for Euston, with my understanding being that it is currently sitting in HS2 Ltd and, to a lesser extent, Network Rail and Transport for London. In the longer term we should seek to establish more permanent entities that can deliver more than one project like SNCF does with railway projects in France.

Another option would be to build a shared support function to cover such activities as HR or finance. A stand-alone and new support function takes an enormous amount of time to set up and, in my experience, distracts and delays delivery particularly in the early stages.

In the Wider Lessons Learnt section, I have recommended that NISTA should conduct a review on how delivery capability can be built, retained, shared and transferred from one project to another.

F58. HS2 Ltd has been underpowered in the delivery and commercial functions.

F59. Restricted pay levels and protracted approval processes at all levels have constrained the ability to recruit the appropriate people and people have been lost in the process to alternative jobs in the private sector.

HS2 is one of the most challenging infrastructure projects in the world and needs the best capability and talent available. Also, given the scale, the pool of leadership talent needs to have more depth, especially within the commercial and delivery functions. For example, HS2 was at least five times bigger than Crossrail and significantly larger than Thames Tideway.

There is a common view that HS2 Ltd has been consistently underpowered. Part of this is structural and a failure to recognise that more depth of leadership was required – most of the project delivery senior leadership roles are more challenging than the CEO role is for many other projects. A second contributing factor is to do with pay constraints and appointment approval processes. A vital part of the Reset is to fix these issues.

Generally, the support functions are well resourced. The problem relates primarily to the delivery and commercial leadership and teams. The arrival of Mark Wild is an ideal time to review capability in these two areas. Mark Wild has already identified the need for a Chief Delivery Officer role which I fully endorse, but more will be needed.

Pay and appointment approvals have been a constant constraint. Currently HS2 Ltd must request approval from the DfT for all roles over £150,000 (or a bonus of over £17,500) and additionally from HMT for the most senior roles. Although this varies

between different Ministers, there has long been an aversion to paying what are perceived as inflated salaries. Whilst I understand the politics (and optics) of this, it does not recognise that, if you are to attract the right calibre skills and expertise (who have choices on where to work), then you need to pay appropriately.

This process is also taking too long. In addition to the 6 months or more that it typically takes to hire a senior role, the approvals from HMG are often adding another 6 months to the process. HS2 Ltd is then sometimes forced down the route of hiring staff, who are wanted for a permanent role, on interim contracts or as secondees. This is illogical if you end up paying far more via a secondment contract.

I propose that HS2 Ltd should be given more freedom and autonomy to act with speed and decisiveness. One way this could be achieved would be to agree an addition to the current Remuneration Annex to the HS2 Ltd Framework Document so that HS2 Ltd can operate independently to make senior hires over £150,000. The agreed framework would involve an overall budget, agreed pay ranges and numbers of people. It would apply to both new recruits and existing staff at an executive or senior leadership level. HS2 Ltd would have freedom to make hires as long as they fell within the agreed framework. The CEO and Chair of the HS2 Ltd Board would still be reviewed and appointed within the current process.

Attracting the best talent is not just an HS2 issue, it applies to the UK market as a whole. UK Infrastructure needs a joined-up solution for attracting top talent to UK major projects. I think that NISTA should be given the responsibility for leading an initiative to build capability and leadership in infrastructure delivery across the UK (See Wider Lessons Learnt section).

R62. Mark Wild to reset the capability in the Commercial and Delivery functions.

R63. A Remuneration Framework is put in place with HS2 Ltd to enable greater flexibility and speed in hiring and retention of existing staff.

F60. I would expect to have found more evidence of external expert advice to cover gaps in expertise given constraints on recruiting commercial and delivery resources.

F28 in the Assurance section identifies that good project delivery is reliant on four inputs including access to expert advice. This sits alongside delivery team excellence, expert challenge and effective assurance.

Given the challenges and problems that have arisen on projects, particularly the MWCCs, coupled with the challenges of building commercial and delivery teams with sufficient depth and capability, I would have expected that more use of external strategic and commercial advice would have been made. I view this as separate from commissioning external reviews and reports. Taking specialist expert advice is common practice in the private sector to cope with a crisis, supplement skills and expertise, or to cope with a surge in demand. An example would be a company bringing in a restructuring firm.

It Is also worth noting that HS2 Ltd has not been able to benefit from support from specialist infrastructure project delivery expertise within the Government. This is covered in the Sponsor section below. HS2 Ltd needs to be proactive in its use of external expert advice and set up additional frameworks that can be called upon at short notice.

R64. HS2 Ltd to consider setting up frameworks for specialist strategic and commercial advice to supplement those already in place.

F61. There have been challenges between HS2 Ltd and DfT on the management of the indirect cost budget which has resulted in cost pressures that have impacted delivery.

The trust issues that are a recurring theme of this Review have also impacted the way that the indirect cost budget is managed by HS2 Ltd and overseen by DfT. I have heard from DfT that it doesn't think the budget is being appropriately spent and

from HS2 Ltd that DfT is micromanaging and constraining its ability to resource the Programme appropriately.

There is no doubt that the indirect budget has added to cost pressures and has been put under pressure from overall affordability constraints. The cancellation of Phase 2 and HS2 East has also meant a complete rethink of the overall resources of the Programme.

There has not been sufficient clarity between central (i.e. head office) costs and programme costs (costs associated with delivery: e.g. the civils, stations, and system teams). Historically the split between these two has been one third central and two thirds programme. All indirect costs have been put in the same bucket and cost pressures applied to the total budget. This has made it more difficult to solve the problems around underpowered delivery and commercial teams in HS2 Ltd, and more challenging to bring in external advice in times of crisis.

The agreement of a sustainable indirect cost budget must be part of the Reset and a distinction should be made between central and programme costs. To achieve this, on the one hand HS2 Ltd must demonstrate that it has a robust and defensible budget, and on the other the budget must allow HS2 Ltd to retain and build the capability to deliver the Programme into service. The budget should be a multi-year settlement.

R65. HS2 Ltd and DfT to agree a new indirect cost budget as part of the Reset.

8.2 Sponsor Team

F62. The SRO and senior leadership team have not had the bandwidth to deal with the breadth and scale of issues arising from the Programme.

Although this has not always been the case, HS2 is currently overseen by MRPG which is led by Alan Over. The MRPG (on behalf of the DfT) provides the sponsorship for both HS2 and Northern Powerhouse Rail. Within HS2, as SRO, Alan

Over is responsible with his team for Phase 1, Euston Station, and any ongoing discussions about future rail infrastructure to address capacity issues between Birmingham and Manchester.

I think this is an unrealistic workload for the SRO and his leadership team, especially given the work required around the Reset for Phase 1 and the need to sort out everything on Euston. There are two options: split the role of SRO or bring in more capacity and expertise in the senior leadership team. I think this needs to be reviewed as a matter of urgency.

R66. Review the capacity and capability of the SRO and the MRPG leadership team to deliver its objectives: HS2 Phase 1, Euston Station, a possible Phase 2 and Northern Powerhouse Rail.

F63. The capability of the Sponsor Team could be improved.

In the same way that HS2 Ltd team has been underpowered to deal with a project of the size and complexity of HS2, the Sponsor team has a similar issue. I think there are three main problems:

1. **The Sponsor Team has experienced a high level of attrition.**

The Sponsor Team has experienced high attrition over the last few years. This turnover of staff impacts long-term corporate memory and an understanding of why decisions were made and knowledge of the overall project. In mitigation, an effective knowledge management system has been set up and the benefits of this have been demonstrated by the ease with which documents have been shared with my Review Team.

2. **There could be a greater balance between people with a background in the public sector and the private sector.**

From my time as CEO of Partnerships UK (PUK) and Infrastructure UK, I found that there was great value in having a mix of public and private sector skills. Public sector

experience brings an essential knowledge of how Government works and how to get things done in the public sector. It is wrong to generalise that people from the public sector do not have commercial and specialist infrastructure delivery skills but in my experience, it is very beneficial to supplement their capability by including people from the private sector who are experienced in delivering major infrastructure projects on the client side. The other advantage of this is that people in the public sector tend to move jobs more often, so by including private sector people you can reduce staff turnover.

3. The quality of the Sponsor Team challenge.

I have heard during my interviews that the Sponsor Team has lacked the ability to engage effectively with HS2 Ltd and to provide an effective challenge. Too often the response from the Sponsor Team has been to ask for more and more information rather than collaborative engagement. The Sponsor has of course been able to make good use of the P-Rep.

There was an action taken in 2021 to define the roles and responsibilities of the Sponsor Team and to develop a 'World Class Sponsorship Team'; the output of this was of a good quality, and it would be sensible to revisit this work and ensure that its findings and recommendations have been implemented. This should provide an opportunity for the team to reflect on capability gaps as well as to develop skills internally.

This Review talks a lot about the need to restore trust. A more confident and capable Sponsor Team is essential to the rebuilding of trust.

As set out in the Assurance section, the capability of the Sponsor team has been reviewed relatively lightly in external reviews despite assurance reviews highlighting concerns.

R67. As part of the Reset, a review of DfT Sponsor capability is required.

F64. Other than the P-Rep, the Sponsor team has not sought to take external advice to fill gaps in expertise.

As with HS2 Ltd, apart from the P-Rep, the Sponsor Team has taken limited external advice in areas which require deep expertise, such as cost and commercial management. The IPA's advisory role on HS2 has been relatively limited due, maybe, to resource constraints.

This is in marked contrast to my experience at PUK, where on any major PPP project, the public sector client team would have access to dedicated support from PUK. This would normally have consisted of a team of 2-3 people. This support would have involved people with specialist skills as well as access to knowledge and best practice from other projects. I think this is a missed opportunity.

As set out in the Wider Lessons Learnt section I think that NISTA should develop a centre of excellence for project advisory support with much greater capacity than the IPA can currently offer.

In the meantime, DfT should consider taking advice if specialist skills are required to supplement specific capability within the Sponsor Team.

F65. Trust needs to be restored between the Sponsor Team and HS2 Ltd.

There is a recurring theme of the lack of trust between the Sponsor and HS2 Ltd. This lack of trust leads to tension, a lack of transparency, a perception of micromanagement, an inability to solve problems in a collaborative manner and a blame culture. The evidence shows that these behaviours have escalated since summer 2023 when the cost pressures emerged from the MWCCs.

The need for greater transparency has been a constant theme in my discussions. My conversations with individuals from other infrastructure projects have revealed that they have a much higher level of transparency, which has been highly beneficial. This is in part due to the presence of third-party financiers who demand continued access to documentation and data, and therefore increased transparency between

stakeholders. Within HS2 Ltd a monthly Programme Review meeting is held where the senior executive spends an entire day going through the Programme MI. I think this is an excellent initiative. However, although the P-Rep attends, no-one from the Sponsor Team is present. I think it would be helpful for representatives of the Sponsor Team to attend.

Transparency of data ensures that all parties are operating from the same information. However, it is vital that the various stakeholders respect their roles. Transparency is there to improve understanding and communication. It is not there to enable micromanagement.

Another important issue on culture is creating an environment where “bad news” can be shared in an open and transparent way between all HS2 stakeholders. The ongoing threat of cancellation and the way government systems operate (e.g. slow protracted processes, multiple layers of approvals), have not helped support an open culture, and have likely fuelled the distrust. There is clear evidence from other projects that, if a problem is identified and addressed early, then the consequences will be much more limited.

My proposals with regard to setting up a Programme Board are designed to help deal with this issue at a senior level, but it needs to be addressed right down through the HS2 Ltd and Sponsor organisations. Building Psychological Safety would create a shared vision and recognition that the DfT and HS2 Ltd are dependent on each other’s successes to deliver the railway and wider transformation. For HS2 Ltd and the DfT this would encourage transparent conversations, even when ‘bad news’ needs to be shared such as adverse changes to cost, scope or schedule. This would also go a long way to reducing the tensions in the relationship.

The arrival of Mark Wild as the new CEO gives a perfect opportunity to review the culture in HS2 Ltd and reset the relationship between HS2 Ltd and DfT at different layers of the organisation. The DfT needs to be a full partner in this initiative.

R68. HS2 Ltd and the Sponsor team should develop a charter based on Psychological Safety, where each side can take risks in voicing

opinions, challenging decisions and admitting mistakes without fear of negative consequences.

R69. A cultural reset is required to establish ways of working – modelling collaborative behaviours across all levels in both HS2 Ltd and the Sponsor.

9. Main Works Civils Contracts (MWCCs)

Redacted for commercial confidentiality

10. Euston

The Chancellor's announcement of funding to build the approach tunnels to Euston in the October 2024 Budget provided much needed certainty on the future of the HS2 London terminus at Euston. This is good news for the Programme as, for Phase 1 to deliver the benefits anticipated, it needs the central London terminus.

The announcement to cancel Phase 2 and HS2 East was accompanied by a decision to transfer responsibility for the Euston Programme from HS2 Ltd to DfT. The tunnels and the approaches to the station remain within Phase 1 and are the responsibility of HS2 Ltd. I support the decision to separate the Euston Programme from HS2 Ltd and was an advocate for doing this earlier. The skills and expertise required are different and there is a different set of stakeholders. The Euston Programme is a mega multi-billion-pound project in its own right with many complexities. Its constituent parts are:

1. The construction of the HS2 central London terminus and improved onward connections ("HS2 Euston Station")
2. Network Rail's redevelopment of the mainline station ("NR Euston Station") with the HS2 Euston Station ("Euston Stations")
3. Updating the Transport for London Station ("Euston Underground"); and
4. The wider development within the station "red line"

For a long time, Euston has been fraught with difficulties and uncertainty. The decision on the tunnels removes some of the uncertainty but, as it stands, there is no agreed scope or cost estimate, and no governance structure or agreed delivery vehicle. There is therefore a lot to sort out if the project is to be delivered.

The DfT recently commissioned an Independent Panel to look at the proposed delivery model for Euston and some other related issues. I have not sought to duplicate this review. I support the findings and recommendations. I have focussed

on providing additional observations and recommendations drawing on the lessons learnt from my review of Phase 1. I think there are five priorities:

- Put in place a governance structure
- Agree the scope and schedule
- Agree a Delivery Model
- Put in place a long-term ring-fence funding settlement
- Enhanced sponsor capability

R73. A new governance structure is required to lead and drive the project to successful completion.

There is currently no agreed governance structure for taking forward Euston station, and it is a priority to set this up. Following the transfer from HS2 Ltd, responsibility for the Euston Programme lies with the DG for MRPG as SRO and the lead is the Euston Director within the SRO's team.

The Euston Partnership is a useful forum. Its mission is to "bring together the projects alongside *key stakeholders, providing a single guiding mind for the entire Euston Campus to ensure a collective focus on driving forward benefits for all those who live, work and travel through Euston*". Representatives include HS2 Ltd, Network Rail, DfT, Transport for London, London Borough of Camden, Greater London Authority, West Coast Partnership and Lend Lease. However, it is not a decision-making body, and I got the impression that it has been in limbo for the last year or so.

I recommend that the Euston governance structure follows the same principles that I have recommended for Phase 1:

Shareholder Board

This Board would represent the Financial Shareholder interests. I would suggest that the remit of the Phase 1 Shareholder Board is expanded to include the Euston Programme. It doesn't make sense to set up another entity. The membership would need to be expanded to include the Programme Board or Delivery Vehicle Chair(s) in time.

Ministerial Taskforce

Similar to the Shareholder Board I think the Ministerial Taskforce's remit can be expanded to include the Euston Programme.

Programme Board

The same philosophy could be adopted as for Phase 1; i.e. separate Board is established to drive the Euston Programme to a successful conclusion. More work needs to be done to consider who should be represented on this Board and how it relates to the Euston Partnership.

Delivery Body

The entity or entities responsible for delivering the Euston Programme. This is discussed further below.

R74. The Euston sponsor capability within DfT needs to be enhanced.

As set out in the Capability and Culture section, the responsibilities of the DG for MRPG are broad and so there must be an issue of bandwidth in relation to overseeing Euston. In my view, the Sponsor Team capacity is also lacking some of the specialist skills associated with developing and sponsoring such a complex programme, i.e. the building/refurbishment of stations and wider urban redevelopment. I suggest that as a first step "senior adviser" capacity is brought in to sit alongside the SRO and Euston Director to help lead the development of the Euston Programme. This could be two people with one having expertise in station

development and the other in commercial development. These one or two people could also play a role in a future governance forum.

I also support the recommendations of the Independent Panel highlighting the priority appointment of an experienced individual to lead the delivery who has a track record success of the early-stage development of major rail and stations infrastructure.

R75. The options around the delivery model need to be reviewed and agreed.

This issue has recently been reviewed by the Independent Panel with options including an in-house delivery function and an arm's length body. I understand that there is currently a preference for an arm's length body. I support the view of the Panel that at this stage the full range of options should be kept open for consideration. I note that currently most of the delivery functions are being carried out by HS2 Ltd and that there has always been a debate about whether Network Rail should have an involvement in the delivery of the HS2 Euston station.

R76. Agree the scope, EAC and funding with a ring-fenced and realistic budget.

If the lessons are to be learnt from the wider HS2 Programme, then time needs to be allowed to iterate the scope, design, cost and schedule to arrive at the best outcome for the Euston Programme. This task is complicated by the desire to bring in private sector funding. Although the creation of proposals and solutions is the responsibility of the Sponsor Team and delivery partners (coming together at the Programme Board), the Shareholder Board is there to bring together the Financial Shareholders and to make the decisions (or rather final recommendations to Ministers).

A key input to the scope decision is to what extent the HS2 Station is future proofed for possible options around a Phase 2; i.e. how many platforms should be built or should space be set aside for future platforms. This is a Financial Shareholder/Ministerial decision.

The output of this iterative process should be an agreed Requirement and Scope, an agreed EAC, and a ring-fenced long-term funding settlement with appropriate protected contingencies built in.

R77. Phasing of the work should be considered as a method of delivering benefits earlier.

Akin to the model of King's Cross, Canary Wharf and Battersea Power Station, there are significant benefits that can be delivered in terms of access to HS2 and improvements to the Network Rail station that could be realised without the surrounding regeneration. I support the recommendation in the Euston Independent Panel report that there are advantages in delivering a project like this in stages, so as to allow benefits to be realised earlier.

11. Wider Lessons Learnt

Beyond the focus of HS2, this Review was also tasked with identifying broad themes that should be considered for future projects. I have captured lessons learnt, and, where appropriate, made recommendations. I have not sought to repeat the lessons learnt in other reviews but have focussed on particular points that come from my review of HS2 and my wider experience.

It should be noted that recommendations in this section are made in a different context to the other recommendations in this Review relating to HS2. Many of the recommendations go much wider than HS2 and transport so, for those, stakeholders other than DfT need to decide whether and how they should be implemented.

I have suggested that quite a number of the recommendations should be given to NISTA. This is in the absence of any great knowledge of how NISTA is going to operate so some might need to be re-allocated. Also, the recommendations for NISTA will need to be prioritised and staggered as there are too many to implement in one go.

Lessons learnt fall under the following headings:

1. **Stewardship of the UK Infrastructure market**
2. **Governance:** How HMG can enable major projects, where it should intervene and where it should step back.
3. **Managing Cost and Schedule**
4. **Capability:** What lessons can be applied to future delivery organisations

In addition, there is a more comprehensive lessons learnt section from my review of the MWCCs.

11.1 Stewardship of the UK Infrastructure Market

Lesson: The delivery of the UK Infrastructure market needs to be actively managed.

The track record of infrastructure delivery in the UK over the last 10 years has not been good, with many public sector projects and programmes suffering delays and rising costs. As an aside, the regulated sectors (particularly energy) have a better track record demonstrating that private funding and leadership has a role to play in delivering public sector infrastructure. I also think that the PPP model could be adapted to bring in some of the beneficial features of the RAB model.

The NIC has been responsible for advising Ministers on the Infrastructure Strategy, and IPA have focussed primarily on assurance but there has been no central government body responsible for overseeing and driving the UK infrastructure programme. I think this is needed. From 2000 to 2010, one of the roles of Partnerships UK (PUK) was to support HMT in providing overall stewardship of the PFI/PPP market including driving the policy, managing the pipeline, managing and creating supplier capacity and developing standard contracts. PUK was succeeded by Infrastructure UK when the remit was widened to all infrastructure. I think that NISTA should be given the equivalent role to PUK/IUK for the UK infrastructure programme.

In my view, the importance of the infrastructure strategy to the UK merits the appointment of a specific Minister. This Minister could cover Infrastructure and Construction and be supported by NISTA.

R78. Consideration to be given to appointing a specific Minister for Infrastructure and Construction.

R79. NISTA to be tasked with providing overall leadership of the delivery of the UK infrastructure programme reporting into a Minister.

Lesson: The structure and capacity of the UK construction market does not support the Government's infrastructure plans

This Review demonstrates that HS2 stretched the civils supply market beyond its capacity. It also shows that the structure of the UK construction market, with Tier 1 suppliers commonly relying heavily on outsourced design and sub-contracting to Tier 2 and 3, has shortcomings. If we are to deliver the infrastructure that the Government aspires to deliver, then we need a construction capability that is fit for purpose for future demand. It has to be a priority sector and yet has received limited government focus for the last 10 years. The last government report that I can find relating to the construction sector was in 2019. I suggest that NISTA takes the lead and should be asked to review the construction sector looking at issues such as:

- A demand-led assessment of what is required
- How to encourage more capacity at the Tier 1 level (i.e. prime)
- The relationship between design and construction

R80. NISTA to conduct a review of the capacity and capability of the civils construction sector.

Lesson: Planning Reform is needed to support the plans for infrastructure investment in the UK

As per F41, without significant reform to the UK planning consent process, other major infrastructure projects will continue to face cost and schedule delay. I fully endorse the review announced in September 2024 by the Government on proposed reforms to the National Planning Policy framework.

11.2 Governance

Lesson: Projects can become too big for a single entity to manage

Too often governance and delivery structures are driven by the desire to reduce the number of interfaces. However there comes a point when the size of the task overwhelms the capacity and capability of a single body. HS2 Ltd is a case in point. I think the scope of its responsibilities could have been reduced; i.e. utilising a separate delivery structure for the Euston Programme. However, if you split responsibilities you still have to bear in mind that one entity needs to be the controlling mind.

For future programmes of scale, consideration should be given to the scale of tasks given to the delivery body, particularly if it is newly set up. Also, consideration should be given to appointing specialist sub-boards for large contracts or significant operational issues.

R81. Consider the scale of tasks for new delivery bodies to avoid overwhelming the organisation and structure the governance arrangements to reflect the scale and complexity of the programme.

Lesson: The role of the Government as Financial Shareholder needs to be reinforced in governance structures and resourced appropriately

As per F17, the Financial Shareholder needs to be recognised more in the governance structure and the same can be said for some other projects and programmes. This role needs to be embedded in projects going forward and specialist expertise brought in to help manage it. In the same way as UKGI was set up to help manage the Government's corporate shareholdings, it would make sense to establish a similar central capability for infrastructure. Accountability would still lie with the Government department, but the central unit would supply expert resource to support it. NISTA should be tasked with considering where the capability should be hosted and managed. Options could be NISTA itself, UKGI or the National Wealth Fund (previously the UK Infrastructure Bank).

R82. NISTA to review how the Government Financial Shareholder role is managed across the infrastructure programme.

Lesson: Oversight and management of design solutions and the consequences of planning and environmental consents need a clear place in the governance structure with the appropriate challenge of cost and affordability

This is discussed further in F45 in the Cost, Schedule and Benefits section. The two recommendations are:

R83. The governance structure should explicitly cover environmental issues and there should be a clear mechanism for challenging the solutions proposed. It also needs to be recognised that whole government decision-making may be required.

11.3 Managing Cost and Schedule

Lesson: "Think slow, act fast"

This is a point much discussed in the Review, but which is worth repeating here. It is also referenced in many previous lessons learnt exercises and the quote is taken from the title of the first chapter of Bent Flyvbjerg and Dan Gardner's (2023) book, 'How Big Things Get Done'[3].

Lesson: Proactive steps need to be taken to enforce and embed a cost control culture

This Review discusses that a culture of driving down cost to manage affordability has been absent in HS2. I think this is a wider problem in UK public sector infrastructure projects where iconic design solutions and first of a kind engineering solutions are common.

On any project, this issue needs to be tackled head on, and actions taken to address it from the outset of the project. Affordability needs to be the top priority, and we must stop designing and building things we cannot afford.

Lesson: P50 is too low a value to set the Departmental Target Cost

Many other reviews and lessons learnt reports have covered the issue of optimism in developing cost estimates. I will constrain my wider lesson learnt to the P values. As per F46 in the Cost, Schedule and Benefits section, the use of P50 (for the Departmental Target Cost) and P75 (for the total funding envelope) is too low and needs to be reviewed for future projects by HMT.

R84. Review the use of P50 and P75 values for future infrastructure projects.

Lesson: Inflation needs to be a retained risk for Government

Over the span of HS2, inflation has been as low as -0.10% in 2015 up to a record 11.2% in 2022. HS2 and other projects have demonstrated that it is not possible or effective for inflation risk to be managed in its entirety within the project cost envelope. Some risk can be held by the supply chain and the delivery body/sponsor, but the balance needs to be held by HMT as the Financial Shareholder. It should be noted that, in the regulated sector, inflation risk is passed on to the consumer.

R85. Inflation risk needs a bespoke solution within infrastructure projects.

Lesson: Transparency and quality of Management Information is a fundamental requirement of good project delivery

Experience on HS2 and Crossrail show that the quality of MI has impacted the ability to make decisions at all levels in a timely and reliable manner. Transparent sharing of information between the Delivery Body and Sponsor Department, as well as between the Sponsor and HM Treasury, via the delivery and governance chain, has been a feature of good practice in other projects. Transparency allows for a single and reliable version of the truth and is evidence of trust, which should enable good decision-making.

The other lessons learnt are:

- A consistent approach and methodology for providing MI should be applied right through to the supply chain
- Without consistent comprehensive reporting, emerging risks are not identified and mitigated early, leading to unforeseen issues that escalate into major problems
- Do not rely on bottom-up information but have a process that ensures a top-down expert challenge

11.4 Capability

Lesson: We need to rebuild a public sector centre of excellence for infrastructure commercial and delivery support

Major infrastructure projects are very difficult to deliver, and the responsibility is spread around government departments and other public sector bodies. At the time of PFI/PPP, Departments established commercial centres of excellence (sometimes called Commercial or PFI units) with recruits from the private sector to supplement public sector staff. In addition, PUK, under the sponsorship of HMT, was set up with one of its specific objectives being to build a team of commercial/delivery specialists that could support public client bodies in the delivery of major projects. PUK also acted as a “fixer”: brought into problem situations working with the public and private sectors to find a solution. PUK was able to recruit and retain a high calibre team.

I believe this central capability needs to be rebuilt. The IPA has retained an advisory function and has some good people who offer support to projects. However, this has not been present on HS2 Phase 1 in any meaningful way. Combining assurance and advisory needs to be carefully considered as, in my view, they do not happily sit together. IPA is perceived as an assurance body, and this affects the impact and the effectiveness of its advisory support. I would suggest that the accountability and ownership for assurance needs to be kept separate from the advisory function. This was the case with PUK.

I propose that NISTA be tasked with rebuilding this central capability with a recognition that some of the people will need to be recruited from the private sector, and so pay flexibility will be required.

R86. NISTA to establish a team of commercial/delivery specialists to support Departments and the wider public sector in the delivery of infrastructure projects.

Lesson: The pool of infrastructure talent in the UK is insufficient

HS2 Ltd has constantly struggled to recruit sufficient people with right levels of skills and experience. The Review sets out some of the reasons for this (pay constraints, approval processes, reputation of the Programme) but another big reason is that the available talent pool has shrunk and is too small particularly at a leadership level. Many of the best people have chosen to work for professional services firms (i.e. the big engineering consultancies), the regulated markets or have gone abroad.

It is anticipated by 2027 the UK will need an additional 225,000 construction workers (Construction Skills Network Report). There have been some good initiatives. We need to learn from the success of The Crossrail Tunnel Academy, which trained over 15,000 people. The planned reopening of the National College for High Speed could also be a welcome addition to the industry.

However, I think more needs to be done and we need to develop an Infrastructure Capability Plan which covers leadership and all other levels of expertise, to develop a future generation. Given that this is a vital enabler for the delivery of the UK Infrastructure programme, I would suggest that it is another task for NISTA.

R87. NISTA to develop an Infrastructure Capability Plan.

Lesson: The setting up of a brand new delivery vehicle has made building capability far more difficult

This is discussed in more detail in F57 in the Capability and Culture section. In summary in the UK there is history of setting up brand new public sector delivery vehicles to deliver each new infrastructure project/programme. This significantly increases risk and increases the time needed to stand up an organisation.

R88. NISTA to conduct a review on how delivery capability can be built, retained, shared and transferred from one project to another.

Lesson: Public sector pay rules are a constraint to recruiting the best people

Infrastructure projects are difficult and complex to deliver. You only have to look at the UK (and international) track record to see this. These projects need the best people, and those people have a choice of where to go. This requires the ability to pay market salaries. We cannot rely on a sense of 'public duty' or secondments, particularly as these often end up in short term tenures.

Trying to operate within the normal public sector pay framework has not worked on HS2. Pay has been a constraint, and approval processes have been too long. One of the barriers to pay has been political reluctance to pay salaries aligned with market rates (fuelled by press comment). It would be much better to agree an upfront bespoke pay framework. Then the difficult decision only needs to be made once, and future pay awards will not be subject to the changing views of Ministers.

R89. For new projects/programmes, agree a pay framework upfront to reduce multiple decisions and create greater consistency and certainty.

11.5 Lessons learnt from the MWCCs

Lesson: For large complex contracts where development and procurement periods stretch over a long period there is a need to review the appropriateness of the procurement approach at regular intervals. If necessary, delay the contract award if there is too much risk and uncertainty

The MWCC procurement timeline stretched over a four year period from the initial market engagement to the Stage 1 contract award in 2017. Stage 2 contract award was in 2020. Many of the problems that have arisen on the MWCCs can be tracked back to a failure to change the procurement approach or delay the procurement in light of the fact that:

- A wide range of dependencies had not been addressed at the time of the contract awards
- Contract values had increased significantly, and market capacity and risk appetite had reduced dramatically, particularly at Stage 2
- Contestability was very limited at the time of Stage 2 contract awards

Examples of dependencies are design maturity, accurate and reliable Target Prices, progress on land acquisition and consents, and the level of supply chain risk appetite.

Lesson: Schedule priority must not be allowed to dominate decision-making at the time of contract awards.

The evidence shows that schedule was a primary driver at the crucial decision points on the MWCCs. To the extent that alternative options were considered, they were ruled out on the grounds of delay and consequential increased cost.

There is a belief amongst some people that delay is to be avoided at all costs with one of the main reasons being that the fixed costs extend over a longer period of time. This can be true but only if the risks of pressing ahead are manageable. In the

case of HS2 there was collective optimism over how manageable the consequential risks were.

Lesson: It is risky to let a contract when there is a significant level of assumptions and exclusions

The scale of assumptions and exclusions has caused major issues in the delivery and management of the MWCCs. My lessons learnt are as follows:

1. If necessary, delay the contract award until the risk of outstanding assumptions and exclusions can be reduced to a manageable and ultimately affordable level
2. Structure the client resources in terms of size and capability to deal with the number and complexity of assumptions and exclusions; i.e. a lean client approach is not going to be applicable if there are significant issues to manage.
3. Be aware that wider support is required from stakeholders to help manage assumptions and exclusions. Many of the consents will involve government-wide stakeholders and a whole government approach can reduce delay and cost
4. There should be a requirement to ensure that assumptions and exclusions are captured and consistently managed across the contract. Transparency of the process can be improved by cross-referencing assumptions with risk and schedule data and benchmark forecasts of defined cost. Reducing subjectivity in assessing the likely impact of risks, developing a uniform approach and providing clear and timely instructions for mitigation will improve management and help to control cost

Lesson: Contracts need to be sized with regard to market capacity and the benefits on economies of scale only apply up to a certain size and then reverse

The size of the MWCCs have proved too large to manage effectively, encompassing nearly the whole of the UK supply chain. By maxing out capacity, HS2 Ltd has had little ability to manoeuvre within contracts when costs have escalated, or schedule has not been met. Future projects need to structure the contracts with regard to available market capacity and risk appetite and, where necessary, change the phasing of a project to ensure that there is flexibility in the market to absorb risk or change.

Whilst there are benefits in reducing interfaces, the size of the HS2 work packages have led to diseconomies of scale, i.e. at a certain size the economies of scale reverse. Work packages need to be based on the size of the project, the capacity and capability of the supply chain and the capability of the commercial and delivery teams to manage the project.

Lesson: Early Contractor Involvement is a valid procurement and delivery approach but relies on a set of specific circumstances to operate effectively

From my review of the MWCCs I have come up with the following list of attributes which make the choice of ECI as a procurement more likely to succeed:

- A scope of works with established design precedents
- A design of sufficient maturity
- A design period of manageable length
- A strong and capable client
- Experience within the supply chain of ECI
- Capability within the supplier to manage design effectively (in-house design management is better than outsourced)
- A small list of assumptions and exclusions at the time of contract award
- Supply chain risk appetite

In deciding whether ECI is the right approach, careful thought needs to be given to all of these issues before proceeding down the ECI path.

Lesson: Phasing should be a tool to learn lessons and build confidence in the project

For mega projects, phasing is a key strategic lever for effective delivery, schedule management, value for money and cost management. Projects with high levels of complexity should learn the lessons from HS2 and consider starting with easier sections where possible. This will enable a project to build confidence in their approach, capability and processes.

By correctly phasing future mega projects, lessons can be incorporated to outperform previous phases (as demonstrated by Hinkley Point to Sizewell C).

Lesson: You cannot assume that the Target Price and incentive mechanisms will stand the test of time

For long contracts like the MWCCs there is significant risk that the Target Price and the incentive mechanism (the Commercial Model) will lose their validity over time. Factors that can reduce the effectiveness of a Commercial Model are:

1. The inability to set an accurate Target Price at the outset
2. Insufficient design maturity and too many assumptions and exclusions which undermine the Target Price
3. Over-reliance on the incentive mechanism as the main method for controlling cost
4. External factors (for the MWCCs these included Covid-19, inflation, conflicts)
5. Inability to adapt the Commercial Model once the costs have significantly exceeded the Target Price
6. Limited supply chain risk appetite

For all these reasons you need an effective contractual mechanism which is properly applied and allows a renegotiation/recalibration of the commercial model. To supplement this, the client needs negotiating levers (this is covered below).

Lesson: Contracts need to have mechanisms that provide negotiating leverage for the public sector client

Infrastructure contracts are often long in duration and complex in execution. It is not credible to believe that you can cover all future events in the contract clauses although many seek to do so. This problem is even more acute if there is a greater level of risk and uncertainty when the contract is signed (as was the case with the MWCCs). The change clause attempts to deal with change but very often this proves inadequate and difficult to use.

The answer is for the public sector client to recognise that it will need negotiating levers. These can come from termination options or the right to retender part of the contract. These are often considered to be ‘nuclear’ and too difficult to implement, so the threat and therefore the negotiating leverage that they might bring, is reduced materially. There are examples of where they have been used (Bond Street Station in Crossrail) but, in my experience this is rare.

There are ways to make these options more credible and mitigate this risk:

- Establish the contract such that retender is the default option at a milestone point and the onus is on the supplier to demonstrate that continuing with the contract is the best option and ensures value for money
- Ensure that the public sector client has the right to be assigned the design and Tier 2 and 3 sub-contracts. In this way the termination can be restricted to the prime contract and the risks of schedule delay are mitigated

- Carry out Red Team reviews prior to contract signature, wargaming potential scenarios so that clear actions are identified in advance to deal with contractual issues

11.6 Conclusion

Having spent the last few months immersed in the challenges that have faced HS2, it is clear that there is no singular reason for the problems within HS2. It has to be recognised that the HS2 Programme is an order of magnitude bigger than any other UK infrastructure project and so some of the lessons learnt are unique to HS2. However, many can be applied to other projects.

The infrastructure sector overall needs to think carefully about the lessons to be drawn and how to improve delivery if we are to achieve what the Government has set out in its infrastructure plans. It is my hope that this Review and the lessons to be learnt can provide recommendations and ideas for the sector to make positive changes for future projects.

12. Appendices

12.1 Appendix A: Collated Recommendations

Section	Recommendation	
Governance	R1	All stakeholders to remember the importance of advocacy for the HS2 Programme going forward.
	R2	Establish a Programme Board.
	R3	Bring more independent/non-executive representation into the governance structures.
	R4	Review and agree new Terms of Reference for the HS2 Ltd Board.
	R5	Review terms of the Development Agreement and Framework Document, relevant to the HS2 Ltd Board, to reflect the current position of the Programme.
	R6	Evolve the HS2 Ltd Board ToR, and the terms of the Development Agreement and Framework Document, relevant to the HS2 Ltd Board, as the Reset progresses.
	R7	The revised Terms of Reference for the HS2 Ltd Board should set out the respective responsibilities and accountabilities of the Accounting Officer and the non-executive Directors operating under the Companies Act (2006)
	R8	The HS2 Ltd Board should establish sub-boards to provide more granular oversight of selected projects and targeted operational issues, starting with one for MWCCs and one for the cost estimate/project controls.
	R9	Appoint at least two new Board members with major project delivery experience as soon as possible.
	R10	Document a new Board appointment process which confirms the Chair as the lead for all appointments other than the DfT and HMT representatives.
	R11	The Sponsor Board to be closed down and responsibilities split between the newly formed Programme Board and the SRO and Sponsor Exec team.
	R12	The Framework Document and the Development Agreement to be amended to reflect the closing down of the Sponsor Board and the revised role of the Sponsor.
	R13	Review the governance that sits above the Sponsor with the objective of removing at least one layer of approval.

	R14	Agree a Terms of Reference for the Programme Board and amend the Framework Document and Development Agreement to reflect its role.
	R15	Recruit 2-3 Independent Members to the Programme Board with one acting as chair.
	R16	Review the stakeholder engagement forums in the light of the new governance structure and then undertake regular reviews as the Programme progresses to operations.
	R17	Recognise the distinction between the HS2 Ltd Corporate Shareholder and the Financial Shareholder.
	R18	DfT to review how the DfT Shareholder Team and the Sponsor Team work together in respect of the Corporate Shareholder role.
	R19	Establish DfT and HMT as joint Financial Shareholders.
	R20	Establish a Shareholder Board with independent representation.
	R21	Amend the Terms of the Framework Document and Development Agreement to reflect the new governance arrangements relating to the Shareholder Board and the role of the Financial Shareholders.
	R22	Put in place a Shareholder agreement between DfT and HMT including detailed provisions for the management of contingency.
	R23	Ensure that the Ministerial Taskforce has a permanent role in the governance of the Programme and meets regularly.
	R24	The system of delegation should be reviewed in light of the new governance structure and evolved over time to take into account the Reset.
	R25	Follow the advice of the DfT Lessons Learnt document to ‘act decisively when in exception’.
	R26	Give the Programme Board a specific remit around interventions.
	R27	Conduct periodic reviews of the Governance structure to ensure that it is fit for purpose for the stage the project has reached.
	R28	HS2 Ltd to carry out a specific review on the preparedness and approach to achieving the end state operational railway.
Assurance	R29	An Integrated Assurance and Approval Plan should be developed to reduce the multiplicity of assurance processes, limit duplication of assurance commissions, and build trust across all parties in the information provided.
	R30	The Integrated Assurance Group should be re-established with a wider mandate than its predecessor that allows it to exert greater influence over all assurance activities. The Integrated Assurance and Approval Plan should be owned by

		the IAG and managed in conjunction with HS2 Ltd and the Sponsor.
	R31	Include in the Integrated Assurance and Approval Plan a programme of assurance post contract awards.
	R32	Review all relevant LOD3 commissions to assess implementation of recommendations or caveats applicable to the post contract award period.
	R33	HS2 Programme resources should be strengthened to allow sufficient dedicated expertise to challenge the content, not just the process, of information passed up through the Lines of Defence model.
	R34	The P-Rep role be reviewed and updated to take into account the current status quo with advisory services remaining a priority over assurance.
	R35	The DfT should consider the future scope of the P-Rep role in terms of Phase 1 and Euston and assess whether the current 6 FTEs is sufficient.
	R36	Assurance reviews should use a common and transparent approach to communicate risk. Decision makers should read into the findings to ensure that the full meaning and messaging is understood.
	R37	The Programme Board has overall responsibility for overseeing and actioning the output of assurance reviews but should delegate where appropriate to HS2 Ltd and the Sponsor.
	R38	Seek to reduce the number of external reviews on HS2 Ltd and ensure that reviews are coordinated, additive and complementary to existing knowledge.
	R39	As part of the Reset, include in the transformation plan, led by the CEO of HS2 Ltd and the SRO, a prioritised set of recommendations and actions from the various reviews that have taken place.
Cost	R40	A culture of cost control and affordability must be established and prioritised on HS2 and any infrastructure project. This must be led from the top.
	R41	Any decision to choose a new scope and design should be robustly challenged against alternatives based on an existing design that may be less desirable but offer a lower risk and cost.
	R42	In future, time should be allowed in the Programme to iterate requirements, scope, design and cost so that affordability can be managed, i.e. Rail Systems.
	R43	Use the Financial Shareholder to act as a challenge to political decision-making which impacts the Programme.
	R44	Incorporate the findings and actions of the cost estimation and programme control review in the Improvement Plan for Project Controls immediately.

	R45	Set up a Project Controls HS2 Ltd sub-board to oversee the implementation of the IPPC and to scrutinise and challenge the Cost Forecast.
	R46	Ministers, via the Ministerial Taskforce, the Financial Shareholders and the Sponsor, must give time and space for proper planning and development.
	R47	Agree the scope of Phase 1 as part of the Reset including decisions on future-proofing and descoping.
	R48	The governance structure explicitly covers environmental issues and there is a clear mechanism for challenging the solutions proposed. It also needs to be recognised that whole government decision-making may be required.
	R49	Review the use of P50 and P75 for the Target Cost and overall Funding Envelope and consider adopting different values for different parts of the Programme taking into account their maturity.
	R50	In line with the NAO recommendation, Government should use cost ranges rather than point estimates particularly in the early stages of a project's life.
	R51	As part of the Reset, agree a new baseline cost and schedule and a date when this will next be updated.
	R52	Review the way in which historic prices are used in infrastructure projects and consider whether a bespoke solution is required.
	R53	Annual funding control periods must be avoided as they undermine effective management of the Programme.
	R54	For projects like HS2, where it is contributing to a wider regeneration, create a business case for the overall vision such that different options can be explored in terms of programme/projects mix.
	R55	Update the guidance for wider economic benefits in transport infrastructure projects, noting the progress that has been made post a similar recommendation in the Oakervee Review.
	R56	Revise guidance on the cadence of Business Case updates for programmes that extend over a long period.
Capability	R57	Mark Wild should be given the freedom and funding to put in place a high calibre and enduring leadership team and this should be a top priority for the Reset.
	R58	The use of consultants and interim roles in the senior leadership team should be a last resort.
	R59	HS2 Ltd and the Sponsor must work together to build the brand of the Programme and make it an attractive place to work.
	R60	Review how lessons learnt are captured and shared on the HS2 Programme.

	R61	Review the effectiveness of the Knowledge Management system as an aid to corporate memory.
	R62	Mark Wild to reset the capability in the Commercial and Delivery functions.
	R63	A Remuneration Framework is put in place with HS2 Ltd to enable greater flexibility and speed in hiring and retention of existing staff.
	R64	HS2 Ltd to consider setting up frameworks for specialist strategic and commercial advice to supplement those already in place.
	R65	HS2 Ltd and DfT to agree a new indirect cost budget as part of the Reset.
	R66	Review the capacity and capability of the SRO and the MRPG leadership team to deliver its objectives: HS2 Phase 1, Euston Station, a possible Phase 2 and Northern Powerhouse Rail.
	R67	As part of the Reset, a review of DfT Sponsor capability is required.
	R68	HS2 Ltd and the Sponsor team should develop a charter based on Psychological Safety, where each side can take risks in voicing opinions, challenging decisions and admitting mistakes without fear of negative consequences.
	R69	A cultural reset is required to establish ways of working - modelling collaborative behaviours across all levels in both HS2 Ltd and the Sponsor.
MWCCs	R70	**Redacted for commercial confidentiality**
	R71	
	R72	
Euston	R73	A new governance structure is required to lead and drive the project to successful completion.
	R74	The Euston sponsor capability within DFT needs to be enhanced.
	R75	The options around the delivery model need to be reviewed and agreed.
	R76	Agree the scope, EAC and funding with a ring-fenced and realistic budget.
	R77	Phasing of the work should be considered as a method of delivering benefits earlier.
	R78	Consideration to be given to appointing a specific Minister for Infrastructure and Construction.

Wider Lessons Learnt	R79	NISTA to be tasked with providing overall leadership of the delivery of the UK infrastructure programme reporting into a Minister.
	R80	NISTA to conduct a review of the capacity and capability of the civils construction sector.
	R81	Consider the scale of tasks for new delivery bodies to avoid overwhelming the organisation and structure the governance arrangements to reflect the scale and complexity of the programme.
	R82	NISTA to review how the Government Financial Shareholder role is managed across the infrastructure programme.
	R83	The governance structure should explicitly cover environmental issues and there should be a clear mechanism for challenging the solutions proposed. It also needs to be recognised that whole government decision-making may be required.
	R84	Review the use of P50 and P75 values for future infrastructure projects.
	R85	Inflation risk needs a bespoke solution within infrastructure projects.
	R86	NISTA to establish a team of commercial/delivery specialists to support Departments and the wider public sector in the delivery of infrastructure projects.
	R87	NISTA to develop an Infrastructure Capability Plan.
	R88	NISTA to conduct a review on how delivery capability can be built, retained, shared and transferred from one project to another.
	R89	For new projects/programmes, agree a pay framework upfront to reduce multiple decisions and create greater consistency and certainty.

12.2 Appendix B: Key Terminology

List of Acronyms

Acronym	Definition
ALB	Arm's Length Body; a non-departmental public body which reports to a minister
BBV	Balfour Beatty Vinci (one of the JVs)
BCR	Benefit-Cost Ratio
BuF	Bottom-up Forecasts
CEO	Chief Executive Officer
CFO	Chief Financial Officer
DA	Development Agreement
DEL	Department Expenditure Limit
DESNZ	Department for Energy Security and Net Zero
DfT	Department for Transport
DG	Director General
DJV	Design Joint Venture
EAC	Estimate at Completion
ECI	Early Contractor Involvement
EKFB	Eiffage, Kier, Ferrovial Construction and BAM Nuttall
EME	Early Market Engagement
EMR	Environmental Minimum Requirements
ES	Environmental Statement
FBC	Foreign Bank Charges
FD	Framework Document
FTE	Full Time Equivalent
GIAA	Government Internal Audit & Assurance
HMG	His Majesty's Government
HMT	His Majesty's Treasury
HS1	High Speed Rail One
HS2	High Speed Rail Two
HS2 East	Birmingham to East Midlands Parkway
HS2 Ltd	High Speed Rail Two Limited
HSRG	High Speed Rail Group
IAAP	Integrated Assurance and Approvals Plan
IAG	Integrated Assurance Group
IAP	Independent Assurance Panel
ICE	Innovative Contractor Engagement
IPA	Infrastructure & Projects Authority
IPPC	Improvement Plan for Project Controls
IPDC	Investment, Portfolio and Delivery Committee, DfT
IPT	Integrated Project Team
JV	Joint Venture
KPI	Key Performance Indicator
LOD	Line of Defence
MI	Management Information

MPRG	Major Projects Review Group
MRPG	Major Rail Projects Group
MTF	Ministerial Taskforce
MWCCs	Main Works Civils Contracts
NAO	National Audit Office
NEC3	New Engineering Contract 3
NIC	National Infrastructure Commission
NISTA	National Infrastructure and Service Transformation Authority
NR	Network Rail
OCI	Optimised Contractor Involvement
OPRG	Olympic Project Review Group
PAC	Public Accounts Committee
Phase 1	London Euston to Birmingham Curzon Street
Phase 2a	Birmingham Curzon Street to Crewe
Phase 2b	Crewe to Manchester Piccadilly
PIM	Project Information Management
PFI	Private Finance Initiative
PPP	Public Private Partnership
P-Rep	Project-Representative
PUK	Partnerships UK
RAB	Regulated Asset Base
RCF	Reference Class Forecasting
RDEL	Resource departmental expenditure limits
SAO	Senior Accounting Officer
SCS	Skanska, Costain, and Strabag (one of the JVs)
SoS	Secretary of State
SPADs	Special Advisor
SPVs	Special Purpose Vehicles
SRO	Senior Responsible Owner
TAP	Treasury Approval Point
TCB	Tripartite Cooperation Board
TfL	Transport for London
UK	United Kingdom
UKGI	UK Government Investments
UKIB	UK Infrastructure Bank

Glossary of Key Terms

Term	Definition
Align	One of the JVs consisting of: Bouygues Travaux Publics, Sir Robert McAlpine and VolkerFitzpatrick.
Funding envelope	A total amount of money, delegated to HS2 Ltd, that the Government plans to spend on the delivery of HS2 over a multi-year period.
Hinkley Point C	Hinkley Point C nuclear power station is a two-unit, 3,200 MWe EPR nuclear power station under construction in Somerset, England.
P-Value	In infrastructure projects 'P' values are used to determine the likelihood of a project being completed for a particular price. Each P-value relates to a probability. For example, a P75 cost estimate means that there is 75% confidence that the project will be delivered within the stated price or less.
Phase 2 Cancellation	Cancelling Phase 2 of the project and scaling back the railway to a high-speed line between London Euston and the West Midlands.
Point Estimate	A single figure used to estimate a value rather than a cost range.
Sizewell C	Sizewell C is Britain's latest Net-Zero megaproject. Once delivered, it will be a 3.2-gigawatt nuclear power station.
Target Cost	The total cost agreed between the Department for Transport and HS2 Ltd for the fee to complete construction of the railway.
Thames Tideway	Thames Tideway Tunnel is a deep-level sewer along the tidal section of the River Thames in London, running 25 kilometres from Acton in the west to Abbey Mills in the east. It has been praised for being delivered on budget and to schedule.

12.3 Appendix C: Evidence Base

This evidence was collected between September 2024 and November 2024, with the primary window of the Review period being 2019 – November 2024. This was extended further to allow for consideration of historical information, particularly in my analysis of the MWCCs.

I have been able to gather information from a variety of sources. Documentation was requested and received from HS2 Ltd and DfT as well as relevant third parties as applicable. Organisations were consulted for their input (see Table 1). Individual names remain confidential to allow for truthful and unencumbered sharing of their experience. Previous literature has been reviewed to build on existing industry knowledge and concerns (see Table 2 for sources which are within the public domain).

Table 1: Organisations consulted include:

- Crossrail
- Department for Transport
- Government Internal Audit & Assurance
- High Speed Two Limited (HS2 Ltd)
- HM Treasury
- Independent Assurance Panel (HS2)
- Infrastructure and Projects Authority
- KPMG (P-Rep)
- National Infrastructure Commission
- Representatives from the JVs
- Sizewell C
- Thames Tideway

Table 2: Key Source Documentation

1	HS2 Development Agreement, 2022
2	High Speed Rail (London – West Midlands) Act, Hybrid Bill, February 2017
3	'How Big Things Get Done: The Surprising Factors That Determine the Fate of Every Project, from Home Renovations to Space Exploration and Everything in Between', Bent Flyvbjerg and Dan Gardner, February 2023
4	HS2 Outline Business Case, DfT, 2013
5	HS2 Framework Document, August 2022
6	Managing Public Money, HM Treasury, May 2023
7	Lessons from Transport for the Sponsorship of Major Projects, DfT and IPA, April 2019
8	Oakervee Review, Douglas Oakervee, February 2020
9	Lessons Learned from Major Programmes, National Audit Office, November 2020
10	Sponsoring a Major Project: The Crossrail Experience, DfT and IPA, March 2024
11	Full Business Case, High Speed 2 Phase One, DfT, April 2020
12	Cost Drivers of Major Infrastructure Projects in the UK, National Infrastructure Commission, October 2024
13	High Speed Two: A Progress Update, National Audit Office, January 2020
14	House of Commons Select Committee Report, 2016
15	HS2 Phase One Environmental Statement, November 2013
16	'The Construction Productivity Imperative', McKinsey & Company, July 2015
17	Survival Guide to Challenging Costs in Major Projects, National Audit Office, June 2018
18	Cancellation of Major Projects: Perspectives on Rethinking the Approach to Major Projects – Inspired from HS2 Phase 2 Lessons, Major Projects Association, September 2024
19	Intelligent Client Roles – Functional Guidance, HMG, 2022

12.4 Appendix D: Phase One MWCCs Diagram

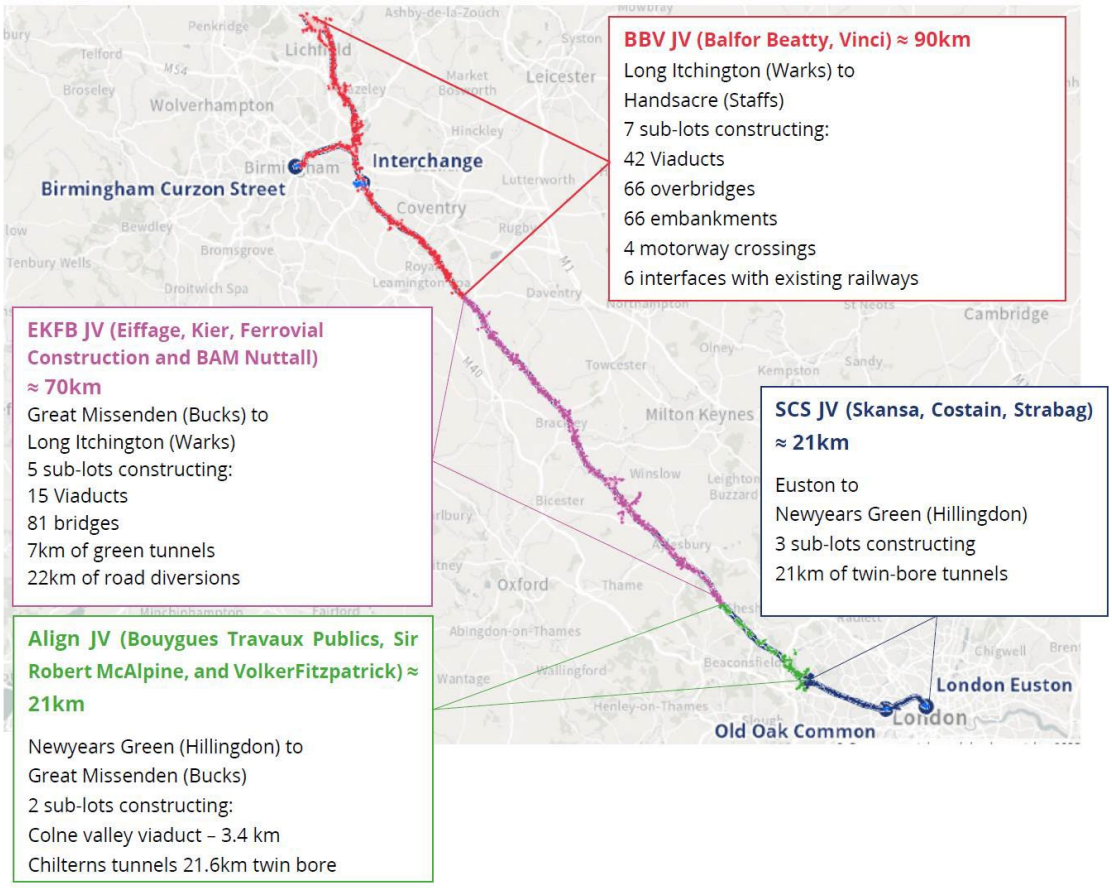

Figure 1: Phase One Main Works Civils Contracts

Source: HS2 Ltd

12.5 Appendix E: My Review's Terms of Reference

Transport Projects Governance and Assurance Review 2024.

Terms of Reference

Overview

1. Since the Lessons from Transport for the Sponsorship of Major Projects was published in 2019, the Department for Transport has established a programme to capture and apply the learning from its projects to support continuous improvement. This review (the Review) forms part of that programme. Both Crossrail and HS2 (High Speed Rail 2) have suffered from cost increases and delays despite the governance, control and assurance frameworks within the delivery bodies, between the delivery bodies and DfT, and across wider Government. This Review will consider the lessons to be drawn and applied from how one of DfT's largest projects has been orchestrated. The Review will focus on evidence from recent HS2 Programme experience as well as other existing learnings from comparable major transport projects. The Review will make recommendations to HMG for the HS2 Programme specifically and identify broader themes that should be considered for major programmes. The work to do this should be robust, objective, and transparent.

Scope

2. To review recent performance on the HS2 Programme (including Euston station) in relation to:

    a. Effectiveness of DfT's sponsorship and oversight model, the systems and processes involved with this model, and consideration of any changes that are needed to support efficient and transparent programme delivery.
    b. Effectiveness of corporate governance within HS2 Ltd and the interfaces between DfT and HS2 Ltd.
    c. Effectiveness of overall approach to governance, support, and oversight across the HMG system as part of the overall control environment as well as processes to support efficient and transparent programme delivery.
    d. Effectiveness of the various levels of assurance in place for the programme including the HS2 Programme's independent Project Representative function.
    e. Effectiveness of cost, schedule, and benefits forecasting and reporting at a programme level within and between DfT, HS2 Ltd and the wider HMG system and how this has evolved, including the effectiveness and consequences of actions to identify and deliver cost efficiencies aimed at ensuring the programme is delivered for as low a cost as possible.
    f. Effectiveness of the approach to procuring and managing the Main Works Civils Contracts (MWCCs), including contracting strategies and rationale for approach; how contracts and JVs were put together, including the allocation of risk, and how these contracts have been managed throughout the programme lifecycle.
    g. Culture, behaviour and ways of working across the HS2 Programme, to include:

i. the context of HS2 Ltd as a Government-sponsored arm's length body and the nature of working with its key supply chain.
ii. the role of psychological safety alongside transparent reporting within the programme.

h. Assessment of capability to review the extent to which the programme's resources were mobilised appropriately. To include consideration of resourcing strategy for business-critical roles.

3. The Review should consider the period since the Oakervee Review publication (February 2020), including recommendations for Notice to Proceed. By exception, it will consider;

    a. MWCC contracts to allow for a holistic review of the context within which these contracts were implemented and therefore the appropriateness of this model.

    b. Any evidence which precedes the Oakervee Review which may influence recent experience.

4. The Review should consider previous lessons identified for major programmes (principally the joint DfT- IPA report "Lessons from transport for the sponsorship of major projects" April 2019), those made in the Oakervee Review where relevant, and lessons already identified from other recent transport programmes of relevance to its scope, e.g. Gatwick Station, M4 Smart Motorways and Crossrail. The Review will consider relevant documents or reports which make substantive direct or indirect recommendations aimed at improving the successful oversight of projects.

    a. The Review will consider how well these recommendations were understood, identify themes as to which recommendations were acted upon, and outline barriers to implementation. This will be conducted to a sufficient level and depth that is consistent with the timing and the resourcing of the wider Review.

5. The Review will make recommendations to HMG for the HS2 Programme specifically and identify broader themes that should be considered for major programmes in general.

Delivery

6. The DfT Chief Portfolio Delivery Officer will act as the client for the Review. They will be supported by a Client Panel with representation from DfT, HMT, IPA and HS2 Ltd to provide strategic guidance to the Review Lead to ensure that his findings and recommendations can be applied to major projects in future, including HS2.

7. The Review will be led by James Stewart and supported with external expert support as needed. It is anticipated to be a three-month piece of work from project inception, with emerging findings shared as soon as possible to inform the future governance and oversight of the HS2 Programme as well as future projects.

8. It will be for the Review Lead to determine the appropriate approach to the Review. However, it is anticipated that it will comprise a combination of: evidence gathering, desk-based analysis and stakeholder interviews; and recommendation generation using workshops where appropriate.

9. The depth of analysis will be limited by the duration and resourcing constraints of the review.

Deliverables

10. The outputs from the Review will be a draft report setting out the initial findings and a final report setting out lessons and recommendations to be applied to future projects.