



Developing options for a Rail Freight Growth Target to 2050

Evidence Pack: a summary of the approach and evidence gathered

Introduction

Government committed to setting a Rail Freight Growth Target (RFGT) when it published the Plan for Rail and the Transport Decarbonisation Plan.

Both policy publications recognised the critical role that rail freight plays in improving supply chain resilience, and helping to secure economic, social, and environmental benefits across the country.

In response to this commitment, the Department for Transport (DfT) commissioned the Great British Railways Transition Team (GBRTT) to develop a range of options for a long-term RFGT.

The purpose of this document is twofold:

- (1) It summarises the analytical approach undertaken to develop these options
- (2) It provides an overview of the evidence base that has been gathered to define these options.





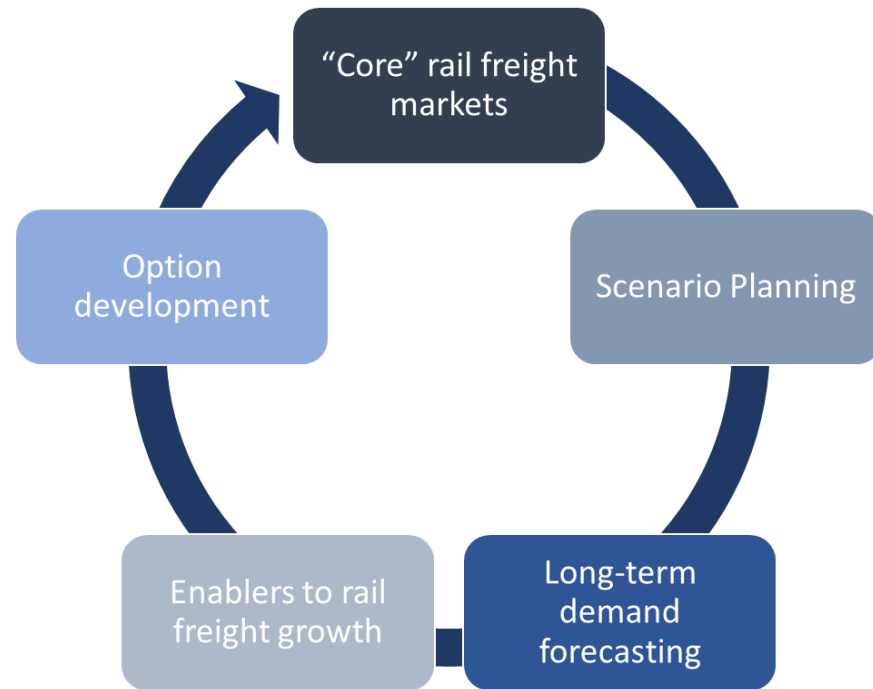
Process for designing options

- Understanding the key drivers of change that will impact the size and distribution of the rail freight market
- Forecasting long-term demand under a range of market scenarios
- Consider the ways in which forecast demand can be accommodate on the rail network

Strategy approach

To ensure the range of options developed are both credible and realistic, a robust and evidence-led analytical framework was developed. The analytical activity can be summarised as:

- (1) An assessment of the “core” and “emerging core” rail freight markets.** This ensured the options are focused on the markets that are most likely to drive material change in the way capacity is allocated on, or capital investment is made in, the rail network.
- (2) The development of four future-based demand scenarios that are distinct and plausible.** A cross-modal stakeholder working group of logistics and transport planning professionals explored how different demand drivers and uncertainties could affect the demand for rail freight.
- (3) The production of rail freight demand forecasts for 2050.** Industry experts were instructed to forecast rail freight demand under the conditions of the four scenarios, to frame the potential size of the rail freight market by 2050.
- (4) An exploration of the ways in which the rail industry can accommodate forecast rail freight demand on the network.** This ensured that there is an understanding of the different enablers to deliver growth and the role of key industry stakeholders.
- (5) The definition of three RFGT options that are informed by responses to the Call for Evidence (CfE).** All previous work undertaken was considered holistically to develop options that are credible, realistic and stretching.



Developing long-term rail freight demand forecasts

Key policy and industry documents were reviewed to narrow the focus of the analysis to the markets that are most pertinent to the industry's long-term strategic planning.

The “core” and “emerging core” markets were the focus of four demand scenarios in the demand modelling:

- (1) A future where technological changes in the road haulage sector reduce the strategic case for rail freight and Government policy and funding choices reflect this.
- (2) A future where technological changes in the road haulage sector and labour costs make rail freight particularly competitive in bulk markets and long distances. However, policy and funding do not support transformational changes in rail freight usage.
- (3) A future where low-cost decarbonised HGVs make road haulage cheap and low emission, but rail freight retains a strong strategic case in bulk markets and over long distances. Risk is transferred from Government to the rail industry, which responds to the principles of reform by establishing a strong commercial rail offer.
- (4) A future where decarbonised HGVs are not as competitive as they are today which increases the strategic case for rail. Government responds through proactive and co-ordinated policy and investment choices that favour rail.

Although the “core” and “emerging core” markets are the primary focus of the analysis, it does not mean that other freight markets are not strategically significant to rail or may not become “core” in the future.



A “core” rail freight market has been defined as one that, in the event of significant growth, is most likely to drive material changes to capacity allocation or network investment decisions.

The “core” markets identified by this analysis are Intermodal, Construction, and Energy & Fuels. International and Express Freight have been included as “emerging core” markets, given their potential to drive change.



Understanding the enablers of rail freight growth

The demand forecasts provide a credible view of the potential size of the rail freight market in 2050. The next part of the analysis considered the ways in which this demand can be accommodated on the rail network (recognising that not all the demand can realistically be addressed by rail).

The rail freight sector is comprised of both private sector owned and operated businesses and public sector organisations, each with their own commercial and reputational imperatives. As such, a wide variety of businesses contribute to the competitive and commercial landscape of the rail freight market and play an important role in the movement of goods by rail.

In this commercial context cost is paramount: an end customer's choice will almost always be determined by cost competitiveness between transport modes. Decisions which have an impact on those costs will significantly influence the potential for modal shift from road to rail.

However, the analysis has been developed with a particular focus on the areas that the rail industry will be best placed to manage or exert influence over. This is not to say that other enablers should not be considered, or certain decisions be precluded. Rather, it is to ensure that there is a necessary focus on the following key areas of activity:

- (1) Making better use of the network.** The areas of activity explored here included running longer and heavier services (e.g. improving wagon utilisation rates or lengthening freight services); enacting timetable trade-offs which favour freight over passenger services where this is justified; and improving path utilisation rates.
- (2) Terminal development activity.** The two key areas of activity here are developing new terminal facilities (which typically involves leveraging private sector investment) or increasing the throughput of existing facilities.
- (3) Enhancing the rail network.** The key areas of activity here are maximising the benefits of committed enhancement schemes by ensuring that freight needs are considered or further investment in rail capacity or capability schemes (where they are affordable and represent value for money).

For each of these enablers, analysis was undertaken using a baseline of train running data to consider the potential level of rail freight growth that each could facilitate. This analysis has helped to inform the option development.



Developing long-term RFGT options

- The Call for Evidence and how it informs the option development
- Understanding the level of growth that committed investments may deliver for rail freight
- Developing a range of stretching yet credible RFGT options

The Call for Evidence: designing and delivering a RFGT

A formal Call for Evidence was launched in 2022 to improve the industry's understanding of how much of the current and future market demand for freight could be met by rail, the roles that rail could potentially play in the nation's supply chains and the blockers that would need to be addressed to enable it to play these roles.

Respondents were invited to provide comment on how a growth target should be designed. The evidence gathered was a key input to the design of the options. The key considerations were:

- **Timeframe:** the interaction between short-term and long-term targets;
- **Geography:** the interaction between regional and national aspirations;
- **Government:** the interaction between Central and Devolved Government objectives;
- **Market specificity:** the interaction between commodity-specific and commodity-agnostic targets; and
- **Metrics:** the interaction between a single metric and multiple complementary metrics.



How the Call for Evidence informed the option development

The Call for Evidence has helped to shape the design of the RFGT options for 2050. The key conclusions drawn from the evidence are threefold:

- (1) The balance between simplicity and complexity.**
To have value the target must be understood by industry and be unambiguous, whilst also being sufficiently detailed that the industry knows how it can realistically be delivered. To this extent, a single target measured as net freight tonne kilometres (ftkms) is a strong basis for setting a target.
- (2) Pragmatism.** The target will be implemented in the context of the wider industry so it must be consistent with, and understood within the context of, rail's strategic objectives so that trade-offs can be understood.
- (3) Iteration.** The long-term RFGT should be iterated regularly to remain relevant and deliverable. The long-term target should be unregulated and unfunded, but it should be supplemented with regulated and funded short-term targets that have planned actions to achieve them.



The target for rail freight growth to 2050 will begin in Control Period 7 (CP7) as it should be understood within the context of the industry's existing targets.

The regulated target of 7.5% growth in net freight tonne kilometres (across England & Wales) is the first incremental target towards the long-term ambition.



The impact of committed decisions

To develop distinct RFGT options, the first step was to understand and quantify the potential impact of commitments already made by Government. This provides a benchmark against which the range of options can be developed, and choices can be considered. In modelling terms this is referred to as the 'Do-Minimum'.

A credible 'Do-Minimum' requires delicate consideration of the balance of risk. Inevitably, it is a trade-off rather than an objectively "correct" set of assumptions. The 'Do-Minimum' for this analysis has quantified the impact of two variables:

- (1) Regulated outputs for freight growth in the Periodic Review
- (2) Committed network enhancement schemes (specifically East West Rail (EWR) and Transpennine Route Upgrade (TRU)).

The analysis shows that a credible 'Do-Minimum' is 15% growth in net freight tonne kilometres. This combines the 7.5% growth from the CP7 growth target with the assumed 8.3% growth from EWR and TRU.

The analysis has considered the impacts of Network North, including recent decisions around High Speed 2 (HS2). The analytical modelling has been moderated and refined by removing assumptions about rail freight growth from HS2 Released Capacity. To consider the opportunities that Network North may create for rail freight, a sensitivity test for delivering the Ely Area Capacity Enhancement has been undertaken, as it delivers substantial freight benefits.



Option 1: a 45% increase in net freight tonne kilometres

Ethos

Option 1 considers the potential level of growth that could be achieved if market change is gradual, and the shape of the industry does not change significantly. Government (and the rail infrastructure manager) supports rail freight growth in the absence of rail reform legislation and large-scale investment beyond what is committed. The rail industry seeks to make better use of the existing network and maximise the benefits of committed investments under the existing industry structure.

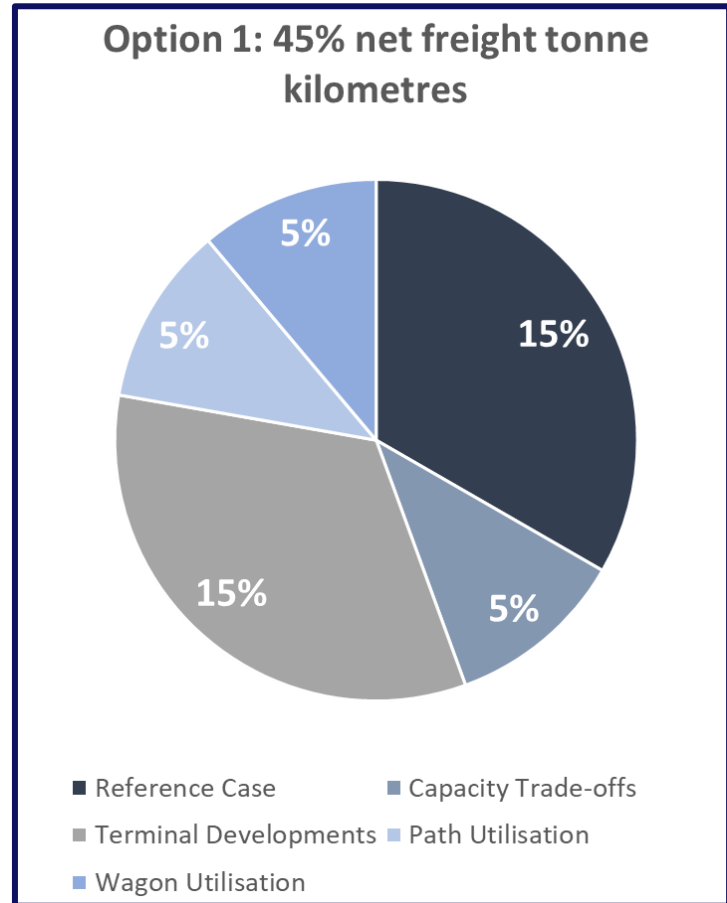
Assumed public and private sector capital spend

Option 1 assumes only very modest public sector capital expenditure into the rail network, beyond the network enhancements cited as committed. The growth from network enhancements is therefore assumed to be realised by maximising the benefits of EWR and TRU for freight.

The private sector is assumed to continue investing in the development of new Strategic Rail Freight Interchanges (SRFIs), for example at Northampton Gateway and West Midlands Interchange. This is the key driver of rail freight growth as the industry responds by seeking to accommodate new traffic flows. It is assumed that complementary trade-offs will be needed to deliver growth on routes serving these new terminals.

Other drivers of growth

The industry seeks to deliver rail freight growth through capacity trade-offs, wagon utilisation improvements, and better utilisation of timetable paths. The assumed growth from these enablers is very modest to reflect that there are no major changes to the industry structure or incentives. The public sector elements of the industry will work with the private sector to identify efficiencies and drive growth.



Option 2a/b: a 65-85% increase in net freight tonne kilometres

Ethos

The ethos of Option 2 is that Government supports the transport of goods by rail in its decision-making and is more focussed in terms of both investment and policy. Therefore, the option considers the potential level of growth that could be achieved if risk is delegated from government to the rail industry. A key part of rail policy is that the principles of rail reform for freight are fully realised, both without legislation (Option 2a) and with legislation (Option 2b).

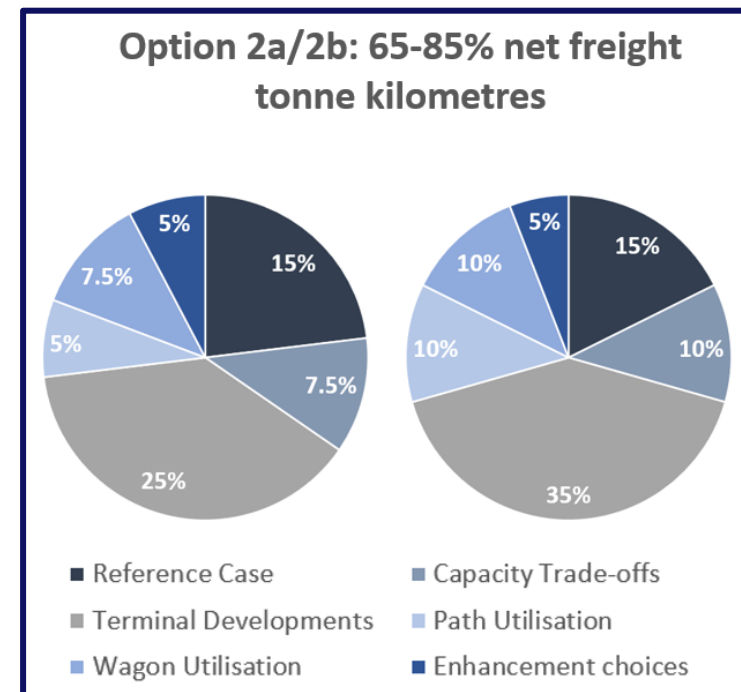
Assumed public and private sector capital spend

Option 2a and 2b both assume a relatively modest amount of additional public sector capital expenditure on rail network enhancements, beyond those cited as committed. The assumed public sector spend in Options 2a and 2b is higher than Option 1 as tactical capacity and capability schemes are assumed to be delivered to complement private sector activity. It is assumed, however, that additional services on the key mainlines are primarily accommodated within existing freight paths or opportunities.

The assumed private sector spend is higher than Option 1 and most of it relates to the development of new SRFIs and complementary Intermodal Rail Freight Interchanges. It is assumed that the coverage of rail-served warehousing expands considerably.

Other drivers of growth

Compared to Option 1, the level of growth is higher for capacity trade-offs, improvements to wagon utilisation, and path utilisation improvements. It is assumed that the potential for growth from these enablers will be greater as there is a larger incentive on the part of the industry to grow rail freight volumes. This reflects the role that the Government or the rail body (dependent on the option) will play in developing a strong commercial offer.



Option 3: a 105% increase in net freight tonne kilometres

Ethos

The ethos of Option 3 is to consider the potential level of rail freight growth that is possible with a Government that has substantial capacity for investment, with more limited affordability constraints. It considers the impact of co-ordinated government investment and policy choices that prioritise freight. This is primarily reflected in the availability of public funds for rail network enhancements.

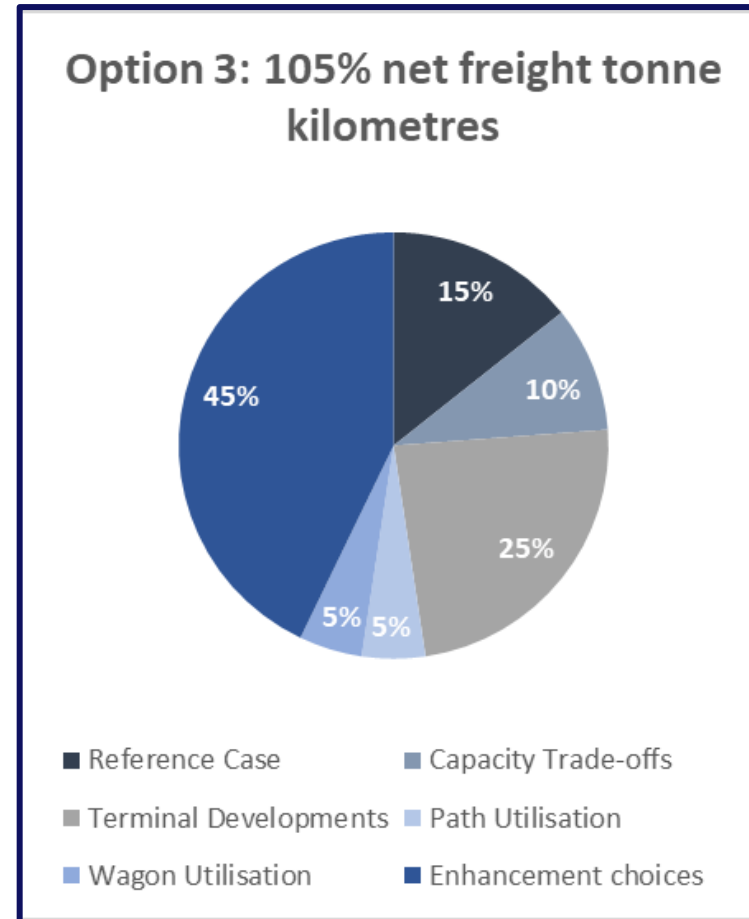
Assumed public and private sector capital spend

Option 3 assumes a significant amount of additional public sector capital expenditure on rail network enhancements, beyond those cited as committed. The assumed spend is significant as it includes major infrastructure projects.

The assumed private sector investment in Option 3 is in a similar order of magnitude to Option 2. The primary difference is that the assumed number of new terminal developments is fewer, however the required spend on new rolling stock is greater in this option (as there is a greater requirement for additional trains per day and less of a focus on network efficiencies).

Other drivers of growth

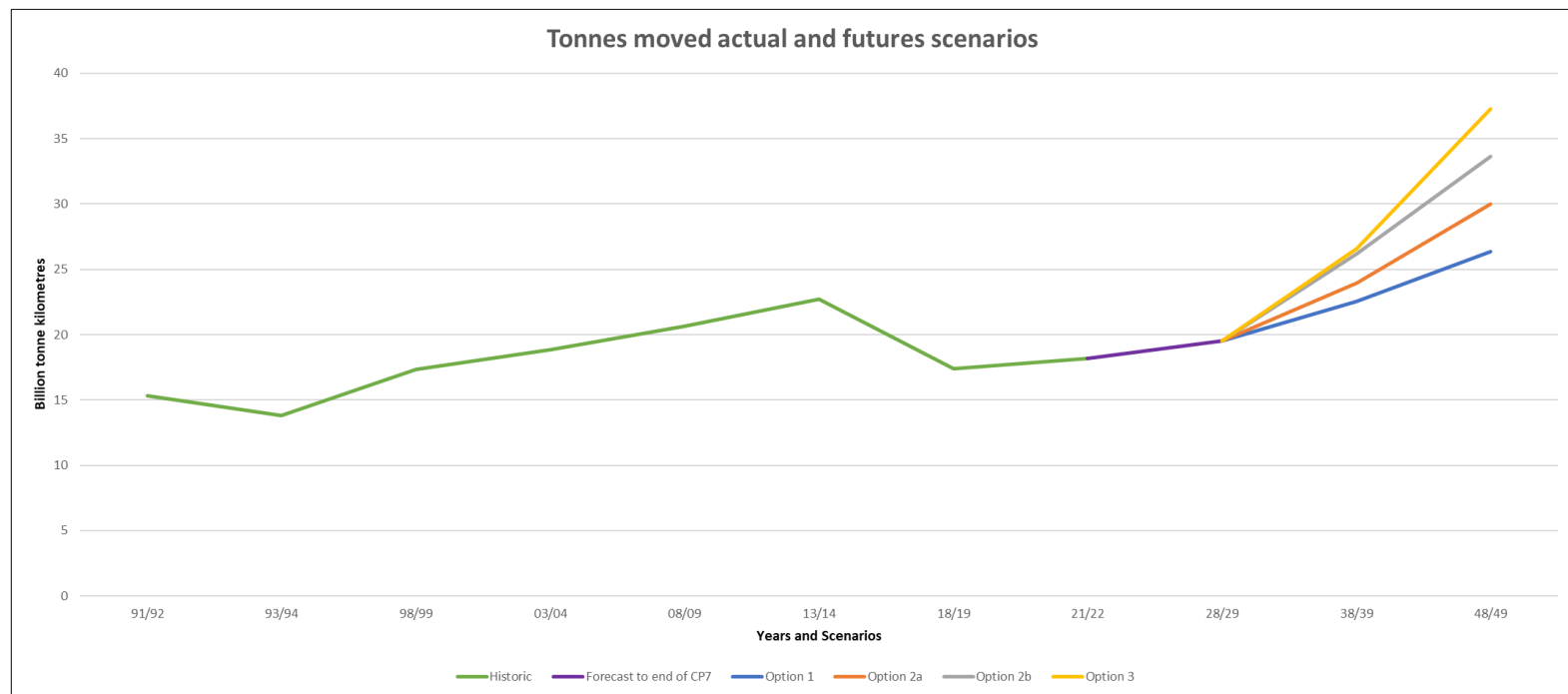
When developing this option, a conservative estimate about the potential for growth from capacity trade-offs, wagon utilisation, and path utilisation has been made. The assumed level of growth is less conservative than for Option 1 but not as optimistic as for Option 2. This decision was taken to reflect the assumed role of the rail infrastructure manager in this option and to avoid having a level of growth that would present affordability concerns and poor value for money.



Trajectories of long-term rail freight growth

The figure below shows the historical trend of freight moved and the implied trajectory of rail freight growth under each of the options relative to the implied exit point at the end of CP7. It is based on the industry delivering 7.5% (England & Wales) and 8.7% (Scotland) growth in ftkms.

- **Option 1 would equate to approximately 26.4bn ftkms by 2050.** For the rail industry to deliver this, it would need to deliver 7.4% growth in net ftkms each control period from CP8 through to the end of CP11 – this is a Compound Annual Growth Rate (CAGR) of 1.4%.
- **Option 2a equates to approximately 30bn ftkms by 2050.** The rail industry would need to deliver 10.7% growth each control period from CP8 through to the end of CP11 to reach this trajectory – this equates to a CAGR of 2.1%.
- **Option 2b equates to approximately 33.6bn ftkms by 2050.** To deliver this level of growth, the rail industry would need to deliver 13.8% growth each control period from CP8 through to the end of CP11 – this is a CAGR of 2.6%.
- **Option 3 growth is the equivalent of approximately 37.3 bn ftkms by 2050.** The rail industry would need to deliver growth of 16.6% net ftkms from CP8 through to CP11 to deliver this level of growth – this equates to a CAGR of 3.1%.





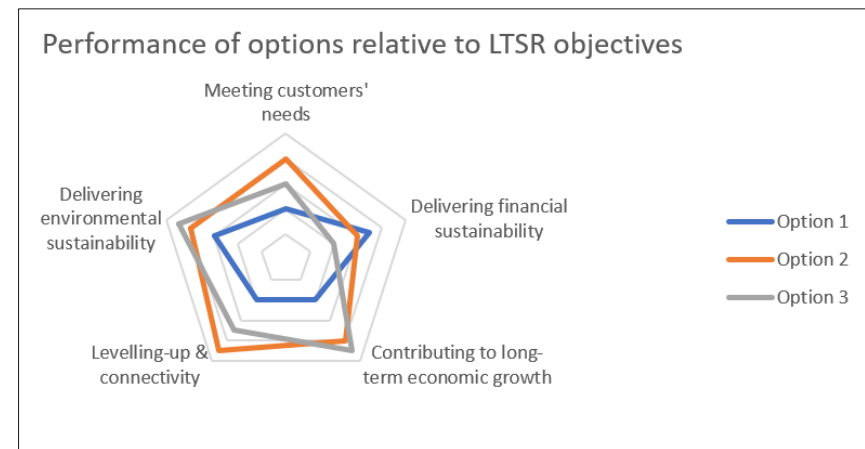
Assessing performance and value

- Delivering against the strategic objectives for rail
- Assessing overall economic value and value for money
- Conclusions

Performance against the strategic objectives for rail

An important feature of the analysis relates to understanding how each of the options perform against the Government's strategic objectives for the railway. Each of the options will variously contribute towards the 5 strategic objectives defined in the Long-Term Strategy for Rail. The figure (below) is a qualitative assessment of how each option performs against the strategic objectives. Each option was given a score from one (poor performance) to five (strong performance). This assessment was based on the ethos of the option (i.e. the traffic being addressed), the ways in which this growth will be accommodated (i.e. the balance of costs and benefits), and the level of growth being realised.

- **Meeting customers' needs.** Options 2 and 3 perform strongest against this objective as the level of growth defined is most conducive to the ambition of the private rail freight sector. Option 2 performs slightly better because there is a greater focus on realising network efficiencies, which is assumed to reduce unit costs for railway users.
- **Delivering financial sustainability.** Option 1 performs the strongest against this objective as it assumes the lowest capital and operational expenditure. Option 2 outperforms Option 3 on the basis that the public-sector capital expenditure is lower and there is a greater onus on generating income through the railway's freight estate.
- **Contributing to long-term economic growth.** Option 3 performs the strongest as it delivers the most additional freight traffic. As this is assumed to be a result of network enhancements it stimulates supply chain activity and is assumed to have a positive impact on the workforce.
- **Levelling-up & connectivity.** Option 2 performs strongest against this objective as it is predicated on addressing terminal connectivity in hinterlands not well-served by rail. This is assumed to improve local productivity through job creation and provide access for new market entrants.
- **Delivering environmental sustainability.** Based on the current absence of a decarbonised, long-distance HGV alternative, all three of the options perform strongly against this objective. Modal shift to rail will help reduce emissions in the surface transport sector. Option 3 performs strongest as it affects the most modal shift to rail.



Overall assessment of economic value and value for money

The figure (below) summarises both the overall economic value (expressed as Net Present Value (NPV)) and the relative Value-for-Money (expressed as Benefit:Cost Ratio (BCR)) of the growth target options (net of User Benefits).

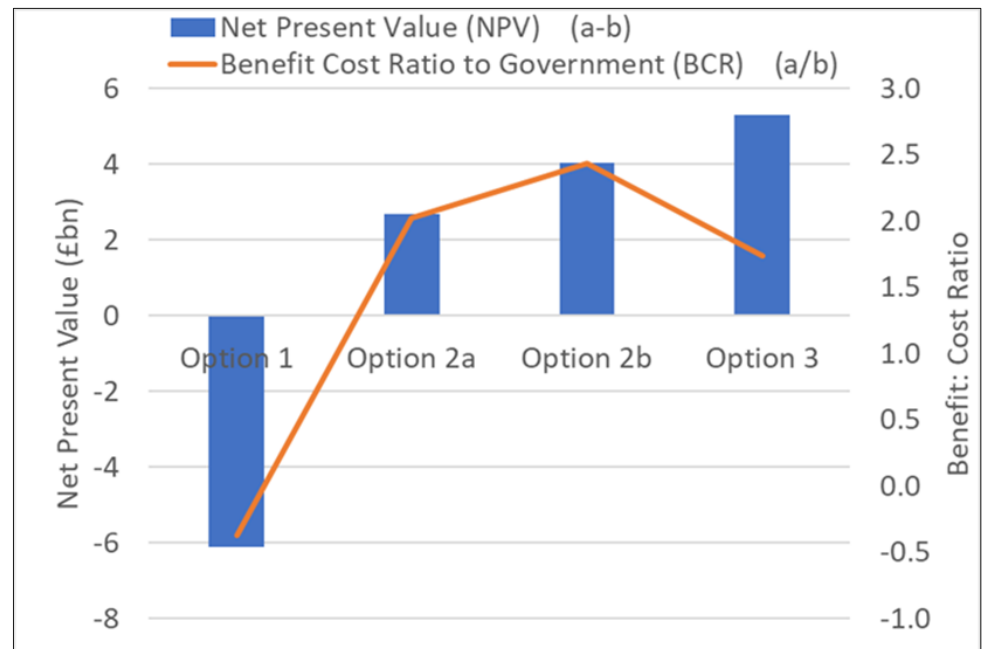
Option 1 has a negative NPV and a BCR just above 0. In this option, the lack of capital spending (and the lack of ability on the part of industry to make trade-offs with passenger services) means that the additional freight traffic delivered through this option can only be achieved by way of a significant degradation in network performance.

The benefits delivered by Option 1 are more than offset by the combination of the additional private car mileage that is generated by the poorly performing rail network and the increased “in year” revenue support required by public sector passenger rail businesses because of the fall in passenger rail demand. Essentially, disbenefits and therefore costs are being accrued as a result of poor rail network performance.

Worsening rail reliability and performance is assumed to cause modal shift from rail to road in passenger markets. The performance risk is mitigated in Options 2 and 3 through timetable trade-offs and network enhancements, respectively.

Option 3 generates the highest NPV. However, it comes at a significant price to the public-sector funders of the railway as it requires network enhancements (which would be expensive and would raise affordability concerns).

Option 2b delivers higher value-for-money because additional high-productivity freight capacity is prioritised, making better use of today’s rail network. Therefore, whilst overall revenue is reduced, the quantum of services withdrawn enable lease cost savings to be realised.



Conclusions

The analysis has necessarily focused on a finite number of potential options and given a particular focus to the areas that the rail industry can exert the most influence over. However, wider policy decisions have the potential to materially transform the market for rail freight.

The following headline conclusions can be drawn from the analysis:

- Option 1 performs poorest in terms of the impact on rail network performance. Whereas the focus on trade-offs in Option 2 and network enhancements in Option 3 means rail network performance is assumed to be unimpacted.
- Option 2 performs the strongest against the strategic objectives for rail. It provides a strong foundation for balancing the trade-offs between the objectives.
- Option 3 generates the most substantial economic value; however, this is offset by the significant costs to deliver this level of growth, which are assumed to be borne by the public sector.
- Option 2 delivers the best value for money because it requires less capital investment in rail infrastructure as there is a greater focus on making better use of the existing rail network.
- The focus of Option 2 on placing the commercial onus on the industry does not preclude further investment along the lines of Option 3. However, pursuing Option 3 without the industry demonstrating the commercial capability implied by Option 2 would represent a substantial risk which would very likely raise affordability concerns, as well as being poorer value for money.

