



Department
for Transport

High Speed Two Phase Two Financial Case

Moving Britain Ahead

July 2017

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Department for Transport
Great Minster House
33 Horseferry Road
London SW1P 4DR
Telephone 0300 330 3000
Website www.gov.uk/dft
General enquiries: <https://forms.dft.gov.uk>



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Contents

1. Introduction	5
Purpose	5
Scope	5
2. HS2 Funding	7
Spending Review 2015	7
Initial allocation of Phase 2a and Phase 2b budget	8
Crewe Tunnel transfer from Phase 2a to Phase 2b	8
Funding and cost assumptions	8
3. Financial cases	10
Phase 2a Outline Business Case	10
Phase 2b Strategic Outline Business Case update	10
4. Cost estimates	11
Phase 2a	11
Phase 2b	13
Periodic Update and Benchmarked Target Design Cost	15
Budget Envelope and Target Price	15
Approach to contingency and risk	16
Phase 2a	16
Phase 2b	17
Assurance of the cost estimate	17
Phase 2a	17
Phase 2b	17
5. Affordability during the construction stage	18
Phase 2a and 2b	18
Scenario testing	18
6. Managing cost and risks	19
Oversight regime/approach to managing costs	19
7. Operational outlook	20
Summary of findings	21

1. Introduction

- 1.1 This document sets out the latest position with regard to the Financial Case for the High Speed Two (HS2) Phase Two programme.

Purpose

- 1.2 The Financial Case addresses both up-front and long term affordability. Affordability is therefore assessed by comparing the extent to which there is agreed funding in place to meet the projected costs of the programme, and the extent to which the operational railway changes the longer term cost of the GB railway.
- 1.3 Recognising that each phase of the HS2 programme is at a different stage of its project life cycle, this document sets out the progress for:
 - Phase 2a – The Financial Case at Outline Business Case (OBC) stage to support Government’s decision to deposit the hybrid Bill in Parliament this summer; and
 - Phase 2b – An update to the Strategic Outline Business Case (SOBC) *Financial Case*¹ (November 2016). This supports the Secretary of State for Transport's Phase 2b route decision and response to the *Route Refinement Consultation*² (November 2016).
- 1.4 In line with the HM Treasury Green Book guidelines, this document forms part of a five part business case. The five cases are:
 - Strategic Case
 - Economic Case
 - Financial Case
 - Commercial Case
 - Management Case

Scope

- 1.5 HS2 is a new high speed rail network for the UK, connecting London with major cities in the Midlands and the north of England. It is a Y shaped network that will be delivered in several stages. Trains will also run beyond the Y network to serve places such as Liverpool, Preston, Newcastle and Scotland.

¹ <https://www.gov.uk/government/publications/hs2-phase-2b-strategic-case>

² <https://www.gov.uk/government/consultations/hs2-crewe-to-manchester-west-midlands-to-leeds-route-refinement-consultation-2016>

- 1.6 Phase One of HS2 will see a new high speed line constructed from Euston to north of Birmingham, where it will re-join the existing West Coast Main Line (WCML). New high speed trains will serve Birmingham city centre and an interchange station designed to serve the wider West Midlands. At Old Oak Common in west London, a new interchange will be built connecting HS2 with the Elizabeth Line and Great Western Main Line. Passenger services are planned to commence on the Phase One route in 2026.
- 1.7 In November 2015 the Government announced its intention to accelerate the delivery of the section of Phase Two between the West Midlands and Crewe (Phase 2a). At the northern end it will connect with the WCML to the south of Crewe to allow HS2 services to join the WCML and call at Crewe station. Phase 2a is expected to be built and operational by 2027 (subject to Parliamentary approval of the Phase 2a hybrid Bill).
- 1.8 In November 2016 the Government confirmed the majority of its preferred route for Phase 2b of HS2, which will complete the full Y network. The southern end of the 'Western Leg' connects to Phase 2a (south of Crewe) and goes on to Manchester with a connection back to the WCML south of Wigan. The 'Eastern Leg' connects to the Phase 1 route and goes on to Leeds with a connection back to the East Coast Main Line (ECML) at Church Fenton. Phase 2b is expected to be built and operational by the end of 2033 (subject to parliamentary approval of the Phase 2b hybrid Bill).

2. HS2 Funding

Spending Review 2015

- 2.1 At the 2015 Spending Review (SR15), the Government restated the long-term funding envelope for delivery of the full HS2 scheme of £55.7bn (Quarter 1 2015 prices). The table below indicates the funding allowances for each Phase of the programme established at SR15.

£ billions	Phase One	Phase 2a	Phase 2b	Total
SR15 Budget	27.18	3.72	24.83	55.7

Table 1: SR15 funding envelope

- 2.2 In addition to restating the funding envelope, the SR15 settlement set a year by year capital funding allocation for HS2 for a period of five years (2016/17 to 2020/21, inclusive). At an aggregate level, the SR15 funding settlement provides for £1.36bn across the five year period for the Phase 2 programme. These allocations are given in nominal prices (i.e. the allocation assumes forecast inflation for the SR15 settlement period using indices relevant to the HS2 programme).

£ billions	Phase 2a	Phase 2b	Total
RDEL	0.10	0.43	0.53
CDEL	0.40	0.43	0.83
TDEL ³	0.50	0.86	1.36

Table 2: HS2 Phase 2 Nominal Settlement during SR15 period (FY2016/17 to FY2020/21)

- 2.3 The infrastructure elements of the SR15 settlement profiles for Phases 2a and 2b include 40% optimism bias (OB), which has been applied in line with HM Treasury Green Book guidelines. The process for how HS2 Ltd has developed its approach to contingency and risk is set out from paragraph 4.21.

³ C-DEL is Capital Departmental Expenditure Limit. RDEL is Resource Departmental Expenditure Limit. TDEL is Total DEL, being the sum of CDEL and RDEL.

Initial allocation of Phase 2a and Phase 2b budget

- 2.4 SR15 set a funding envelope for Phase Two of £28.55bn in 2015 prices. Of this, Phase 2a was allocated £3.72bn and Phase 2b the remaining £24.83bn.
- 2.5 The funding arrangements agreed between DfT, HS2 Ltd and HM Treasury are such that, as the design development of Phases 2a and 2b continues to be progressed, flexibility exists to transfer scope and related budget between these two phases.

Crewe Tunnel transfer from Phase 2a to Phase 2b

- 2.6 HS2 Ltd's designs include a handover point between Phase 2a and Phase 2b at the southern portal to a tunnel required under Crewe for Phase 2b.
- 2.7 As design has matured on Phase 2a, HS2 Ltd identified that extending the tunnel approximately 2.5km further south than proposed in the route announcement in November 2015 would allow HS2 Ltd to avoid complex rail and road interfaces in the Crewe area. This will allow for the avoidance of significant disruption to local business and residents and will reduce the risk of Phase 2a delivery.
- 2.8 The consultation on this proposed route refinement was launched in September 2016. Given that Phase 2a and Phase 2b will join at the tunnel portal, and because in practice the tunnel will be delivered as a single project, we have assumed that the tunnel will be delivered in full during Phase 2b construction works. Accordingly, the costs associated with this change are more appropriately applied to the Phase 2b budget.
- 2.9 The cost associated with this work is estimated to be £241m (including contingency).
- 2.10 To effect this, the SR15 budget of Phase 2a has now been reduced from £3.72bn to £3.48bn and the Phase 2b budget increases accordingly from £24.83bn to £25.07bn. This does not result in an increase to the overall funding for the HS2 programme.

Funding and cost assumptions

- 2.11 The approach adopted in relation to risks, contingencies and mitigations is documented in this Financial Case. The Economic Case provides analysis of some variant scenarios.
- 2.12 A key assumption remains that HS2 will be fully publicly funded upfront.
- 2.13 Part of HS2 Ltd's role is to act as the Infrastructure Manager for the railway. The Government intends that the HS2 Infrastructure Manager will levy an Investment Recovery Charge on all operators using the new high speed network (inclusive of Phase One, 2a and 2b).

2.14 The ability to levy the Investment Recovery Charge is critical to recovering investment costs for the taxpayer and ensuring the long term affordability of HS2. We will determine the precise level and structure of this charge at a later stage in the project as part of the decisions on the broader charging and operating framework. We will also continue to investigate private financing and third party funding where this could reduce cost to the taxpayer and promote value for money.

3. Financial cases

Phase 2a Outline Business Case

- 3.1 The Phase 2a route extends the Phase One route from Birmingham to Crewe, providing a connection to the WCML, and allows for the tunnel portal at Crewe for Phase 2b. Phase 2a is due to open by the end of 2027, allowing for an improvement in journey times to the north of England.
- 3.2 This OBC supports the deposit of the hybrid Bill which was laid in Parliament this summer. The main focus for the next stage of the project will be taking the Bill through Parliament and seeking Royal Assent. We expect to achieve this by the end of 2019, which would allow construction to start in 2020, although enabling works will commence before this point in time.

Phase 2b Strategic Outline Business Case update

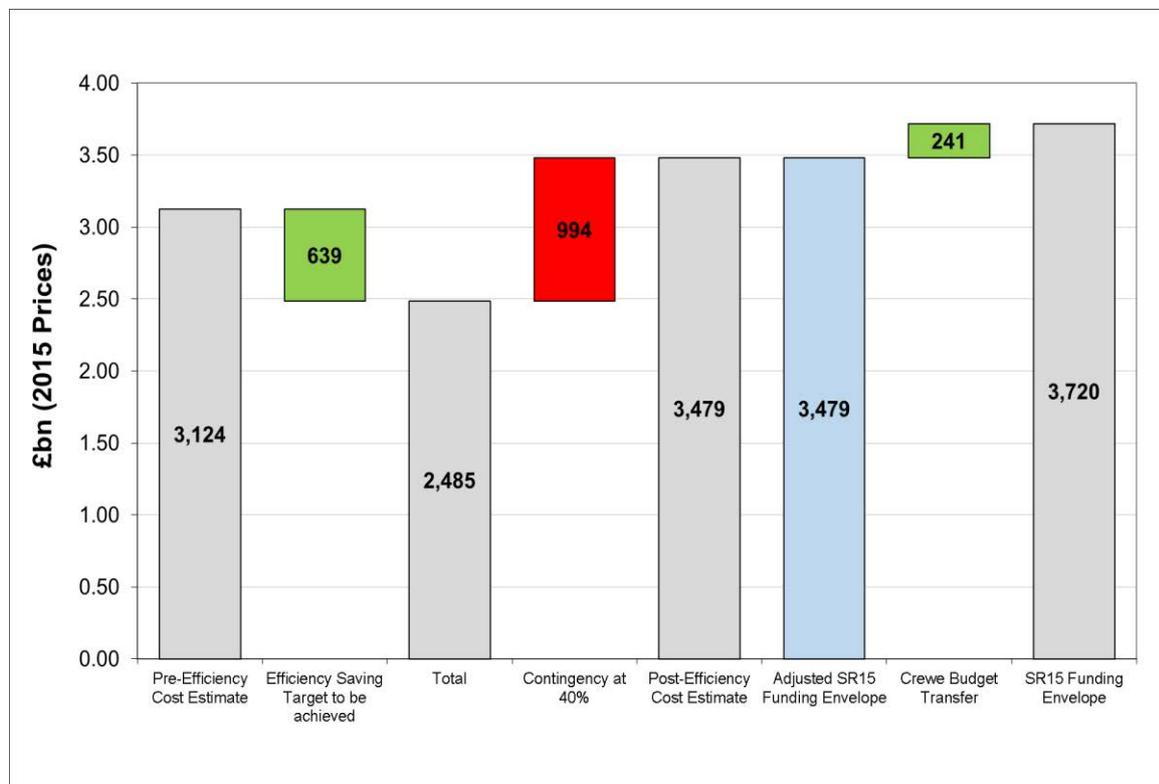
- 3.3 The Secretary of State announced his preferred route for Phase 2b in November 2016, subject to consultation on a number of areas where the proposed route had changed substantially since the announcement in 2013. HS2 Ltd has now undertaken further analysis and refinement and is publishing its recommendations in response to this consultation alongside the Secretary of State's announcement of his preferred route decision in July 2017.
- 3.4 Following the confirmation of the Secretary of State's preferred route, HS2 Ltd will deliver the next stage of design work to prepare a hybrid Bill for Phase 2b. It is expected that this will also enable the efficiency opportunities that have been identified to be further matured, contributing to the delivery of savings, ensuring the project is delivered within the total funding envelope. This work will also allow us to take a more detailed view of the risk profile associated with the Phase 2b project.
- 3.5 We expect to deposit the hybrid Bill by the end of 2019, enabling Royal Assent by the end of 2022. This will allow an 11 year construction period for the whole Phase 2b route to Manchester and Leeds, with connections to the WCML, Sheffield and the ECML.

4. Cost estimates

Phase 2a

- 4.1 Since SR15, the scheme for Phase 2a has undergone significant design development. HS2 Ltd has undertaken a thorough review of the scheme and has reviewed the estimated costs. HS2 Ltd has also undertaken consultation on the preferred route, developed the scheme since then, and undertaken further consultation, the most recent of which was held at the end of 2016.
- 4.2 At SR15 Phase 2a required £745m (2015 prices) worth of efficiency savings to be delivered to meet the funding envelope of £3.72bn (2015 prices). Since then HS2 Ltd has incorporated £80m worth of efficiencies which reduces the cost estimate (with detailed plans in place to deliver the remaining target). Following transfer of the Crewe Tunnel works from Phase 2a to 2b, the revised efficiency target is now £639m⁴ and for Phase 2a the latest cost estimate is £3.48bn. Chart 1 demonstrates this.

Chart 1: Phase 2a efficiencies



⁴ £639m represents the remaining efficiency target post those efficiencies already achieved and following the Crewe Tunnel transfer.

- 4.3 The efficiency savings that have been achieved since SR15 and are now embedded within the Phase 2a cost estimate include:
- Revised forecasts for land and property re-sale receipts
 - Reduced civil engineering costs arising from more efficient ways of delivering cuttings, environmental mitigations, cut and cover tunnels, retaining walls, viaducts, roads, pavings and diversions
 - Reduction in costs associated with relocating the Infrastructure Maintenance Depot from Crewe to Stone
 - Reduced indirect costs associated with constructing the railway and
 - Reduction of costs associated with supplying power to Phase 2a, removing the connection at Crewe, and reducing the cost of the Rugeley connection on the basis that a majority of cabling will be overhead rather than buried
- 4.4 Total opportunities for efficiency savings of £1.1bn have been identified, and HS2 Ltd's 'central estimate' is currently £681m. HS2 Ltd therefore has a good level of confidence in achieving the targeted £639m of remaining efficiency savings required to be within the overall funding available. The opportunities identified include:
- Combining road bridges and crossings to benefit from construction economies and synergies
 - Supply chain efficiencies gained via prompt payments and productivity savings
 - Better yield management on property rental income
 - Value engineering of service delivery options; for example identifying the optimum track gradients to reduce volume of earthworks required
 - An Innovation Strategy which is targeting savings through initiatives such as smarter approaches to piling and 'trimming' the use of materials used in structures
- 4.5 The work done through HS2 Ltd's design development process shows that the cost estimate, together with savings deliverable through its efficiency programme, will remain within the SR15 funding envelope.
- 4.6 In developing the latest cost estimate for Phase 2a, a number of key assumptions have been made:
- a. That HS2 will be publicly funded up-front
 - b. There are no State Aid issues attached to the project
 - c. During construction of the route infrastructure, it is anticipated that the works will impact the business of existing train operating companies. Compensation will be paid to operators (anticipated to be via payment to Network Rail). It is assumed that such amounts will be determined in accordance with established industry access mechanisms, which provide compensation to train operating companies when access to the rail network is disrupted and denied
 - d. The West Coast Partnership will run the existing Intercity West Coast services from April 2019 and become the shadow operator for HS2 services in late

2018, operating the overall combined service from December 2026 when HS2 opens

- e. The funding transfer from Phase 2a to Phase 2b as a result of the scope transfer discussed from paragraph 2.6 does not change the SR15 funding envelope for Phase Two overall

4.7 A number of wider uncertainties remain with regard to the current cost estimates. For instance, any scope changes made during the passage of the hybrid Bill could add cost or reduce the amount of contingency available. Policy experts from DfT, HM Treasury, HS2 Ltd and the Infrastructure and Projects Authority (IPA) continue to work together to ensure that any scope changes are subject to clear decision making and governance.

Phase 2b

4.8 The Phase 2b SOBC Financial Case published in November 2016 was based on the central assumption that Phase 2b will be delivered within the funding envelope of £24.83bn (Quarter 1 2015 prices, including contingency and rolling stock).

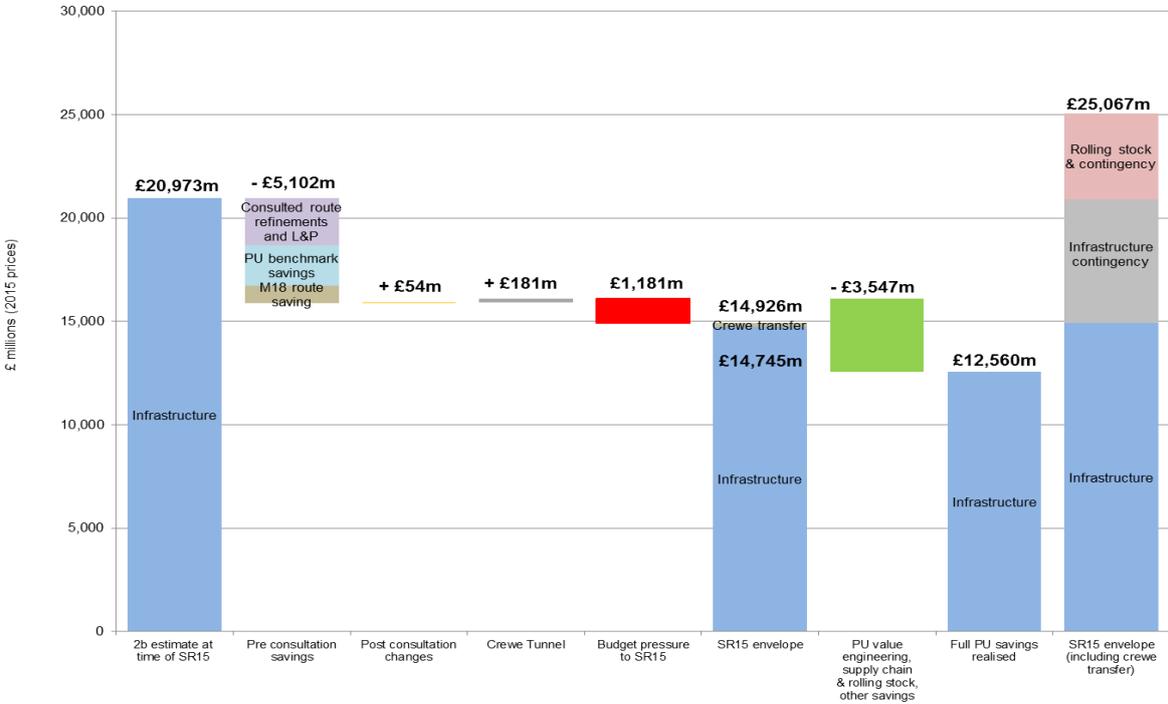
4.9 As described from paragraph 2.6, the Phase 2b budget will increase by £241m following a transfer of Phase 2a budget, in relation to the Crewe tunnel, to Phase 2b. Following this budget transfer, the Phase 2b total funding envelope is now £25.07bn.

4.10 In November 2016 £5.10bn of efficiencies were embedded within the cost estimate. In response to the November 2016 consultation on Phase 2b, the cost estimate has now been updated to include the route refinements determined by the Secretary of State. In line with the 2017 Phase 2b announcements⁵, the cost estimate before contingency includes:

- a new proposal for the site of the Eastern Leg rolling stock depot, which had previously been proposed for New Crofton. A new location at Temple Green has been proposed by the Secretary of State
- a recommendation to move the route to the east of Measham to avoid some of the significant impacts on the town and its businesses
- altered rural-urban boundaries on the Phase 2b route to reflect comments received during consultation
- extension of the Rural Support Zone ('RSZ') and Homeowner Payment ('HOP') schemes to rural properties adjacent to deep bored tunnels, where they are within 300m of the track as it enters and leaves the portal

⁵ <https://www.gov.uk/government/consultations/hs2-crewe-to-manchester-west-midlands-to-leeds-property-consultation-2016>

Chart 2: Phase 2b efficiencies



4.11 Work continues to refine the Phase 2b cost estimate, with an OBC being developed by 2019. HS2 Ltd has appointed advisers under Professional Service Contracts (PSCs) to support the design and the environmental statement that will be required as part of the process of depositing the Phase 2b hybrid Bill, which is expected to take place at the end of 2019. The PSCs will also provide technical services which will better inform the cost estimates for the next stage of the business case, and in particular, review and incorporate further efficiencies into the formal cost estimate as the designs mature. With support of the PSCs, HS2 Ltd will update the cost estimates on a bottom up basis, and these estimates will underpin the OBC for Phase 2b which will be published before deposit of the hybrid Bill.

4.12 The adoption of the M18 route results in an infrastructure saving of £858m (£1.2bn including contingency). As set out in the November 2016 consultation, this cost saving assumes the cost of delivering a junction in the Clayton area north of Sheffield back onto the HS2 mainline, but not the costs of electrification of the Midland Main Line (MML) between Clay Cross and Sheffield Midland or electrification of the existing railway from Sheffield to Clayton (and any signalling renewal at Sheffield). The Phase 2b route decision document⁶ explores the impact of different assumptions on the route decision.

⁶ <https://www.gov.uk/government/consultations/hs2-crewe-to-manchester-west-midlands-to-leeds-route-refinement-consultation-2016>

4.13 HS2 Ltd expects that Phase 2b will come within its funding envelope once the further efficiencies identified through the Periodic Update⁷ are reflected in the cost estimate.

Periodic Update and Benchmarked Target Design Cost

4.14 As a result of its exploration of comparable international projects, HS2 Ltd identified cost savings from incorporating learning from more efficient development, design, procurement and supply chain practices that are employed internationally.

4.15 Following the Periodic Update (reported by the NAO in June 2016), DfT has required HS2 Ltd to examine and incorporate the findings and savings identified in the Periodic Update as part of the cost estimate updated for all phases of the programme. For Phase 2a this resulted in an efficiency savings target of £745m. Since then HS2 Ltd has incorporated £80m worth of efficiencies, leaving a remaining target of £665m. Following the transfer of the Crewe Tunnel from Phase 2a to 2b, the efficiencies required to deliver Phase 2a within the revised total funding envelope are £639m.

4.16 The efficiencies identified by the Periodic Update for Phase 2a can broadly be described as relating to one of the following categories:

- a. Benchmarking
- b. Value management in supply chain; or
- c. Other efficiencies for design development

4.17 A Benchmarked Target Design Cost (BTDC) of £65m/km was set for Phase 2b in November 2016, which was set at a level matching the best international benchmarks. A BTDC of £65m/km would lead to Phase 2b being delivered at a cost below the total funding envelope.

4.18 The Phase 2a section of the route has different characteristics and will be constructed through a different landscape to Phase 2b, so a different BTDC is appropriate. The original SR15 funding envelope for Phase 2a is equivalent to £62m/km; once the transfer of scope and budget to Phase 2b is complete for the tunnel extension south of Crewe this falls to £58m/km. Our analysis indicates that a BTDC of £55m/km is appropriate, based on the characteristics of the Phase 2a route. We are therefore setting HS2 Ltd a BTDC at this level for Phase 2a. We recognise that setting a BTDC for Phase 2a below the total funding envelope is part of the incentivisation for HS2 Ltd to deliver the project within its available funding.

Budget Envelope and Target Price

4.19 In line with the Development Agreement, the BTDC is a precursor to the Phase 2a 'Budget Envelope' which will be set in due course and will be lower than the 'Total Funding Envelope' of £3.48bn. When the Full Business Case (FBC) for Phase 2a is

7 In April 2016, the IPA was commissioned to lead the Periodic Update, working collaboratively with HS2 Ltd and DfT. The purpose of the Periodic Update was to look at options for savings to enable the programme to reach an internationally efficient cost. In doing so, it also reviewed savings already identified by HS2 Ltd.

approved by DfT, a 'Target Price' will be set. This will be at a level that incentivises HS2 Ltd in the delivery of the Phase 2a infrastructure ahead of procurement of major construction works and is anticipated to take place following Royal Assent, currently scheduled for end of 2019.

- 4.20 In regards to Phase 2b, following the setting of the BTDC of £65m/km in November 2016, we plan to establish a 'Budget Envelope' for Phase 2b around the time of OBC and deposit of the hybrid Bill. A 'Target Price' for Phase 2b will be set around the time of Full Business Case (FBC) and the Royal Assent of Phase 2b hybrid Bill.

Approach to contingency and risk

- 4.21 During the early phases of large infrastructure programme development, HM Treasury guidance on contingency assessment is to derive contingency through a calculation of OB. OB is based upon a set of historic projects where the sanctioned project cost and outturn costs can be compared.

Phase 2a

- 4.22 For Phase 2a, contingency continues to be applied at 40%. HS2 Ltd derived this using the guidance on OB set out in HM Treasury's Green Book (Appraisal and Evaluation in Central Government (Treasury Guidance 2011)), and the 'Supplementary Green Book Guidance'.
- 4.23 DfT's latest WebTag guidance (which applies the Green Book principles to transport schemes), supports the view that 40% remains an appropriate risk provision for a project at this stage. WebTag also indicates that for a project at level 5 development (design development of a single option), contingency on capital expenditure should be calculated using the mean probability value from the Quantified Cost Risk Assessment (QCRA), plus a residual 4% OB overlay. HS2 Ltd's initial work on its QCRA has provided sufficient comfort that the 40% contingency applied by way of OB is sufficient.
- 4.24 It is anticipated that contingency for Phase 2a will transition from OB to a Quantitative Risk Analysis (QRA). This can be conducted once:
- The project scope is mostly defined
 - The cost estimate covers all scope and is at sufficient detail to understand its basis
 - The schedule covers all scope and is at sufficient detail to understand its basis
 - There is sufficient information and knowledge of the above from the team to identify risks, attach them to cost lines or activities, and assess their likelihood and impact
- 4.25 While significant progress has been made to develop a clear risk profile for Phase 2a, the level of detail is not currently sufficient to exceed the threshold for converting the use of OB to the use of a full QRA approach.

Phase 2b

- 4.26 At this early stage of the project, HS2 Ltd has applied 40% OB to Phase 2b, which has been derived from guidance set out in HM Treasury's Green Book (Appraisal and Evaluation in Central Government (Treasury Guidance 2011)), and the 'Supplementary Green Book Guidance' ('guidance').

Assurance of the cost estimate

Phase 2a

- 4.27 In line with the Management Case, in developing the cost estimate for the scheme, HS2 Ltd has undertaken assurance on the cost estimate and design of the scheme. This is applied consistently across the programme.
- 4.28 The programme teams within HS2 Ltd developed the cost estimates, providing review and challenge within each team through a First Line of Defence (LOD 1). Subsequently a Second Line of Defence (LOD 2) assurance was provided through HS2 Ltd's central cost management team. This team is a dedicated resource within HS2 Ltd, which owns HS2 Ltd's cost estimation approach, methodology and systems, and which provides assurance to HS2 Ltd by providing scrutiny over the cost estimates themselves and the way they have been developed.
- 4.29 An external body provides the Third Line of Defence (LOD 3) by considering assurance done by previous lines of defence in addition to reviewing the robustness of cost estimation methodology and outputs. Assurance is also provided by the Department's Project Representative (P-Rep), who undertakes further reviews and confirms whether the cost estimates are appropriate.

Phase 2b

- 4.30 An external body provides the Third Line of Defence (LOD 3) by considering assurance done by previous lines of defence in addition to reviewing the robustness of cost estimation methodology and outputs. This work was based on the preferred route options that we announced in November 2016. It concluded that the cost estimate was suitable for that purpose. In addition, P-Rep has reviewed the LOD 3 report and confirmed that the cost estimates are appropriate for the level of design and stage of project development.

5. Affordability during the construction stage

- 5.1 Any assessment of affordability needs to consider the programme cost estimate against the SR15 funding envelope and annual spend against annual nominal budgets set in the spending review.
- 5.2 It is important to note that the funding arrangements agreed at the time of SR15 between DfT, HS2 Ltd and HM Treasury allow flexibility in the timing of funding in certain circumstances where changes in construction, scope or timing occur within the programme. Any such flexibility does not result in an increase to the overall funding envelope for the programme.

Phase 2a and 2b

- 5.3 Phase 2a and 2b can be considered affordable provided that:
- The efficiency targets can be achieved
 - The overall costs of the programme do not increase above the funding envelope established at SR15
 - Future spending reviews allocate sufficient annualised funding as the programme progresses

Scenario testing

- 5.4 Given the significant number and material scale of risks and opportunities either crystallising or falling away as the design development progresses, the Financial Case presented here is based on the central case only, and no sensitivities have been tested. The Economic Case provides analysis of some variant scenarios.

6. Managing cost and risks

Oversight regime/approach to managing costs

- 6.1 DfT and HS2 Ltd both intend to deliver the most cost effective design for the railway and ensure that the best value is achieved within the agreed funding envelope of £55.7bn (2015 prices).
- 6.2 An oversight regime for delivering HS2 and managing costs is in place, and includes:
- The HS2 Development Agreement which governs the relationship between the Secretary of State and HS2 Ltd for the delivery of the HS2 programme. It sets out HS2 Ltd's role in developing, building and operating the new railway and the Department for Transport's role as sponsor and funder
 - A dedicated High Speed Rail Programme Board which includes representation from HM Treasury and the IPA and oversees the overall HS2 programme and reporting progress to Ministers and DfT's Board
 - Management reporting and controls to enable DfT as the programme sponsor to have visibility of programme costs, exposure against risks, and trigger points where intervention or escalation may be needed. HS2 Ltd has received ISO 9001 certification, which demonstrates that the company has an appropriate management information system

7. Operational outlook

- 7.1 In addition to estimating the up-front costs of HS2 during the construction stage, and providing assurance that the investment is affordable, the Financial Case also examines the financial outlook for GB rail once HS2 is operational. This analysis provides broad strategic reassurance for the capital investment decision on the HS2 programme. The analysis and the assumptions related to the operational framework of HS2 will be refined and developed as the project moves forward and decisions on the broader charging and commercial operating framework are made.⁸
- 7.2 Analysis has been undertaken on the operational financial outlook for HS2 services, and the impact on wider GB rail. The analysis considered the incremental impact on GB rail premium/subsidy balance, rather than the absolute position over time. This has provided early stage insight on:
- a. Projected costs and revenues both in regard to HS2 services and services on the existing network
 - b. The likely scale of the impact of HS2 on taxpayer support for GB rail
 - c. What the key risks and opportunities offered by HS2 are, and
 - d. The potential scope to improve the financial case
- 7.3 The analysis programme took as its baseline the modelled assumptions e.g. on demand growth, passenger revenue expectations and train service specification (TSS) in the Economic Case. This provides consistency of assessment across the Business Case for the proposed HS2 services. It should be noted that the current released TSS capacity represents just one possible set of assumptions for business case modelling purposes. There are many other potential combinations of released capacity, therefore the analysis provides broad strategic reassurance on future financial flows and is not intended to represent detailed forecasts.
- 7.4 Decisions around the broader charging and operating framework of HS2 are currently anticipated to be made in the early 2020's. This analysis makes use of a number of modelling assumptions to proxy the future HS2 charging framework and commercial operating model.⁹

⁸ The Government announced in November 2016 that the West Coast Partnership (WCP) franchise will include the future InterCity West Coast (ICWC) operations, shadow operation of HS2 pre-2026 and the initial 3-5 years of operation of the HS2 train services. Given the long-term nature of the operational outlook assessment and the on-going decision making around the commercial proposition of WCP, this analysis is neutral in regard to the West Coast Partnership franchise and its potential outcomes.

⁹ The analysis assumes that up front capital costs associated with construction of the network, excluding rolling stock costs, are recovered by levying an Investment Recovery Charge (IRC) on train operations over 90 years. The specific approach taken will be dependent on future policy decisions. It is proposed that options on the level or structure of the charge would be developed and consulted upon as part of the decisions on the broader charging and operating framework. The analysis also assumes that future renewals are financed through access charges levied on the TOC.

Summary of findings

- 7.5 The commercial analysis which we first undertook in 2013 for the Phase One OBC and have now been updated based on our latest demand forecasts and provides a better understanding of the on-going affordability of HS2, in the context of wider GB rail.
- 7.6 The key findings of the updated analysis are in line with the findings of the 2013 analysis, showing that the HS2 full Y network and associated train operations would be of financial benefit to the taxpayer. Under the 'reference case' (consistent with the assumptions of the central case in the Economic Case), the analysis shows a potential additional operating surplus¹⁰ across GB rail of around £300m a year on average (in 2015 prices) over the assumed economic life of the railway, accounting for renewals. This would be comprised of an operating surplus for HS2 operations of around £2.6bn and an additional subsidy requirement for conventional services of around £2.3bn following the recast of their services in line with the current Business Case released capacity specification.
- 7.7 For the purposes of the Phase 2a Financial Case we also tested the operational outlook of the railway in the hypothetical scenario that Phase 2b does not go ahead. This standalone Phase 2a scenario assumes no changes to the Phase 2a TSS beyond 2027 and no further capacity improvements on the GB rail network. Consequently, to be conservative, demand is assumed to be capped in 2037 (the second modelled year of the Economic Case). This scenario confirms that Phase 2a alone would still provide a long-term financial benefit to the taxpayer, generating an estimated annual incremental operating surplus of £150m across the GB rail network.
- 7.8 In addition, the analysis tested the robustness of the results against a range of sensitivities. This provided broad reassurance around the ongoing affordability of HS2 services. HS2 services are likely to generate an operating surplus in all but the most extreme scenarios.

¹⁰ 'Operating surplus' = TOC operating revenues and other income from HS2 operations, minus operating costs and an allowance for a commercial profit margin of the TOC and Corporation Tax. The IRC is a cost to the operator but an income to the government leaving the overall industry balance unaffected. Once renewals are required (initially from 2040/41), these are assumed to be added to a regulated asset base and charged to the train operator.

8. Accounting implications for DfT

- 8.1 Following the precedent set by Phase One, we will capitalise all expenditure from the time of the second reading of the hybrid Bill, our planning assumption is that this will be from:
- April 2018 for Phase 2a
 - April 2020 for Phase 2b
- 8.2 The implication is that, from the point of second reading, all expenditure will be categorised as C-DEL.
- 8.3 At this time it is not possible to assess the accounting treatment during the operational phase as the broader framework for the 'end state' railway has not yet been determined.