THE HS2 REVIEW

March 2014

Maximising HS2 opportunities

- Phase Two:
  - Single HS2/Network Rail Integrated Plan, including east-west rail connections
- Crewe:
  - The consultation route for Phase Two has the potential for a new station at Crewe
  - This new station can be an interchange for the region
- Old Oak Common:
  - West London's major rail interchange, linking long-distance and commuter rail services to the West and North
- Euston:
  - Central London's single biggest redevelopment opportunity

Integrating Phase Two with existing rail network to maximise connectivity

- Leveraging HS2 as an Engine for Growth through:
  - Coordination with Network Rail Control Period 6 (April 2019 – 2024), so that the Network Rail Strategic Business Plan is considered at the same time as the Second Reading for Phase Two and approval
  - A more ambitious plan to link Manchester and Leeds
  - Further electrification and line speed improvements across the North, integrated with HS2 from Liverpool to Hull

A new, integrated station at Crewe, six years early

- A new station that integrates HS2 to West Coast and enables transfer at one station to other services, including trains to North Wales and Liverpool
- Designed as a transport interchange that maximises proximity of the existing road network to facilitate easy connection to surrounding cities
- Regeneration plan to maximise housing and business development
- Consider early delivery of HS2 to Crewe by 2027 – a six-year acceleration

Old Oak Common – West London's major rail interchange

- HS2 will be a catalyst for comprehensive redevelopment of Old Oak Common. However, it cannot be the funding solution for a long-term community of over 20,000 homes and associated businesses to be developed over 20 to 30 years
- The Mayoral Development Corporation must be properly resourced with people and funding, and given appropriate powers to see through at least 20 years of development
- Decisions required on existing rail depot relocations
- Decisions needed on London commuter connectivity, including North/West London Lines and West Coast connection to Crossrail

Euston station – transformational inter-city gateway

- A new combined station to become a world-class transport hub that creates potential for considerable over-site development
- Needs to be designed to accommodate Crossrail 2
- Early engagement with private sector to provide development expertise and long-term funding for over-site development
- Will require relocation of certain existing rail services from Euston during construction
- Street-level connectivity from station to existing communities as part of broader regeneration of surrounding area

HS1 – HS2 link

- The current proposal is the most cost-effective solution to deliver 3 trains per hour
- The proposal has operational limitations (single track – 3 trains per hour) and impacts:
  - freight capacity on West Coast Main Line
  - future commuter growth on North London Line
  - the community of Camden
- Deletion reduces the Phase One forecast by £700m (including risk provision)
- Recommend a study to consider alternative connectivity

Phase One schedule challenges

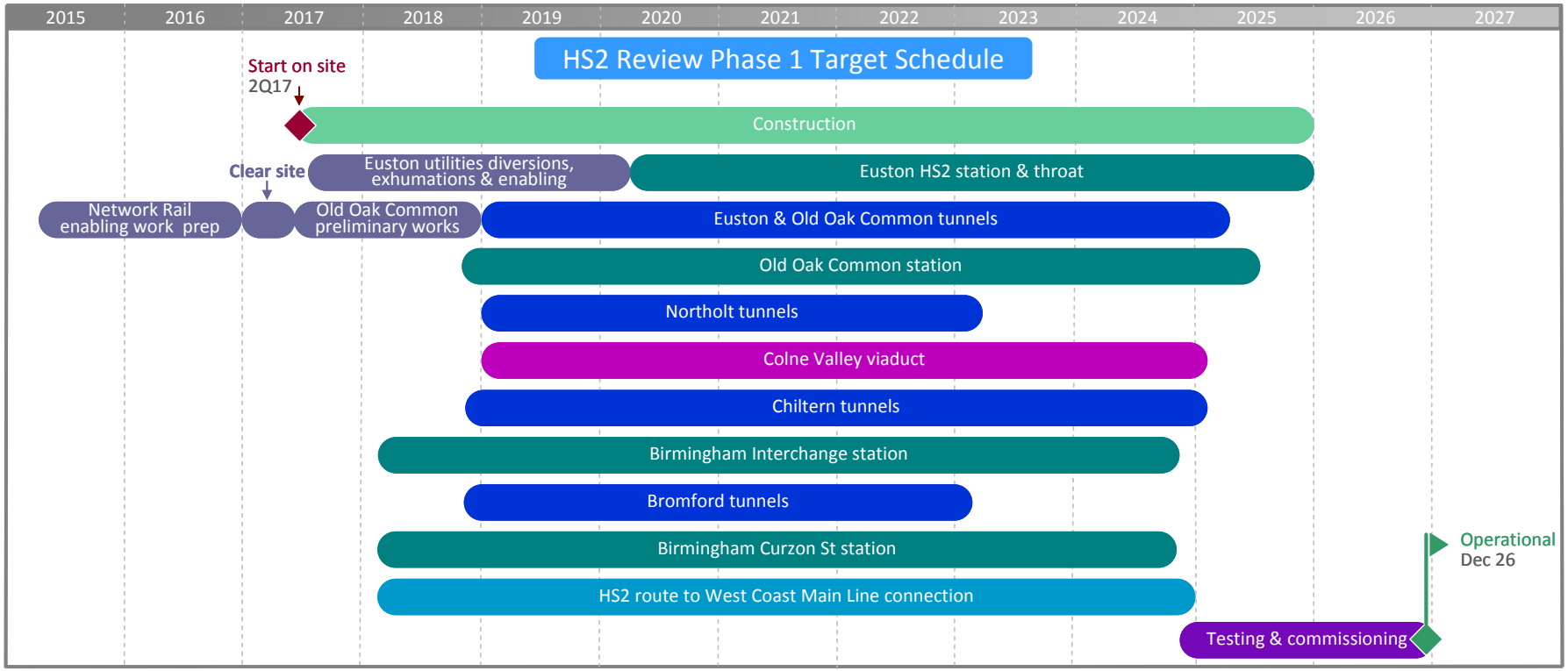
- Parliamentary process
- Depot relocation and clearing the Old Oak Common site is critical
- Decisions on Euston and early engagement to source a private partner
- Major utilities diversions

A realistic, robust timeline is key to making the right decisions, reducing uncertainty and controlling costs

- A timely Parliamentary process is essential, leading to the granting of powers delivered by Royal Assent
- Constructing the London stage is the biggest challenge:
  - Euston – a major redevelopment of an existing station while continuing to run a service
  - Old Oak Common – new site linking to Great Western Main Line and Crossrail while services are running
  - Tunnelling – 74 single-track km in Chilterns and London approaches; no easy access for tunnelling machines

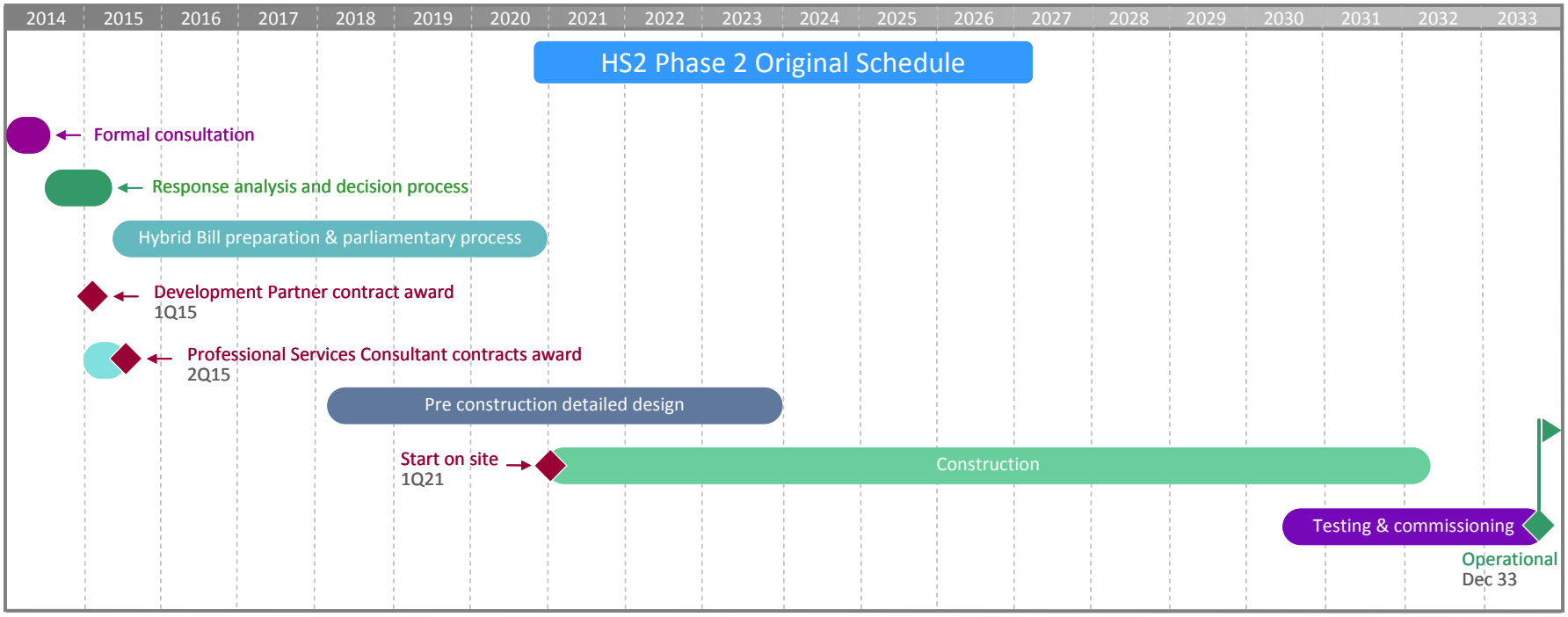
Phase One schedule – target 2026

- Target completion for December 2026 operational service
- Dependent on Parliamentary process and powers granted by Royal Assent
- Depot relocation and start on site at Euston & Old Oak Common are critical



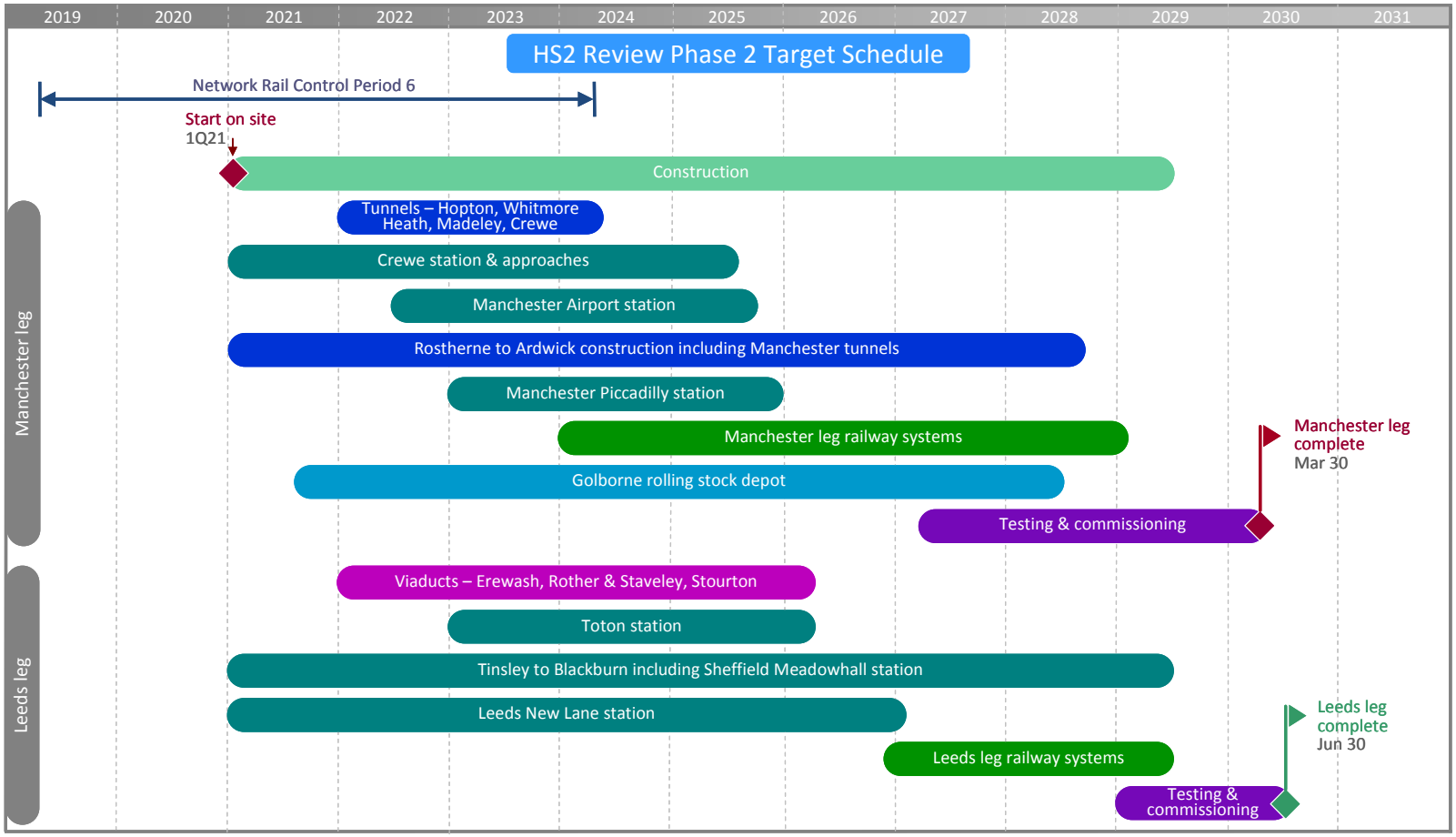
Phase Two – delivery in 2033

- Formal consultation in progress
- Route will be announced in 2015
- Current scheduled completion 2033



Phase Two opportunity to accelerate completion – target 2030

- Target completion for 2030, not 2033
- Crewe station & approaches could be commissioned in 2027, six years early



HS2 cost review validates Phase One budget

- Eight-week review of HS2
  - holistic review of infrastructure and trains budget
  - focused on Phase One cost estimate
  - Phase Two cost estimate to be confirmed once route is announced
- Conclusion: review confirms Phase One budget
- Cost estimate - main changes:
  - reallocation of train depot costs to train budget as per Crossrail, Thameslink and Intercity Express
  - Additional allowances for rail systems, and costs during commissioning
  - Increase in indirect costs to bring into line with Olympic Delivery Authority and High Speed One
  - Reduction of train unit costs

HS2 funding envelope (Spending Round 2013)

- Phase One: London to Birmingham
- Phase Two: Birmingham to Manchester and Leeds
- Included contingency at P95*

	HS2 funding envelope	Phase One	Phase Two
Phase 1 Infrastructure	£21.4bn	£21.4bn	
Phase 2 Infrastructure	£21.2bn		£21.2bn
Trains	£7.5bn	£3.0bn	£4.5bn
Total	**£50.1bn**	**£24.4bn**	**£25.7bn**

** NOTE:* *P95 denotes a maximum reasonably foreseeable cost, and gives a high confidence that the forecast is adequate (with only a 1 in 20 chance of being exceeded)*

Forecast cost for Phase One infrastructure and trains

Costs at 2Q 11 - prices excluding contingency

All Cost Data in £bn @ 2Q11, (red) is negative

Ref	Cost Breakdown Structure	HS2 Estimate (£bn)	Review Adjustments (£bn)	Review Estimate (£bn)
1	Land & Property	1.721	0.000	1.721
2	Tunnels	3.179	0.075	3.254
3	Civil Engineering	3.760	(0.044)	3.716
4	Stations	2.898	0.033	2.931
5	Depots & Stabling	0.754	(0.370)	0.384
6	Rail Systems	1.721	0.308	2.029
7	Modifications to existing network	0.609	0.030	0.639
8	Indirect Costs including client design	1.953	0.392	2.345
9	Interim Maintenance	0.000	0.100	0.100
	Sub total	**16.595**	**0.524**	**17.119**
10.1	Value Engineering & Efficiency Challenge	(1.419)	(0.050)	(1.469)
10.2	Spending Round Reconciliation Adjustments	0.468	(0.468)	0.000
	Infrastructure Forecast Cost Estimate	**15.644**	**0.006**	**15.650**
11	Trains	2.215	(0.562)	1.653
12	Train Depot	0.000	0.370	0.370
	Trains Forecast Cost Estimate	**2.215**	**(0.192)**	**2.023**
	Infrastructure & Trains Forecast Cost Estimate	**17.859**	**(0.186)**	**17.673**

Key Adjustments

2,3,5,6,7	Tunnels/Civil Engineering/Rail Systems/On Network	Contractor oncosts adjustment and correction to 2Q11 prices.
2	Tunnels	Tunnel monitoring and spoil removal rate adjusted.
4	Stations	Additional allowance for pedestrian interchange.
5	Depots & Stabling	Transfer of Washwood Heath Depot to Trains.
8	Indirect Costs	Revised indirect costs to align with industry benchmarking.
9	Interim Maintenance	Interim maintenance during construction period.
10.1	Value Engineering & Efficiency Challenge	Reassessment of opportunities.
10.2	Spending Round Reconciliation Adjustments	Item reallocated.
11	Trains	Improved benchmarking data.
12	Train Depot	Washwood Heath Depot added to trains.

Contingency
Phase One infrastructure and trains

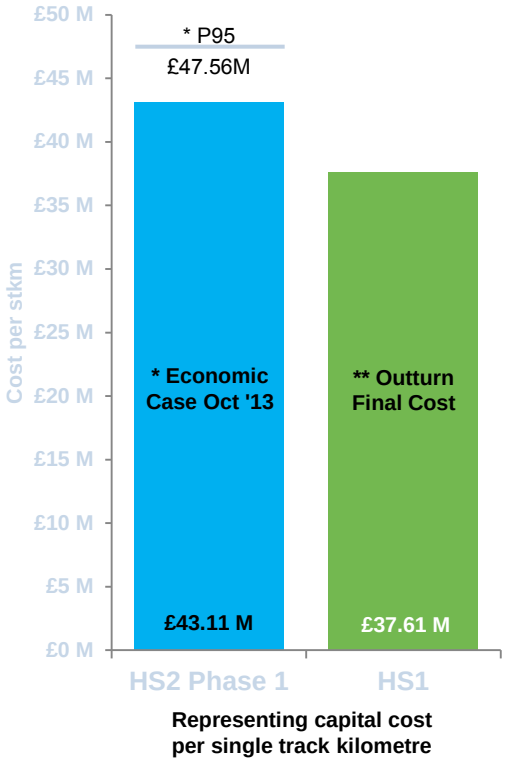
	HS2 budget	Estimated cost	Contingency
Phase One trains	£3.0bn	£2.023bn	£0.977bn
Phase One infrastructure	£21.4bn	£15.650bn	£5.75bn

Phase One infrastructure contingency	£5.750bn
Phase One trains contingency	£0.977bn
Potential scope saving (including risk reduction)	£0.700bn
Potential Phase One infrastructure & trains contingency	£7.427bn

Infrastructure cost comparison with HS1

Benchmarking HS2 P50 Economic Case budget with HS1

Outturn final cost confirms 15% premium for higher capability line



	HS2 Phase One	HS1
Maximum running speed	360	300
Route length	225 km	109 km
Capital cost	P50 £19.4bn * (Economic Case)	£8.2bn**
Passenger capacity of each train	1,100	750

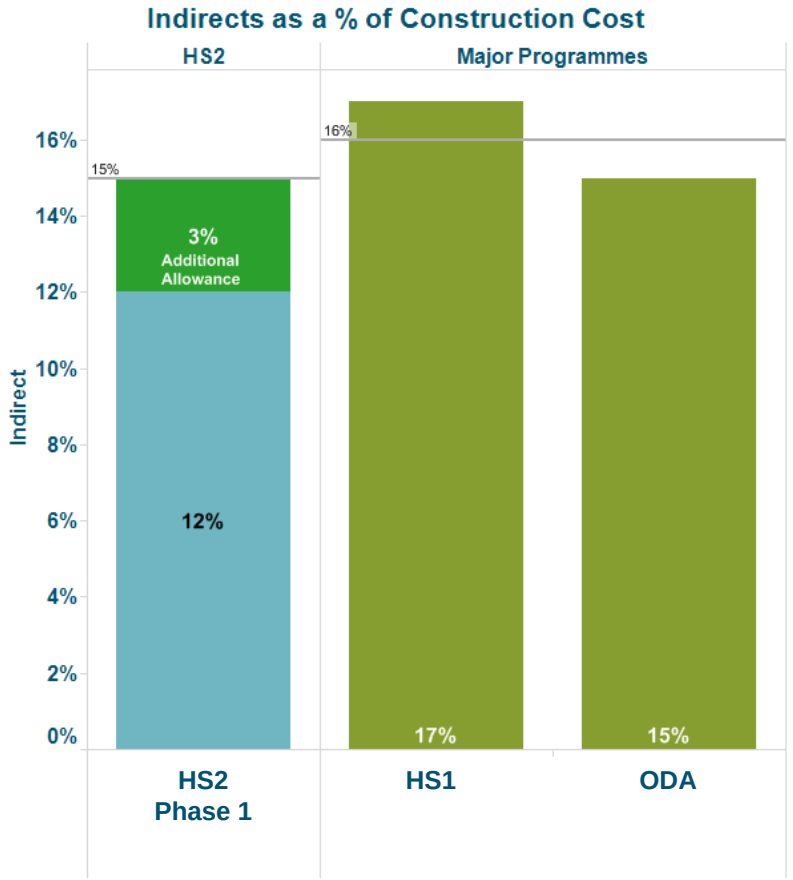
*** P50 and P95 budgets as per 'The Economic Case for HS2' Oct 2013**

**** HS1 completion price, inflation adjusted to 2Q 11 using UK RPI**

Comparison of indirect project costs with HS1 and Olympic Delivery Authority

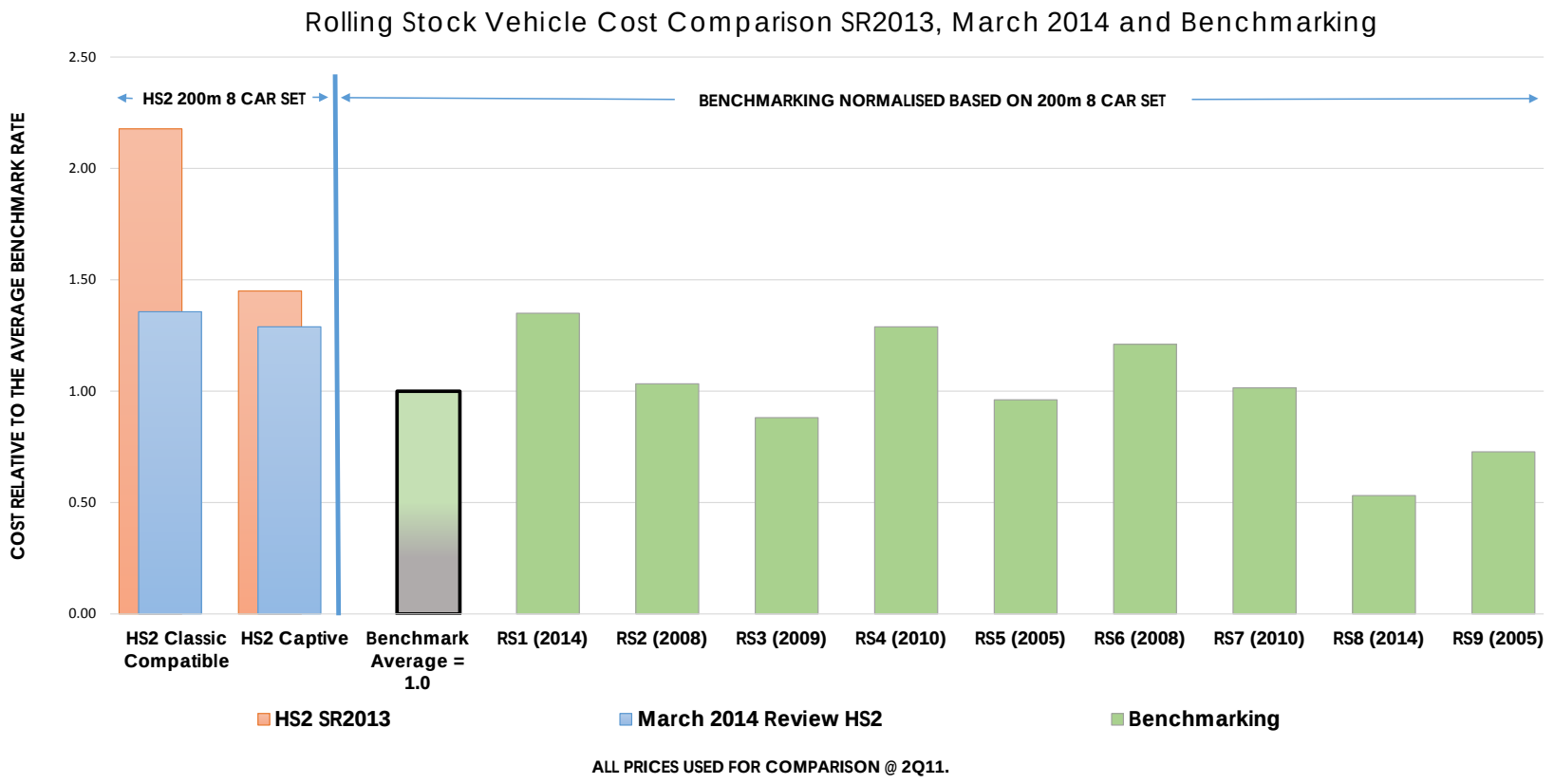
Benchmarking with HS1 and the London 2012 Olympic and Paralympic Games confirms revised HS2 indirect costs are adequate

Indirect costs include: corporate staff, project management, accommodation, IT and consultancy costs (e.g. legal, surveys), but excludes design



Comparison of train unit costs

Benchmarking with other rolling stock types confirms revised HS2 train costs are adequate



Summary

- Phase One estimate and contingency for infrastructure and trains are enough to deliver Phase One
- A robust and realistic timeline is essential for controlling cost
- An achievable Phase One Parliamentary process needs to be understood
- Critical decisions on Old Oak Common depot relocation and Crossrail connection to West Coast Main Line are required
- Decision on HS2 – HS1 link is required
- Guidance on early delivery of Crewe is essential
- Decision is required on early engagement with private-sector partner to seek more ambitious solution at Euston
- Opportunity to deliver Phase Two up to three years early
- An integrated HS2/Network Rail plan for the North, including improved east-west connections, is fundamental