Mark-up options to support fixed cost recovery under GBR

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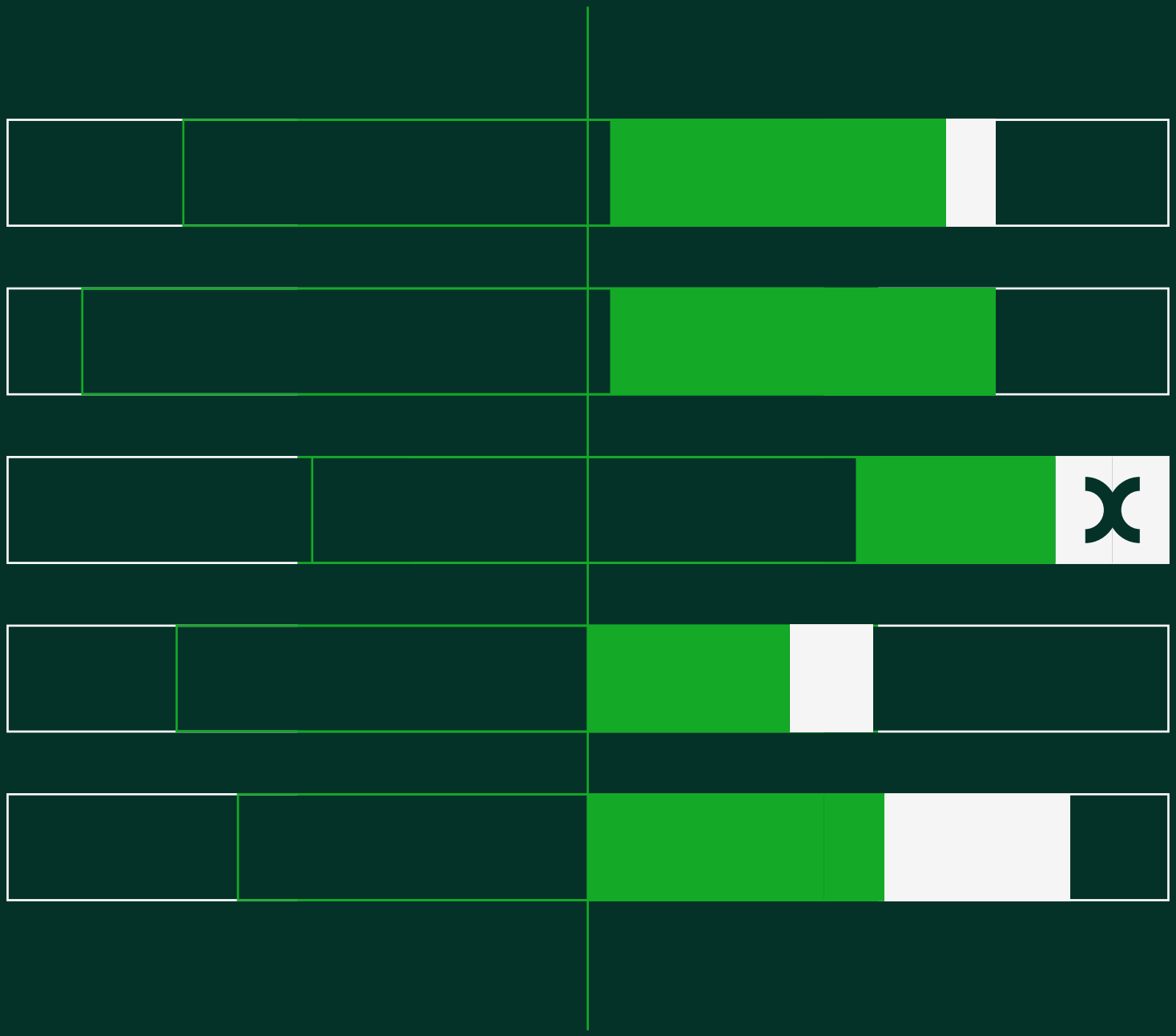
Prepared for Network Rail

6 March 2026



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Executive summary

To support the development of Great British Railway's (GBR) track access charges scheme, Network Rail has commissioned Oxera to explore options for setting mark-ups to contribute to the recovery of GBR's infrastructure fixed costs. This takes place in the context of the draft Railways Bill, which stipulates that GBR's track access charges scheme may include mark-ups on charges for costs that are directly incurred, where GBR considers that these mark-ups would not exceed the amount that an efficient operator could pay.

Precedents for setting mark-ups

To inform the options that are available to GBR for setting mark-ups, we considered both the Office of Rail and Road's (ORR) current approach to setting mark-ups for Network Rail charges, and a number of other European regulatory precedents. Based on this review, we identified the following three general approaches to setting mark-ups.

- **Ramsey pricing:** this involves setting mark-ups in inverse proportion to each segment's price elasticity of demand—with less price-sensitive segments bearing higher charges in order to minimise overall demand contraction. Importantly, however, implementation requires robust elasticity estimates, which can be challenging to obtain.

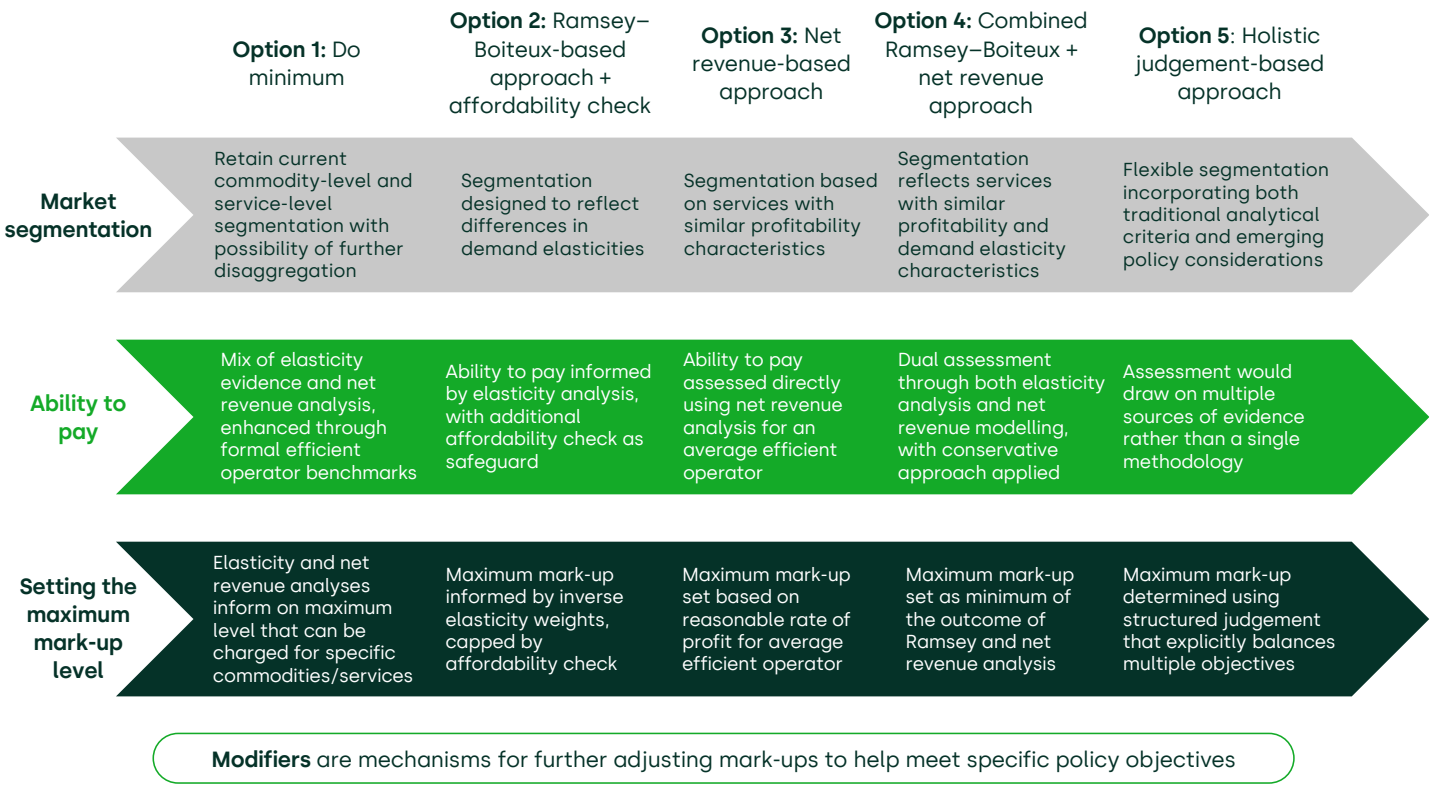
- **Net revenue analysis:** this involves measuring the scope for each segment to bear a different mark-up level, based on profitability assessments. This approach seeks to ensure that charges do not exceed a level that efficient operators can bear, by taking into account forecast cost and revenues, and providing an allowance for a reasonable rate of profit.

- **Hybrid approaches:** these combine elasticity- and profitability-based assessments. Such frameworks generally seek to ensure that mark-ups are both economically efficient and affordable, by setting mark-ups at the lowest level estimated under each analytical approach.

Five options for GBR

Our report identifies five options for setting fixed cost recovery mark-ups under GBR for freight and open-access passenger operators, as summarised in the figure below.

Overview of options



Source: Oxera.

The report also identifies additional '**modifiers**' that GBR could apply alongside any one of these options. Modifiers are mechanisms for further adjusting mark-ups to help meet specific policy objectives (such as supporting market entry and the rail freight target) and to preserve investment and efficiency incentives.

Consideration of these options

Our report considers the extent to which each of the five options is aligned with key requirements outlined in the draft Railways Bill and our understanding of priorities for the charges scheme (as they are being developed by Network Rail), while also considering implementation

feasibility. It should be noted, however, that our report does not identify a preferred or recommended option for implementation.[1]

- **Option 1: Do minimum**—this option seeks to align with the ORR's current approach, while making select modifications to account for GBR's policy and legislative context. It would provide the greatest continuity, and therefore be easiest to implement (subject to the continuation of collection of key data sources). This option aligns with the draft Railways Bill requirements and priorities for the charges scheme. However, by limiting the scale of change, may forgo an opportunity to develop an approach that is more tailored to GBR's strategic objectives.

- **Option 2: Ramsey–Boiteux-based approach with affordability check**—in theory, this approach provides an economically efficient allocation of charges that minimises overall traffic reductions, while ensuring that operators are able to pay the calculated mark-ups. In practice, however, there are multiple issues with Ramsey-based pricing—not least the difficulty in obtaining reliable elasticity evidence—such that strict adherence to this approach carries a risk of setting unaffordable mark-ups.

- **Option 3: Net revenue-based approach**—this directly operationalises the principle that charges should not exceed what efficient operators are able to pay, by setting mark-ups based on modelling operator costs and revenues (and an assumed reasonable rate of profit). However, the approach is data-intensive, and may therefore be especially challenging to implement for freight operators.

- **Option 4: Combined Ramsey–Boiteux + net revenue approach**—this option in effect replaces the 'affordability check' in Option 2 with a more robust net revenue analysis from Option 3. This is therefore arguably the most methodologically robust approach. However, it is also the most complex and data-demanding option, which may limit its feasibility or proportionality in practice.

- **Option 5: Holistic judgement-based approach**—this offers maximum flexibility to pursue policy objectives, and—given that

[1] Recommending a specific option was explicitly excluded from our scope of work.

there are no specific data requirements—provides flexibility to GBR while facilitating pragmatic trade-offs among competing priorities. However, the need to exercise considerable discretion owing to the lack of a clear analytical framework creates significant risks of perceived bias from GBR, which may make this option unviable in practice.

Mark-ups for non-GBR publicly owned or contracted operators

Finally, we have considered how mark-ups should be set for non-GBR publicly owned or contracted operators. **We determine that the presence of public subsidies greatly complicates any assessment of the ability to pay.**

Where publicly owned or contracted operators pass mark-ups on to their funders—as under the current arrangements—the key decision is a policy one: should GBR's fixed costs be funded by the Department for Transport (DfT) (through direct funding where track access charges fall short of cost recovery), or by the funders of non-GBR services (through mark-ups passed on from operators via increased subsidy requirements)?

Therefore, our current thinking is that recovery of fixed costs from these operators is best operationalised using a lump-sum charge. We find that implementing a lump-sum charge similar to the Fixed Track Access Charge (FTAC) under GBR would be feasible. This would require GBR maintaining a fixed cost allocation model that is comparable to Network Rail's current model and implementing a fair, non-discriminatory, and transparent methodology for calculating each operator's final lump-sum charge.

1 Introduction

The Railways Bill will create Great British Railways (GBR), a new public body that brings together responsibility for infrastructure and passenger services under a single organisation.[2] GBR will be required to develop a track access charges scheme for non-GBR operators, in line with its duties and functions.[3]

The Railways Bill requires that charges 'in relation to the operation of a train must be set at the cost that is directly incurred as a result of the operation of the train'.[4] The Cost Directly Incurred (CDI) charges will form the core package of track access charges under GBR's future Charges Scheme Statement (CSS).[5]

The charges scheme may also 'provide for a higher amount to be charged in particular circumstances provided that it does not exceed the amount that Great British Railways considers is the amount that an efficient operator would be able to pay in those circumstances'.[6] Mark-ups on CDI charges form part of the ancillary package of track access charges under GBR's future CSS, and are intended to contribute to the recovery of GBR's infrastructure fixed costs.[7]

In preparation for the introduction of GBR, the Department for Transport (DfT) instructed Network Rail to lead industry development of GBR's future charges scheme.[8] To support this work, Network Rail

[2] The Railways Bill is being debated in the Houses of Parliament and is subject to change. The version used for the purpose of this report is the Railways Bill as amended in Committee. See House of Commons (2026), 'Railways Bill', Bill 373 2024-26 (as amended in Committee), 10 February; Department for Transport (2025), 'A Railway Fit for Britain's Future: Government Response', November, p. 14.

[3] GBR will not be required to levy track access charges to its own operators. However, it will be required to carry out a transparent cost apportionment process and publish 'indicative charges' for purposes of transparency. See Clause 64(5) of House of Commons (2026), 'Railways Bill', Bill 373 2024-26 (as amended in Committee), 10 February; Department for Transport (2025), 'A Railway Fit for Britain's Future: Government Response', November, p. 71.

[4] Clause 64(2) of House of Commons (2026), 'Railways Bill', Bill 373 2024-26 (as amended in Committee), 10 February.

[5] GBR will publish an Access and Use Policy (AUP), which will introduce a framework for how GBR allocates capacity, sets charges, and manages performance across all network users, in line with its statutory responsibilities. GBR will also publish the CSS, which will include details of GBR's charges scheme. See Network Rail (2026), 'Access and Use Policy development', accessed 12 February 2026; Network Rail (2025), 'Great British Railways' Access and Use Policy: Discussion paper Annex 3 – Charges and performance', 1 December.

[6] Clause 64(3) of House of Commons (2026), 'Railways Bill', Bill 373 2024-26 (as amended in Committee), 10 February.

[7] Network Rail (2025), 'Great British Railways' Access and Use Policy: Discussion paper Annex 3 – Charges and performance', 1 December, pp. 6–7.

[8] GBR will determine access charges from 1 April 2029. See Network Rail (2025), 'Great British Railways' Access and Use Policy: Discussion paper Annex 3 – Charges and performance', 1 December, p. 3.

commissioned Oxera to explore options for setting mark-ups—including potential approaches to the 'Market Can Bear' (MCB) test—based on relevant regulatory precedents and taking into account the future policy context under GBR. This will inform GBR's future policy decisions on mark-ups for Funding Period 1 (2029–34).

This report summarises Oxera's research and presents a range of policy options for setting mark-ups that contribute to the recovery of GBR's infrastructure fixed costs. The report is structured as follows.[9]

- **Summary of the current approach to setting fixed cost recovery mark-ups in Great Britain** (section 2).
- **Summary of approaches to setting fixed cost recovery mark-ups in the EU** (section 3).
- **Options for setting fixed cost recovery mark-ups under GBR** (section 4).
- **Conclusion** (section 5).

[9] Recommending a preferred option is outside the scope of this report.

2 The current approach to setting fixed cost recovery mark-ups in Great Britain

2.1 The current track access charges framework in Great Britain

In Great Britain, the Office of Rail and Road (ORR) is responsible for setting Network Rail's track access charges every five years through its Periodic Review (PR) process.

As an input to this process, Network Rail's costs are allocated across different categories, which determines how costs are attributed and which elements are recovered through each type of charge. The basic steps in this process are as follows.

- Network Rail first classifies its expenditure into variable and fixed components. Variable costs are those that change with train usage, such as those relating to track wear and energy consumption. Fixed costs are those that do not vary with the use of the network in the short term, such as the costs of the signalling system.

- Network Rail then uses a cost allocation model to further separate fixed costs into two categories:

    - **non-avoidable costs** are fixed costs that are incurred for minimal network capability, and cannot be avoided by reducing the volume and type of traffic running over the network. These costs are funded largely through the Network Grant provided by the DfT or other funders;

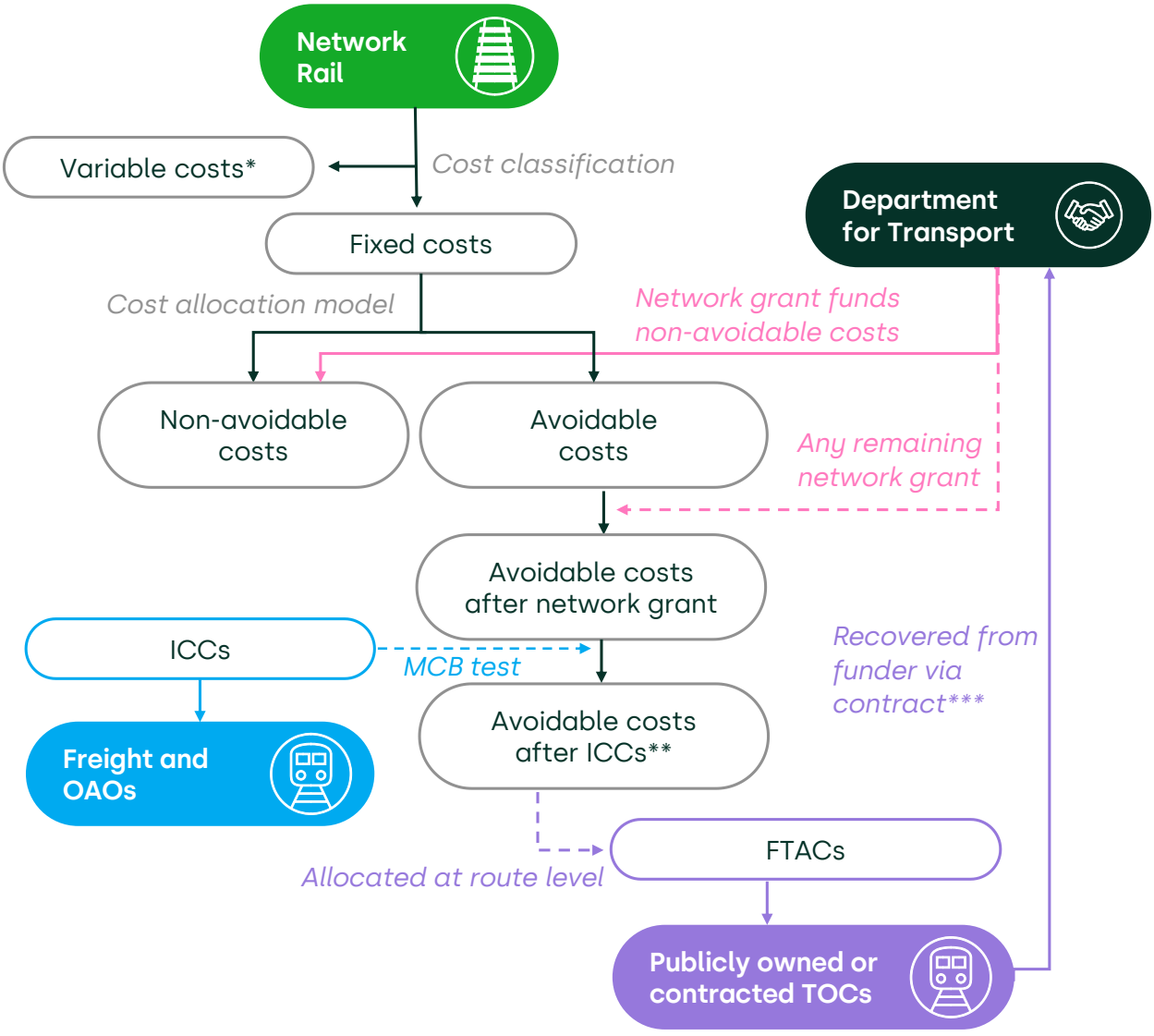
    - **avoidable costs** are fixed costs that could be saved in the long run by reducing the volume and type of traffic running over the network (e.g. by reducing line speeds). These are recovered (at least in part) through Infrastructure Cost Charges (ICCs) levied on freight and Open Access Operators (OAOs).

- Any remaining avoidable fixed costs that are not recovered via ICCs are then recovered from publicly owned or contracted

Train Operating Companies (TOCs) via Fixed Track Access Charges (FTACs).[10]

Figure 2.1 below illustrates the overall framework within which the ORR sets these charges.

Figure 2.1 Framework for setting charges



Note: * Variable costs are recovered from all operators through the Variable Usage Charge (VUC) and, where applicable, the Traction Electricity (EC4T) and Electrification Asset Usage Charge (EAUC). ** Recovery of these remaining fixed costs is further supported by Network Rail's 'other single till income' (e.g. revenues from retail and commercial property rentals and asset disposals). See Office of Rail and Road (2025), 'Access charging framework for use of Network Rail infrastructure: user guide', accessed

[10] This includes TOCs that are owned or operated under contract by the DfT or devolved authorities (devolved governments and local authorities).

December 2025. *** Funders may include bodies other than the DfT, such as Transport Scotland, Transport for Wales, or Transport for London.
Source: Oxera.

2.2 Legislative requirements

The ORR's approach for setting ICCs and FTACs, which contribute towards the recovery of Network Rail's avoidable fixed costs, is governed by The Railways (Access, Management and Licensing of Railway Undertakings) Regulations 2016, which transposed EU Directive 2012/34/EU into UK law.[11] This legislation establishes several key principles that govern the application of ICCs under the current arrangements, including the following.

- **Cost recovery:** ICCs are permitted to enable recovery of fixed costs, subject to the principles of efficiency, transparency and non-discrimination, and the requirements below.

- **Market exclusion test:** an ICC must not exclude from the infrastructure any segments that 'can pay at least the cost that is directly incurred as a result of operating the railway service' (i.e. the minimum access package). Mark-ups can be charged only where the 'market can bear'.

- **Market segment evaluation**: the ORR must ensure that the infrastructure manager evaluates the relevance of ICCs for specific market segments,[12] considering at least the seven pairs specified in the legislation.[13]

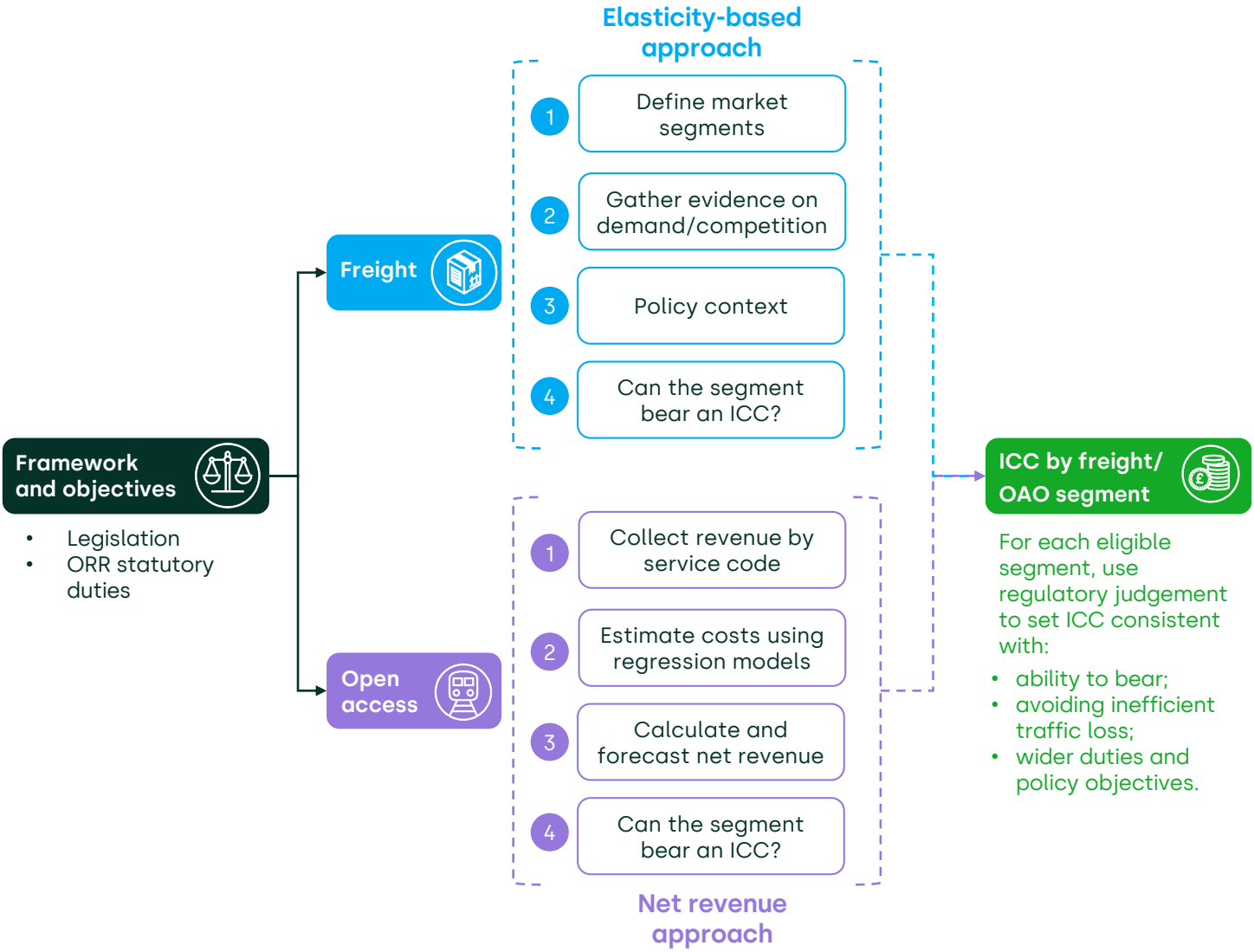
- **Minimum market segments:** while the legislation requires the consideration of at least the seven specified pairs, the final ICCs set must contain at least three segments: freight services, passenger services within the framework of a Public Service Contract (PSC), and other passenger services.

[11] UK Government (2016), 'The Railways (Access, Management and Licensing of Railway Undertakings) Regulations 2016', Schedule 3(2).
[12] While the legislation sets out this requirement, it is the ORR that practically conducts the evaluation of each market segment.
[13] These are passenger versus freight services, trains carrying dangerous goods versus other freight trains, domestic versus international services, urban/regional versus interurban passenger services, combined transport versus direct trains, block trains versus single wagon loads, and regular versus occasional services. See UK Government (2016), 'The Railways (Access, Management and Licensing of Railway Undertakings) Regulations 2016', Schedule 3(2).

2.3 The MCB test

The MCB test determines which rail service segments should pay ICCs and at what level. A segment is considered able to bear the charge if it does not exclude market participants from using the infrastructure, meaning that operators can absorb or pass on the charge with relatively little demand impact. The methodology differs between freight and open-access passenger services. The current approach is summarised in Figure 2.2 below.

Figure 2.2 The ORR's current approach to setting ICCs



Source: Oxera.

2.3.1 Freight services

Services are grouped by primary commodity transported (coal, biomass, iron ore, intermodal, aggregates, etc.), with further disaggregation

considered based on modal competition or flow distance.[14] Segments are prioritised for detailed MCB analysis based on factors including large or rapidly increasing traffic volumes, existing ICCs, or significant changes since the previous review.

The assessment of ability to bear is driven principally by freight demand elasticities, drawing on academic literature and bespoke modelling to understand price sensitivity across segments. This elasticity evidence forms the analytical core of the approach. An explanation of the concept of elasticity—what it measures and how it is interpreted—is provided in Box 2.1 below.

Box 2.1 Understanding the price elasticity of demand

The price elasticity of demand measures how responsive the quantity demanded is to price changes, calculated as the percentage change in quantity divided by the percentage change in price, as follows.

- **Elastic demand (>1):** relatively price-sensitive. A 10% price increase would reduce demand by more than 10%.
- **Inelastic demand (<1):** relatively price-insensitive. A 10% price increase would reduce demand by less than 10%.

Why does this matter for charge setting?

Charges can be set inversely to elasticity to minimise distortions to traffic volumes, as follows.

- **Inelastic segments** bear higher mark-ups (smaller impact on demand despite higher charges).
- **Elastic segments** receive lower mark-ups (to avoid a large impact on demand).

Source: Oxera.

[14] CEPA (2022), 'PR23 Charges Review Market Can Bear Analysis - Freight Services', March.

The elasticity evidence is complemented by additional considerations, including the intensity of road–rail competition, commodity demand projections, relevant government policies (such as decarbonisation measures), stakeholder input, and broader market dynamics. This ensures that the elasticity findings are interpreted within their wider commercial and policy context. For example, the analysis may examine rail–road cost comparisons, market shares between modes, and the likelihood of shippers switching to road haulage if rail charges increase or decrease. Projected demand for specific commodities and the impact of environmental regulations that favour rail over road are also factored into the assessment.

For market segments that have the ability to bear a mark-up, the ORR sets the mark-up level such as to not exclude a market segment from operating. For freight, the general principle used by the ORR is to set the mark-up such that there is a less than 10% modelled reduction in the gross tonne miles shipped by rail.[15]

2.3.2 Open-access passenger services

For open-access passenger services, the market segmentation is informed by a net revenue analysis that is designed to identify which categories of passenger services are most profitable and therefore most able to bear an ICC.[16] This methodology differs from the elasticity-based freight approach, reflecting both the different market structure of passenger services and the availability of detailed revenue, cost, and operational data for passenger services.

Net revenue is assessed at service code level by comparing passenger revenue with estimated operating costs. Revenues are derived from detailed LENNON earnings data covering all TOCs, while costs (which are unavailable at service code granularity) are estimated econometrically using regression analysis. The cost estimation uses operator-level data and key operational drivers such as train hours, vehicle miles, traction type, and service characteristics. Separate models are used for staff costs, traction energy costs, rolling stock costs, and other operating expenses. The predicted costs are calibrated to ensure that totals align with ORR-reported operator costs.

The analysis results in a distribution of net revenue per train mile by service code, which is used to test whether existing segment definitions

[15] Office of Rail and Road (2018), '2018 periodic review draft determination', June, p. 25; Office of Rail and Road (2023), 'PR23 draft determination', June, p. 23.
[16] Steer (2022), 'PR23 Charges Review Market Can Bear Analysis – Passenger services', April.

appropriately capture more profitable services and to explore alternative segmentation options (such as distance thresholds, station usage patterns, or London versus non-London services).

In setting the charge, the regulator considers the extent to which identified service segments can bear the ICC. The charge is calibrated to balance fixed cost recovery with the risk of deterring market entry. In doing so, the regulator also takes account of demand and cost sensitivities (including the impact of changes in other access charges), the minimum required rate of return on investments that is not captured in the net revenue analysis by default (see Box 3.3 below for more details), the competitive dynamics on affected routes (including whether open access competition would reduce net revenues relative to franchise-only operation), and the interaction with the wider charging framework.[17]

To support new market entry, operators entering segments with an existing ICC benefit from a five-year phased introduction: 0% of the ICC in years 1–2, 25% in year 3, 50% in year 4, and 100% in year 5, allowing time for them to establish operations and build revenue before bearing the full charge.[18]

[17] Office of Rail and Road (2023), 'PR23 draft determination', June, pp. 12–19.
[18] There is not an equivalent phase-in mechanism for freight ICCs, although Network Rail has a general Track Access Discount Policy that offers discounts on other access charges for new passenger and freight services, such as the variable user charge and the electrification asset usage charge. Network Rail website, 'CP7 access charges', accessed December 2025.

3 Approaches to setting fixed cost recovery mark-ups in the EU

3.1 Introduction

To understand the potential options available to GBR for determining fixed cost recovery mark-ups, this section summarises a sample of other relevant European regulatory precedents—including for freight, open-access passenger services, and passenger services operated under a PSC.

The approaches taken by regulators and Infrastructure Managers (IMs) across Europe generally fall into one of three categories:[19]

1 Ramsey pricing methodologies;
2 net revenue analyses;
3 hybrid approaches.

In what follows, we provide a brief overview of each of these approaches from a conceptual standpoint, before providing country case studies to highlight how these methodologies have been implemented in practice.

It should be noted that, while the legal framework for setting track access charges is harmonised at the EU level (and has underpinned the ORR's approach discussed in section 2), its practical implementation varies significantly across member states.[20]

For example, with regard to market segmentation, all jurisdictions distinguish at least between freight services, commercial passenger services, and passenger services operated under a PSC. Beyond this common structure, however, further segmentation generally varies

[19] The specific procedures and institutional arrangements vary across jurisdictions. In some cases, the regulator conducts the analysis directly with stakeholder input (e.g. Spain's CNMC). In others, the IM proposes charges based on its own analysis, subject to regulatory approval (e.g. in Italy and Germany). For simplicity, throughout the remainder of this section we refer to IMs setting charges, recognising that the actual decision-making authority and analytical responsibility may be shared between IMs and regulators according to national frameworks.

[20] The legal framework for such an approach is harmonised under Directive 2012/34/EU, which permits the application of mark-ups 'where the market can bear this' and requires them to be 'efficient, transparent and non-discriminatory'. Crucially, the directive specifies that 'the level of charges must not, however, exclude the use of infrastructure by market segments which can pay at least the cost that is directly incurred as a result of operating the railway service, plus a rate of return which the market can bear'. Article 32(1) further requires that 'before approving the levy of such mark-ups, Member States shall ensure that the infrastructure managers evaluate their relevance for specific market segments'. See European Commission (2012), 'Directive 2012/34/EU of the European Parliament and of the Council of 21 November 2012 establishing a single European railway area', *Official Journal of the European Union*, L 343/32, 14 December.

across jurisdictions, based on factors such as train type, distance, speed, type of commodity, or service pattern, which may serve as proxies for grouping together services with similar demand-side characteristics.

It should also be noted that, in some EU member states, the approach to setting fixed cost recovery mark-ups is much less structured and may not fit within any of the three categories identified above. For example, in Sweden and Poland, mark-ups are set primarily to contribute to government-defined annual revenue targets (or to fully close revenue gaps).[21] Since these approaches are generally applied at a high level and may not involve a well-defined methodology, we do not cover these in detail in this section.

3.2 Ramsey pricing approach

3.2.1 Overview

The Ramsey (or Ramsey–Boiteux) pricing approach is underpinned by a key economic concept—the **price elasticity of demand**.

Under a Ramsey pricing approach, mark-ups are set for each market segment in inverse proportion to that segment's price elasticity of demand.[22] The underlying economic logic is that:

- segments with a *higher* price elasticity of demand (which are very responsive to higher charges) should face a *lower* mark-up to avoid a large contraction in services for that segment; and

- segments with a *lower* price elasticity of demand should face *higher* mark-ups, since the resulting impact on service provision is likely to be comparatively limited.

In essence, the idea is that **Ramsey pricing allows the IM to levy a given amount of revenue in the least distortive way possible**—i.e. by minimising the reduction in traffic volumes across the network.

It should be noted that the Ramsey–Boiteux formula incorporates a scaling factor to determine the level of mark-ups required to raise a target level of revenue. Without this factor, the formula can determine

[21] Independent Regulators' Group (2021), 'Appendix to the paper on Market Segmentation and Mark-up Case Studies', November.
[22] In the context of Ramsey pricing in this report, the price elasticity of demand measures the extent to which an increase in track access charges induces an operator to cut back on services or potentially exit the market altogether.

only the relative ratios of mark-ups between segments (not their absolute levels).[23]

The figure below illustrates how Ramsey pricing operates in practice, with market segments defined by commodity type. In this example, the IM needs to raise a total of €10m through mark-ups across three freight commodity segments. To do this, it uses the elasticities of demand for each segment to set mark-ups that are inversely proportional to these elasticities, yielding inverse elasticity weights of 0.5, 1.0 and 2.0 respectively. These weights are normalised using the scaling factor to determine each segment's share of the total €10m recovery target: Commodity 1 contributes 14% (€1.4m), Commodity 2 contributes 29% (€2.9m), and Commodity 3—the least price-sensitive segment—bears the largest burden at 57% (€5.7m).

Figure 3.1 Worked example of Ramsey pricing approach

Source: Oxera.

Under a Ramsey approach, market segments are defined not solely by technical or operational characteristics, but by anticipated demand responses to changes in access charges. Mark-ups are then set using

[23] For a derivation of the Ramsey–Boiteux formula, see Independent Regulators' Group (2021), 'Overview of the application of market segments and mark-ups in consideration of Directive 2012/34/EU', November; Independent Regulators' Group (2021), 'Appendix to the paper on Market Segmentation and Mark-up Case Studies', November.

elasticity evidence as described above, which—in effect—proxies the ability of each segment to bear higher charges. The approach focuses on demand-side substitutability, which is influenced by factors such as competition from other transport modes.

While appealing in theory, there are a number of practical challenges associated with implementing a Ramsey pricing approach, which should be borne in mind. These include the following.

- **Ramsey pricing delivers the 'optimal' (i.e. least distortive) allocation of charges only under certain conditions.** One key condition is that the market segments being assessed are perfectly competitive. Where this does not hold, the level of mark-ups determined through Ramsey pricing would not be optimal from a social welfare-maximising standpoint.[24]

- **Robust elasticity estimates at the required level of granularity are unlikely to be available in practice.** Available estimates may be outdated, or analyses may need to rely on imperfect proxies such as estimates for less granular segment definitions, or evidence from other countries. Where elasticities that measure an operator's responses to a change in track access charge are not available, analyses may need to rely on alternative approaches, for example adjusting elasticities of end-user demand.[25]

- **When segments are substitutes (positive cross-elasticity) or complements (negative cross-elasticity), the Ramsey pricing formula must account for how a mark-up change for one segment affects the demand in other segments.** This requires the estimation of super-elasticities that capture both cross-price and own-price effects, which is more challenging.[26]

[24] For example, assuming that the Ramsey formula is used to raise a given revenue, when one market segment is perfectly competitive and another operates as a monopoly, the charge for the monopoly segment should be lowered relative to the baseline Ramsey pricing outcome, with charges for the competitive segment increased correspondingly. For more details see McFarland, H. (1986), 'Ramsey pricing of inputs with downstream monopoly power and regulation', *Journal of Transport Economics and Policy*, **20**:1, pp. 81–90.
[25] For instance, Germany transforms end-consumer elasticities to track price elasticities assuming that, due to market forces, freight and passenger operators will pass on track price changes proportionally to the share of track prices on total costs. Independent Regulators' Group (2021), 'Appendix to the paper on Market Segmentation and Mark-up Case Studies', November, pp. 16–25.
[26] The cross-price elasticity of one service is a measure of the effect on demand for that service of a change in the price of another service. See Ofcom, 'Wholesale Mobile Voice Call Termination: Annex K'; Decker, C. (2014), 'Modern Economic Regulation: An Introduction To Theory And Practice', p. 82.

- **The available elasticity evidence often covers only specific point elasticities, which measure demand responsiveness at current price levels.** Point elasticities assume that demand responses remain constant across price ranges, but this assumption is likely to fail for substantial price changes. Mark-ups that are calculated from point elasticities therefore risk misjudging actual demand responses, presenting a risk that overestimating inelasticity leads to unexpectedly large traffic losses.[27]

For the reasons above, strict reliance on Ramsey-based pricing risks setting mark-ups at levels that certain segments are not, in fact, able to bear. **We therefore consider that Ramsey pricing methods should be coupled with an additional affordability assessment, to ensure that mark-ups do not exclude segments from the market**.[28]

3.2.2 Country case studies

To illustrate how Ramsey pricing can be implemented in practice, the following boxes provide case studies of countries that have adopted this methodology.

Box 3.1 Germany

Germany applies a Ramsey–Boiteux pricing framework, under which mark-ups are differentiated across market segments in inverse relation to their price elasticity of demand.

The market segmentation reflects differences in demand conditions and service characteristics across passenger and freight traffic. Passenger services are segmented according to factors such as demand intensity and service features (for example, time of day, speed, or network relevance), while freight services are differentiated based on broad operational and risk-related characteristics (such as train weight or the carriage of dangerous goods). In addition to predefined segments, the framework allows for a degree of self-segmentation: railway undertakings may select differentiated service attributes, including time or spatial flexibility and operational priority, enabling access charges to better reflect heterogeneous service requirements and willingness to pay.

[27] See Ofcom, 'Wholesale Mobile Voice Call Termination: Annex K'.
[28] See European Commission (2025), 'Interpretative guidelines concerning the setting up of charges for the use of railway infrastructure', May, p. 12.

Mark-ups are calculated by DB InfraGO AG using a simplified Ramsey pricing approach. The model applies a common scaling factor across all segments to ensure that the total revenue meets the required target (determined by the regulator's approved total costs minus revenues from direct charges) while preserving the relative differences in mark-ups based on elasticity.[1]

Demand elasticities are derived using different methodologies depending on the segment. For long-distance passenger transport, elasticities are based on stated-preference surveys of passengers; for freight transport, elasticities are derived through empirical studies combining transport data and modal shift analysis.[2] These end-customer elasticities are translated into track access charge elasticities using observed cost and revenue data, under the assumption that changes in infrastructure charges are passed on proportionally by railway undertakings. The approach implicitly assumes perfect competition across market segments.

Regional passenger services operated under PSCs follow a separate methodology, with charges indexed to the development of regionalisation funds as specified in the regulatory framework. However, DB InfraGO AG has raised concerns that the current regulatory provisions may underestimate the financial viability of regional rail transport, as the permitted indexation mechanism captures only part of the actual increases in regionalisation funds, potentially limiting the IM's ability to recover costs from this segment.

Note: [1] For example, in 2017/18 it was estimated that €4,117m was set to be recovered through mark-ups (compared with €929m through direct cost charges), with regional passenger transport accounting for 70%, long-distance transport 21%, and freight transport 10% of the total mark-up amount. [2] Stated preference methods involve presenting survey respondents with hypothetical scenarios (e.g. different combinations of prices, journey times or service frequencies) and asking them to indicate their preferences.
Source: Oxera based on DB InfraGO AG (2024), 'Appendix 5.2 to the Infrastructure Usage Conditions (INB) of DB InfraGO AG 2026', August; Independent Regulators' Group (2021), 'Appendix to the paper on Market Segmentation and Mark-up Case Studies', November, pp. 16–25; and Centre on Regulation in Europe (2018), 'Track access charges: reconciling conflicting objectives: Case Study – Germany', May, pp. 13 and 18–21.

Box 3.2 Austria

In Austria, ÖBB-Infrastruktur AG has previously proposed to calculate mark-ups in order to meet a binding revenue target set by the federal authorities. The gap between total infrastructure costs and revenues from basic, direct cost-based charges would be recovered through mark-ups.[1]

The total amount to be recovered through mark-ups is predetermined by the government and treated as an exogenous constraint. Within this constraint, mark-ups are distributed across market segments using a constant that ensures that total revenues from mark-ups exactly match the required amount. The differentiation between segments is then based on each segment's ability to bear charges, which reflects three factors: demand elasticity of final customers, the share of total costs that are infrastructure charges, and the extent to which changes in access charges are passed on to passengers or shippers.

Elasticities of final customers are derived from empirical studies conducted by ÖBB-Infrastruktur AG, including passenger and shipper interviews. These elasticities are then adjusted to reflect the cost structure of railway undertakings and the assumed pass-through rate—ÖBB-Infrastruktur AG assumes a full pass-through of access charge changes to final customers.

In addition, when setting the level of the mark-up an additional check ensures that a calculated demand loss of greater than 1% does not occur.

The different market segments (including passenger and freight services) are covered within a single access charging framework, with mark-ups differentiated primarily on the basis of traffic type, service type, estimated elasticities, and cost characteristics.

Note: [1] This was subject to legal proceedings, and the European Courts of Justice ruled that in setting mark-ups, an overall revenue target cannot be set by the member state. The proposed mark-ups have not been been levied by ÖBB-Infrastruktur AG in practice.
Source: Oxera based on Independent Regulators' Group (2021), 'Appendix to the paper on Market Segmentation and Mark-up Case Studies', November, pp. 4–9; and ÖBB-Infrastruktur AG (2019), 'Information regarding intended significant changes to the charging schemes for mark-ups in the 2020 track access charge model', March; ÖBB-Infrastruktur AG (2022), 'SchienennetzNutzungsbedingungen 2023', December, p. 48; European Commission (2025), 'ÖBB-Infrastruktur AG and WESTbahn Management GmbH v Schienen-Control Kommission: Request for a preliminary ruling from the Bundesverwaltungsgericht', May.

3.3 Net revenue approaches

3.3.1 Overview

Some European IMs employ methodologies that seek to directly measure the capacity of market segments to bear mark-ups. These net revenue (or profitability) analyses are used to determine the level of additional track access charges that different segments can sustain.

Net revenue analyses can be conducted at varying levels of granularity, and can be used to inform the definition of market segments themselves—as the ORR currently does for open-access passenger services.

Net revenue approaches are particularly useful where formal, elasticity-based evidence is limited, but where IMs have access to detailed financial data on operators' revenues and costs, across a wide range of routes or market segments. Rather than simply measuring the level of mark-up that each operator can bear based on its existing (or forecast) net revenues, the analysis typically seeks to establish the net revenues of a hypothetically 'efficient' operator, representative of the average operator in a given segment. This preserves incentives for operators to improve efficiency (or, conversely, avoids rewarding operators that are less efficient with lower mark-ups), and is consistent with requirements in EU legislation.[29]

It is important to note that, when setting mark-ups based on a net revenue approach, **the mark up must be set at a level *below* the expected profit of the relevant segment (absent a mark-up)**. This is because, in order to entice operators to provide services in the first place, operators must be allowed to earn a 'reasonable' rate of profit on their operations. We discuss the link between reasonable rates of profit and ability to pay mark-ups in Box 3.3 below.

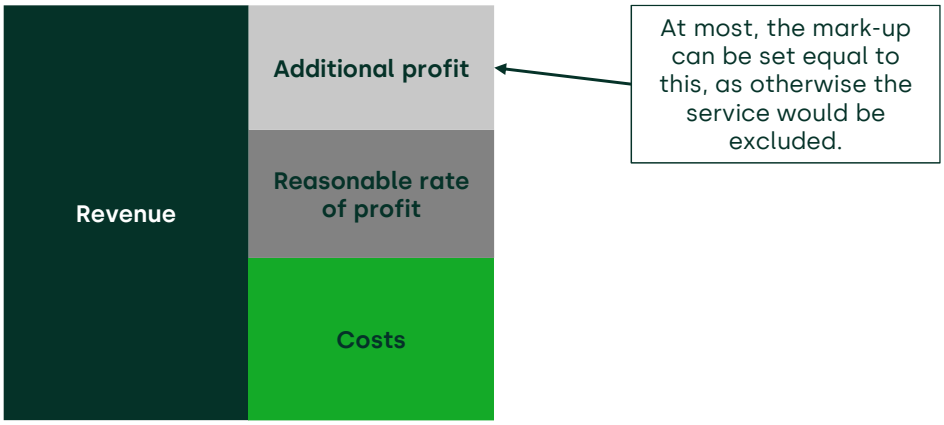
[29] The incentive is twofold: (i) an operator that is less efficient than the benchmark is still charged the full mark-up; and (ii) an operator that is more efficient than the benchmark is not charged a higher mark-up, so it retains any benefit of further efficiency gains. Article 32(1) of Directive 2012/34/EU stipulates that: 'The charging system shall respect the productivity increases achieved by railway undertakings.' This provision is intended to avoid a situation where more efficient operators are charged higher mark-ups simply because they are more profitable, as this would discourage rail operators from seeking to improve their productivity. See European Commission (2025), 'Interpretative guidelines concerning the setting up of charges for the use of railway infrastructure', May, p. 10.

Box 3.3 Why mark-ups must be set below the expected level of profit

To ensure that operators that are charged a mark-up are not excluded from the market, the mark-up cannot be set at the same level as that segment's expected level of profit absent the mark-up. This is because, to incentivise operators to remain in the market, they must be allowed to earn **a reasonable rate of profit**.

A reasonable rate of profit represents the competitive level of profit necessary to incentivise operators to remain in the market and continue providing services. It reflects the minimum profit margin on capital employed that efficient operators require in order to justify deploying their resources in this sector, rather than exiting the market and/or pursuing alternative business opportunities.

The implication is that a key input into using net revenue analysis to set mark-ups is the assumed reasonable rate of profit for operators in that segment.[1] A higher assumed reasonable rate of profit will—all else being equal—imply a lower mark-up for that segment. This is illustrated in the figure below.



Note: [1] Importantly, this is not a guaranteed rate of profit. Rather, the mark-up would be set, based on forecast costs and revenues, at a level that would enable an average efficient operator to achieve this rate of profit over the assessment period (e.g. five years) after paying both variable charges and the mark-up, provided that those forecasts prove accurate.
Source: Oxera.

3.3.2 Selected country case studies

This subsection presents a case study on France, where the IM, SNCF Réseau, conducts profitability assessments using economic modelling for a 'standard carrier', which is considered representative of high-speed carriers operating on the national rail network.

Box 3.4 France

In France, SNCF Réseau assesses the sustainability of infrastructure charges using the economic model of a 'standard carrier'. This model is designed to represent a typical high-speed operator on the national rail network and allows SNCF Réseau to estimate the profitability of both existing carriers and potential new entrants. By benchmarking operators against this standard, the model ensures that charges are set at a level that is sustainable without being influenced by the specific financial characteristics of individual companies.

The standard carrier approach is applied primarily to non-contracted, open-access services, where market sustainability must be verified. To refine its assessments, SNCF Réseau segments the market according to the nature of the service, such as high-speed versus conventional lines, or daytime versus night services. Additional segmentation is based on economic, commercial, and geographical factors. For example, high-speed services are analysed in terms of market size and competition with road transport, reflecting the potential profitability of each segment.

For high-speed lines, pricing is further adjusted based on service-specific characteristics, including the day type (e.g. weekday versus weekend), theoretical departure time, and rolling stock features. Two key rolling stock variables—seat density and total number of seats—serve as proxies for passenger comfort, allowing the model to capture variations in service quality.

For services under PSCs, SNCF Réseau applies a two-part tariff: a fixed market charge, calculated annually based on projected transport service and inflation, and a variable charge tied to the actual level of service provided. When public authorities subsidise these services, a flat fee independent of actual train volumes is unlikely to constitute a barrier to entry, as the subsidy allows the operator to absorb the fixed charge regardless of service levels.

Source: Oxera based on Independent Regulators' Group (2021), 'Appendix to the paper on Market Segmentation and Mark-up Case Studies', November, pp. 13–16; and SCNF Réseau (2023), 'Appendix 5.1.1: Pricing Principles', September, pp. 21–22.

3.4 Hybrid approaches

3.4.1 Overview

Beyond pure Ramsey pricing and net revenue or profitability analysis, some IMs employ hybrid approaches that combine elements of both frameworks.

These approaches integrate elasticity-based pricing with operator profitability assessments to provide a more comprehensive view of market capacity and to safeguard rail undertakings from excessive mark-ups, particularly where the evidence base for estimating elasticities is limited or data availability is weak.

3.4.2 Selected country case studies

The following case study of Spain illustrates how hybrid approaches function in practice.

Box 3.5 Spain

Early approaches by Spain's infrastructure manager, ADIF, to setting mark-ups relied mainly on historical experience and broad judgements about market capacity, rather than formal elasticity analysis. In a 2017 decision, the Spanish regulator (CNMC) criticised this approach for departing from established economic practice, highlighting the lack of an assessment of operators' price-responsiveness.

Following proposals to increase mark-ups on high-speed lines in 2020, CNMC required the development of a hybrid methodology combining market segmentation, elasticity-based pricing and operator profitability assessments. This shift obliges the two infrastructure managers in Spain—ADIF and ADIF AV—to demonstrate not only that mark-ups are economically efficient, but also that they are compatible with sustainable market entry and operation.

Under the current framework in the Railway Sector Act, mark-ups must be efficient, transparent, and non-discriminatory. While Ramsey–Boiteux pricing is recognised as an efficient means of achieving revenue targets, ADIF and ADIF AV must also verify that mark-ups allow an average efficient operator to provide sufficient services in a cost-effective manner. CNMC supports this assessment by calculating benchmark operator costs and forecasting efficiency gains, and by applying a regulatory weighted average cost of capital (WACC) to ensure that an average efficient operator can earn a reasonable return on invested capital. This effectively requires mark-ups to be set at the lower level implied by the two approaches where necessary to avoid market exclusion.

Source: Oxera based on CNMC (2024), 'Comunicación 1/2024, de 12 de marzo, de la Comisión Nacional de los Mercados y la Competencia, sobre la supervisión de los cánones por utilización de las líneas ferroviarias integrantes de la red ferroviaria de interés general', March, pp. 40–49.

4 Options for setting fixed cost recovery mark-ups under GBR

4.1 Introduction

This section sets out five specific options for setting fixed cost recovery mark-ups under GBR. We have developed these options based on insights from the ORR's current approach (see section 2) and relevant European precedents (see section 3), while also taking into account GBR's specific legislative and policy context.

For each option, we provide the following.

- **High-level operational details:** including key design features and how the option could be operationalised in practice.
- **Feasibility considerations:** i.e. implementation requirements such as data availability and technical capabilities.
- **Alignment with principles:** we consider each option against a set of principles (as set out below in section 4.1.1).

We also discuss additional **'modifiers'** that GBR could apply alongside these options. These modifiers are mechanisms for further adjusting mark-ups (set using any of the five options identified) to help meet specific policy objectives (such as supporting market entry and the rail freight target) and to preserve investment and efficiency incentives. This is discussed in section 4.8.

Note that GBR will not be required to levy track access charges on its own operators (although it will be required to publish indicative charges for these operators for purposes of transparency). The five options set out in sections 4.2–4.6 below have therefore been developed on the assumption that these will apply to freight and/or open-access passenger operators only.

Finally, it is important to note that once GBR is introduced, some services will remain contracted or operated by devolved authorities, such as Transport for London, ScotRail, and Transport for Wales services. Given the publicly funded nature of these services, we consider that a different approach to fixed cost recovery will be required. We discuss this in section 4.9.

4.1.1 Principles for GBR mark-ups

In developing its approach to setting mark-ups, GBR must comply with the relevant legislation.

As discussed in section 1, the Railways Bill establishes the conditions, under which GBR may charge amounts above directly incurred costs, as well as the general duties GBR must consider when exercising its functions. GBR will also publish a clear set of priorities for the charges scheme to deliver.

With the help of Network Rail, we have developed a set of criteria to help consider these options against relevant legislative requirements and priorities for the charges scheme.[30] These are as follows.

1 Charges should not exceed the amount that **an efficient operator** is able to pay.[31]

2 Charges should facilitate **long-term planning and investment**.[32]

3 Charges should **support the financial sustainability** of GBR rail infrastructure costs in a **fair and non-discriminatory** manner.[33]

4 Charges should be structured in a way which delivers the highest overall benefit, **promoting effective network operations without penalising market growth**.[34]

[30] House of Commons (2026), 'Railways Bill', Bill 373 2024-26 (as amended in Committee), 10 February (**Railways Bill**); Network Rail (2025), 'Great British Railways' Access and Use Policy: Discussion paper Annex 3 – Charges and performance', 1 December (**Consultation Annex 3**).
[31] **Railways Bill Clause 64(3):** 'The scheme may provide for a higher amount to be charged in particular circumstances provided that it does not exceed the amount that Great British Railways considers is the amount that an efficient operator would be able to pay in those circumstances'. **Consultation Annex 3:** 'Any mark-ups should be grounded in transparent evidence of what an efficient operator is able to pay'.
[32] **Railways Bill Clause 18(2):** GBR must exercise its functions 'so as to enable persons providing railway services to plan the future of their business with a reasonable degree of assurance'. **Consultation Annex 3:** 'The charging scheme should provide stability and predictability, giving non-GBR operators and investors the confidence to undertake long-term business and investment planning. This means maintaining consistency in how charges are calculated, avoiding unnecessary change between control periods, and providing early visibility where change is required'.
[33] **Railways Bill Clause 18(2):** GBR must exercise its functions 'taking into account the costs that will need to be met from public funds and the need to make efficient use of those funds'. **Consultation Annex 3:** 'The charging scheme should contribute to the sustainable funding of the rail network while ensuring that charges for non-GBR operators remain fair, proportionate and evidence based. Contributions towards the fixed costs of the network by non-GBR operators should be on a fair and proportionate basis'.
[34] **Railways Bill Clause 18(2)–(3):** GBR must exercise its functions 'in the manner best calculated to be in the public interest'. Public interest includes 'the social and economic benefits derived from railway services' and 'the effect the provision of railway services has on the environment'. **Consultation Annex 3:** 'While charging decisions will sit downstream of access decisions, the scheme should help ensure that the network operates effectively… When applying the charging levers permitted in legislation to complement access decisions, GBR should ensure that incentives remain aligned with effective network management and wider market growth'.

5 Charges should support the achievement of the **rail freight target**, and promote the use of the railway network in Great Britain for the carriage of goods.[35]

6 Charges should be **transparent, evidence-based, and no more complex than necessary**.

4.1.2 Assumptions

To develop the options outlined in this report, we have had to make specific assumptions about the future policy framework in which GBR will be setting charges. These assumptions—which we have also developed in consultation with Network Rail—are outlined below.

- **There is no ex ante target for how much mark-ups are meant to raise**—meaning any funding gaps needing to be covered following the setting of these mark-ups will be met by government.
- **The mark-ups are calculated at the market segment level**, and *not* at the level of individual operators.
- **A mark-up would not exceed a segment's allocated share of infrastructure avoidable fixed costs**.[36] GBR will maintain a cost allocation model for this purpose, similar to the model Network Rail uses today (see section 2.1).
- **The charges scheme will be updated every five years, similar to the current five-year control period framework.** Unless there is a material change in circumstances or otherwise specified below—e.g. through the use of a phase-in mechanism—the mark-up levels established under any of the five options will remain fixed throughout the five-year period.

4.2 Option 1: do minimum

4.2.1 Description

This option effectively seeks to maintain the ORR's current approach to setting mark-ups (see section 2), while making targeted modifications

[35] **Railways Bill Clause 17:** GBR must have regard to the 'target to increase the use of the railway network in Great Britain for the carriage of goods'. **Railways Bill Clause 18(2):** GBR must exercise its functions 'in the manner best calculated to promote the use of the railway network in Great Britain for the carriage of goods'.
[36] While this is the case under current arrangements, it is not a legislative requirement and is ultimately a decision for GBR.

to account for the revised context following the introduction of GBR. This can therefore be interpreted as a 'do minimum' option.

Market segmentation

For freight, services would initially be grouped by the primary commodity transported such as coal, biomass, iron ore, nuclear waste, intermodal, aggregates, and domestic waste. Within each commodity category, consideration could be given as to whether further disaggregation is warranted (for example, GBR might develop segments for specific freight categories to support its freight growth target, such as e-commerce parcels, or can disaggregate further by modal competition or flow distance).

For open-access passenger services, net revenue analysis would be used to identify service categories with the highest net revenues. Segments would then be defined, in order to group services of similar profitability levels together (with segments potentially based on distance thresholds, station usage, or London versus non-London services).

Ability to pay and level of mark-up

For freight, ability to pay would be assessed using evidence on freight demand elasticities, based on a combination of academic literature and bespoke modelling. The analysis would consider competition from other modes and projected commodity demand, and be complemented with insights obtained from stakeholder engagement and known government policy changes. This evidence would be assessed 'in the round' to determine which segments could bear a mark-up, and to set the maximum mark-up level each segment could sustain.

There are a number of adjustments to the ORR's current approach that should be considered to ensure transparency in the shift towards the new arrangements, and consistency with relevant legislation. These are as follows.

- **Incorporation of an 'efficient operator' benchmark**: given that the ORR's current approach is based on an assessment of freight demand elasticities, there is no explicit consideration of an 'efficient' operator within the existing framework and, as discussed in section 3.2.1, relying solely on elasticities to set mark-ups has multiple limitations. Accordingly, GBR would need to develop some assessment of an 'average efficient operator' for each segment based on observable operational parameters

and financial data to assess whether the 'average efficient operator' would be able to pay the mark-up determined through the elasticity analysis.[37] Where new data is needed to inform this analysis, a structured process of engagement with freight operators could be set up.[38]

- **Greater clarity on how outputs of elasticity modelling are translated into specific mark-ups per segment.** The ORR's current methodology could be enhanced by establishing a more explicit framework for translating the outputs from elasticity-based analysis into specific mark-up values, to help reduce perceptions of arbitrariness in mark-up setting.[39]

For open-access passenger services, net revenue analysis at the service-code level would be conducted to identify the ability to pay of each market segment.

A key change to ensure consistency with the legislation would be to ensure that the costs used in the net revenue calculation are reflective of an 'average efficient operator'. This might be operationalised by benchmarking operator costs and using the median or interquartile range.[40]

Once segments that are able to pay a mark-up are identified, the outcome of the net revenue analysis can also be used to calculate the maximum level of the mark-up. This requires consideration of the reasonable rate of profit required by the OAO to ensure the segment is not excluded by the mark-up—see Box 3.3. The ORR currently accounts for this by setting the mark-up at a 'conservative' level, though GBR could consider adopting a more formal approach to calculating the reasonable rate of profit (see discussion on Option 3 below).

[37] This benchmark will need to account for segment-specific factors. For example, operators' efficiency may be linked to the capacity allocated to them (e.g. impacting journey times) and the capability of the network (e.g. route availability and gauge).
[38] We understand that this data is not currently collected and is commercially sensitive, so the data collection process would need to be carefully designed.
[39] While the ORR relies on the general principle that mark-up should be set such that there is a less than 10% modelled reduction in the gross tonne miles shipped by rail, there is no clear and consistent connection between the elasticity modelling and the final proposed mark-up.
[40] The challenge of benchmarking operators arises when the entire segment is determined to be inefficient, as using historical data will, by definition, embed that inefficiency in the analysis. In such scenarios, an adjustment to the data or a 'bottom-up' cost model that accounts for this issue may be needed if proportionate. For more details on how the cost efficiency of operators can be benchmarked, see Oxera (2025), 'Benchmarking the cost efficiency of train operating companies in Great Britain', European Transport Conference 2025 paper.

To the extent that the net revenue analysis uses data on services operated by GBR, some economies of scale reflected in GBR's costs may not apply to smaller OAOs. Therefore, the maximum mark-up level may need to be adjusted downwards to account for this reduced scope for scale efficiency. Further adjustments may be necessary to account for other factors, such as the impact of competition from GBR operators on OAOs.

4.2.2 Feasibility

Given that this option is based on the ORR's current approach, the implementation challenges are likely to be relatively minor (compared with more fundamental methodological changes). Continuity with the established framework also ensures lower transition risk, in part since industry stakeholders are already familiar with the existing approach.

Operationalising this approach will mostly require continuity in existing data being collected, with some additional data required for the 'average efficient operator' check. GBR will also need to replicate relevant technical expertise. We discuss this below.

Data requirements

For this option to be viable, GBR would need to gain continued access to data sources used by the ORR (or collect equivalent data), and would need some new data for the 'average efficient operator' check.

For freight

- Commodity-level data on freight-movements, demand, and elasticities.
- New financial data by commodity type to fully operationalise a new 'average efficient operator' check.

For open-access passenger services

- Revenue data by service code and operator.[41]
- Cost data for GBR and open-access passenger operators.
- Operational metrics by service code (e.g. train and vehicle miles).

[41] If MOIRA and LENNON datasets were discontinued, a new database would need to be established.

A key feasibility issue is whether historical data would remain representative following market reform. For example, a net revenue analysis based on data prior to market reform may not be reflective of the competitive conditions following the introduction of GBR. The approach may therefore necessitate forward-looking adjustments (or some form of sense check), to ensure the analysis adequately accounts for the new competitive landscape.[42]

Capability requirements

GBR would need to replicate relevant technical expertise from the ORR to effectively implement the framework and undertake the associated analysis. In addition, GBR may need additional capability to operationalise the efficient operator concept, as well as implementing any additional adjustments (as discussed above).

4.2.3 Alignment with principles

This option seeks to align with the ORR's current approach, while making select modifications to account for GBR's policy and legislative context. It would provide the greatest continuity, and therefore be easiest to implement (subject to continuation of collection of key data sources).

We note, however, that the draft Railways Bill is less prescriptive than existing legislation. Therefore, there is arguably an opportunity for GBR to implement more significant changes that more closely align with its strategic objectives (than would be delivered under this option).

[42] This assessment would be conducted when charges are set for each 'control period', i.e. every five years. We note that existing access rights for OAOs will be honoured by GBR until the end of current contracts. See Department for Transport (2025), 'A Railway Fit for Britain's Future: Government Response', November, p. 22.

Table 4.1 Alignment of Option 1 against the principles

Principle	Assessment
Charges should not exceed what an efficient operator can pay	**Sufficient alignment for freight:** the 'in the round' assessment of elasticity and other evidence enables a robust identification of segments that can pay the mark-up. Given there is no mechanistic translation of the elasticity-based analysis into specific mark-up levels, mark-up levels need to be set conservatively to mitigate risk or the link needs to be made more explicit as proposed. If the proposed adjustments are implemented, the concept of an 'efficient operator' is also captured, but this may be more challenging for freight operators given data limitations. **Strong alignment for open-access passenger services:** the net revenue test directly assesses the profitability of market segments and capacity to sustain mark-ups. The efficient operator concept can be operationalised via operator cost benchmarking.
Long-term planning and investment	**Alignment for freight and open-access passenger services largely depends on the modifiers used**—this is discussed in section 4.8. We note however that since this option most closely aligns with current arrangements, it likely reduces uncertainty, which is helpful for long-term planning and investment.
Financial sustainability and fair contribution	**Sufficient alignment for freight and open-access passenger services:** mark-ups contribute to fixed-cost recovery while ensuring fairness and non-discrimination within segments through a transparent, evidence-based framework. For freight, a risk is that the judgement-based aspects of the approach are perceived as insufficiently transparent or arbitrary. The need to make conservative assumptions may also lead to less being recovered. However, these risks are mitigated by the proposed adjustments.
Highest overall benefit. Promotes effective network operations, without penalising market growth	**Sufficient alignment for freight and open-access passenger services:** segments are identified based on evidence of elasticities and profitability, meaning segment-specific characteristics can be taken into account. Enhanced segmentation for freight would further support this principle. However, since each segment's ability to pay is analysed in isolation, the mark-up is not calibrated across all segments simultaneously, which may not achieve the highest overall social welfare benefit. **Specific modifiers could be used to support this principle.**
The charge promotes the use of the network for the carriage of goods	**Strong alignment for freight:** the commodity-level framework allows differentiation that can favour environmentally beneficial or strategically important freight flows. Further enhanced segmentation allows high-growth freight segments to be recognised and supported. **Specific modifiers could be used to support this principle.**

Principle	Assessment
Transparent, evidence-based, and no more complex than necessary	**Sufficient alignment for freight:** methodology builds on established, well-documented ORR precedent, providing a strong foundation for transparency. Freight analysis is based on a wide-range of evidence evaluated 'in the round'. A risk is that the judgement-based aspects of the approach are perceived as insufficiently transparent or arbitrary, but this is mitigated by the proposed adjustments. **Strong alignment for open-access passenger services:** net revenue analysis is transparent, data driven, and provides a uniform framework that links segmentation to ability-to-pay analysis and mark-up level determination.

Source: Oxera.

4.3 Option 2: Ramsey–Boiteux-based approach with affordability check

4.3.1 Description

This option introduces a mechanistic Ramsey–Boiteux formula as the primary methodology for setting mark-ups across both freight and open-access passenger segments. The approach is grounded in welfare economics theory, with mark-ups being set inversely proportional to the price elasticity of demand for each market segment, minimising overall demand distortion (see section 3.2 for a detailed explanation of Ramsey–Boiteux pricing).

However, while Ramsey–Boiteux pricing provides an economically efficient allocation of mark-ups across segments (at least in theory),[43] it does not determine whether any given segment can actually bear the resulting charge. Therefore, to align with the requirement that charges do not exceed what an efficient operator can pay, Ramsey–Boiteux pricing must be complemented by an additional affordability check—we discuss this further below.

Market segmentation

For freight, segmentation aims to reflect elasticity differences across commodity types and operational characteristics. Segments could be defined by primary commodity (e.g. coal, biomass, aggregates,

[43] As noted in section 3.2, Ramsey pricing only provides an optimal allocation of charges that maximises social welfare across market segments under certain conditions. One of these conditions is that the market segments being assessed are perfectly competitive. Where this does not hold, additional adjustments would be required to achieve a social welfare-maximising outcome.

dangerous goods), reflecting different cross-modal competitive dynamics and demand sensitivities. Additional factors that might affect substitutability with road transport might be considered, such as train weight, train length, journey distance (since elasticities may vary between short-haul and long-haul movements), contract type, and time-sensitivity of cargo.

For open-access passenger services, segmentation would reflect differences in demand elasticities across service types and competitive contexts. This could be based on route characteristics including distance, origin and destination, temporal factors, journey purpose, and/or service quality attributes.

Ability to pay and level of mark-up

For both freight and open-access services, mark-ups would be set using the Ramsey–Boiteux formula where the mark-up for each segment is inversely proportional to its price elasticity. Low-elasticity segments (where demand is relatively insensitive to price) would bear higher mark-ups, while high-elasticity segments (where demand was highly responsive to price increases) would receive lower mark-ups.

If the methodology relied on end-user elasticities, these would need to be transformed into track access charge elasticities, using specific assumptions.[44] Where elasticity evidence is limited or uncertain (see below), conservative assumptions would need to be applied to avoid setting mark-ups above ability to pay.

The Ramsey–Boiteux formula also needs to incorporate a scaling factor that adjusts mark-up levels to achieve a desired level of revenue from the charges. Without this factor, the formula determines only the relative ratios of mark-ups between segments, not their absolute levels.

[44] For example, this may involve evaluating the share of access charges in total operating costs, the extent of cost pass-through rates from operators to customers given competitive constraints, and adjustments for different operator business models or contract structures. Translating end-customer demand elasticity into track access charge elasticity is particularly sensitive to assumptions about cost pass-through. In practice, while theoretical models often assume effective pass-through under competitive markets, freight rail operators frequently act as price-takers relative to road haulage. Competitive pressures can therefore limit their ability to pass infrastructure cost increases on to shippers, even where underlying end-customer demand is relatively inelastic.

This scaling factor is increased or decreased proportionally across all segments to raise or lower the total revenue collected.[45]

The critical difference distinguishing this option from pure Ramsey pricing is the inclusion of an **affordability check**. Specifically, after calculating each segment's 'Ramsey-optimal' mark-up, a further assessment would be undertaken to verify whether an 'average efficient operator' could in fact afford to pay the mark-up. Where the Ramsey-optimal mark-up exceeded the affordability threshold, it would be reduced accordingly. An implication of this additional step—where the affordability constraints bind (such that at least one of the mark-ups for a given segment should be reduced)—is that:

- the 'target revenues'[46] underpinning the calculation of mark-ups (using the Ramsey–Boiteux methodology alone) may not in fact be raised;
- the allocation of mark-ups between operators may no longer be 'economically efficient'.

To implement the affordability check, some consideration would need to be given to the average efficient operator's revenue, costs, and the reasonable rate of profit. Nevertheless, we note that the affordability check could be implemented with varying levels of sophistication, depending on data availability and the analytical rigour GBR deems necessary to demonstrate compliance with the legislation.[47]

The outcome of this option, in theory, would be a unified, mechanistic approach to setting mark-ups in an economically efficient way, minimising traffic volume reductions while capping mark-ups where necessary to ensure ability to pay. However, as discussed in section 3.2.1, this is difficult to achieve in practice.[48]

[45] In section 4.1.2, we assumed that GBR will not have an ex ante target for how much mark-ups are meant to raise. This complicates the application of the Ramsey–Boiteux formula given the requirement to set an amount to be raised. Nevertheless we consider that, as a starting point, GBR could consider calculating mark-ups based on setting a revenue target equal to the avoidable fixed costs attributable to the segments in question.
[46] As noted earlier, while we assume there would be no 'target revenues' for GBR to levy in principle, in practice an assumed level of 'target revenues' would be needed to implement this option computationally.
[47] See Option 3 below for a discussion of how the reasonable rate of profit could be determined. However, more complex approaches are likely disproportionate for this option.
[48] For example, Ramsey pricing only provides an optimal allocation of charges that maximises social welfare across market segments under certain conditions.

4.3.2 Feasibility

The feasibility of this option presents both technical and practical challenges that would need to be overcome.

Data requirements

The fundamental requirement for implementing this option is **robust elasticity data** covering all relevant market segments. Elasticity estimates, even when available, are likely to have substantial issues, as discussed in section 3.2.1.

For freight, data availability is challenging. Unlike for passenger services, there is no systematically collected elasticity evidence across different freight markets, with only limited academic studies examining modal choice for specific corridors or commodity groups. Estimates of end-user elasticities would need to be transformed. While the ORR's current approach does not require comprehensive elasticity estimation across all freight segments (the ORR only considers elasticities for selected segments), a full Ramsey methodology necessitates robust elasticity estimates for every market segment to calculate welfare-optimal mark-ups.

For open-access passenger services, the availability of elasticity evidence for passenger services in Great Britain is boosted by the Passenger Demand Forecasting Handbook (PDFH), which represents decades of accumulated evidence on how passengers respond to various factors including fares, journey times, service frequency, and other attributes.[49] However, several significant limitations constrain the direct application of these elasticities to setting mark-ups, including the following issues.

- When elasticities relate to passenger ticket-price responses rather than operator responses to track-access charges, this requires additional assumptions to transform them to the required form.
- Elasticity evidence derives primarily from franchised railways, where operators face different commercial incentives than OAOs.
- Demand patterns shift over time, requiring frequent estimation and rendering some historical estimates less reliable (e.g.

[49] Rail Delivery Group website, 'Passenger Demand Forecasting Scheme', accessed February 2026.

almost every piece of research in PDFH relies on data from before the COVID-19 pandemic).

- General elasticity estimates may not capture all route-specific or service-specific factors that influence demand responses in particular market segments.

The **affordability check** would also require additional data and analytical capability to model the 'average efficient operator' in each segment. However, the degree of sophistication of the check can be chosen to account for the feasibility of gathering additional data.

Capability requirements

Implementing this option would require substantial analytical and technical expertise. It would involve econometric estimation and validation of elasticities, and some financial modelling for the affordability check.

4.3.3 Alignment with principles

In theory, this approach provides an economically efficient allocation of charges that minimises overall traffic reductions, while ensuring operators are able to pay the calculated mark-ups. In practice however, there are multiple issues with Ramsey-based pricing—not least the difficulty in obtaining reliable elasticity evidence—such that strict adherence to this approach carries a risk of setting unaffordable mark-ups.

Table 4.2 Alignment of Option 2 against the principles

Principle	Assessment
Charges should not exceed what an efficient operator can pay	**Sufficient alignment for freight and open-access passenger services:** in theory, the affordability constraint directly operationalises this requirement, including the efficient operator concept, by assessing affordability and capping mark-ups where necessary. In practice, conducting this assessment robustly for freight operators may be more challenging due to data availability limitations.
Long-term planning and investment	**Alignment for freight and open-access passenger services largely depends on the modifiers used**—this is discussed in section 4.8. We note however that as this option represents a new methodological approach with which stakeholders are unfamiliar, it may introduce additional uncertainty initially. This could potentially impact long-term planning and investment decisions in the short term.

Principle	Assessment
Financial sustainability and fair contribution	**Weak alignment for freight and open-access passenger services:** even where a segment is able to pay a higher mark-up, if the Ramsey pricing approach yields a lower mark-up this will bind. While this may in theory be economically efficient, it potentially results in lower recovery from operators compared with other options.
Highest overall benefit. Promotes effective network operations without penalising market growth	**Strong alignment for freight and open-access passenger services:** Ramsey pricing, in theory, sets the mark-up in the most economically efficient way, reducing traffic volume distortions and maximising social welfare. If high-growth markets have lower elasticities of demand they could face higher mark-ups based on the Ramsey formula (if they can afford them), but **additional modifiers could be used to support this principle.**
The charge promotes the use of the network for the carriage of goods	**Alignment for freight largely depends on the modifiers used**: Ramsey pricing does not directly reflect freight-specific policy priorities, with mark-ups determined by demand characteristics rather than strategic objectives. However, **additional modifiers could be used to support this principle.**
Transparent, evidence-based, and no more complex than necessary	While the methodology provides mechanistic clarity and minimises discretion, its technical complexity may undermine understanding. Explaining mark-ups based on elasticities, transformations, and optimisation to non-technical stakeholders may prove challenging. **Weak alignment for freight:** availability of consistent elasticity estimates for all freight segments is limited, with only limited academic studies examining modal choice for specific corridors or commodity groups. **Sufficient alignment for open-access passenger services:** PDFH provides a wide range of elasticity estimates for passenger services, though there are several issues with using these estimates (as discussed above).

Source: Oxera.

4.4 Option 3: net revenue-based approach

4.4.1 Description

This option bases market segmentation and ability to pay entirely on net revenue analysis of freight and open-access passenger segments, combined with an assumed reasonable rate of profit to set mark-up levels. In effect, it extends the ORR's current methodology for OAOs with some changes for freight, applying a consistent and transparent framework across both segments.

Market segmentation

For freight services, segmentation could be designed to group freight flows with similar profitability characteristics. Subject to data availability, this would involve assessing the net revenue associated with different freight flows (see below). The freight flows could be defined based on commodity or service type to reflect how different freight services are provided and their underlying economics.[50]

In practice however, many freight operators carry multiple commodities/run many service types, making it difficult to isolate segment-level financial data. Therefore, how segments are defined will largely depend on the granularity of data that is available.[51]

For open-access passenger services, segmentation would follow the ORR's current approach (see section 2)—net revenue analysis would be used to identify service categories with the highest net revenues. Segments would be defined by grouping services with similar profitability levels together (based, for example, on distance thresholds, station usage, or London vs non-London services).

Ability to pay and level of mark-up

Ability to pay would also be assessed using net revenue analysis.

The maximum mark-up would be set at a level that would enable an average efficient operator to achieve a reasonable rate of profit over the assessment period (e.g. five years), taking into account forecast costs and revenues, and after accounting for variable track access charges (see Box 3.3 for more details).

Where profitability analysis suggested a segment could not sustain any mark-up while earning a reasonable rate of profit, mark-ups would be zero to prevent the exclusion of that segment from operating.

[50] Freight operators provide services in different ways. For example, they can: (i) just provide the locomotive and crew, with the customer providing wagons; (ii) provide a full service, including wagons and terminal services; (iii) provide a fixed service per day, with customers booking available capacity (e.g. container trains). The economics of how these services are provided can vary too. For example, freight operators may bid for client contracts or deploy a given service that clients book.

[51] More granular cost and revenue data could potentially be estimated econometrically using operational characteristics, similar to how the ORR currently estimates costs by service code for passenger services—see section 2.3.2. These might include train weight and length (reflecting economies of scale), journey distance, and terminal handling requirements, all of which materially influence cost structures and margins.

There are many approaches to determining the reasonable rate of profit.[52] Possible approaches include estimating the WACC for an indicative operator, benchmarking industry sustainable profit margins, or using precedents from other sectors. While the analysis can draw on historical data, the reasonable rate of profit will need to be set in a forward-looking manner for the control period, using forecasts of costs and revenues, and taking into account known changes (e.g. shifts in the balance of risk that might affect required profit).

In addition, the analysis should account for the following.

- **Effects of economies of scale and incentives for entry:** if the reasonable rate of profit is benchmarked against an average efficient incumbent operator, it may not reflect the disadvantages faced by new entrants, such as reduced economies of scale and higher risk exposure, potentially deterring market entry.[53]
- **Competitive dynamics in the sector:** if a prospective operator is expecting to compete with an incumbent operator, post-entry profits on certain routes may be lower than those observed in the absence of competition on that route.
- **The operator's ability to adjust costs in response to changes in demand:** high fixed costs (high operating leverage) mean that a small decrease in demand can lead to a significant decrease in profits. In such cases, uncertainty around future demand may warrant a higher reasonable rate of profit.[54]

The net revenue analysis for freight and open-access passenger services would be broadly similar, albeit with some differences.

For freight services, representative cost structures reflecting the economics of different freight flows for an 'average efficient operator' would need to be developed, as these do not currently exist. Against these costs, typical freight rates achievable for each flow would need to be estimated, recognising that rates vary based on contract duration, volume commitments, and competitive conditions. Calculating a reasonable rate of profit for freight segments may be challenging due to the structure of operator accounts (e.g. whether revenue from other

[52] As part of its net revenue approach for open-access passenger services, the ORR does not currently estimate this. Instead, it accounts for this by setting the mark-up at a 'conservative' level.
[53] Alternatively, this could be addressed through the use of modifiers—see section 4.8.
[54] For more details see Oxera (2014), 'Ensuring value for money from rail franchise margins', European Transport Conference 2014 paper; Oxera (2014), 'Something for nothing? Returns in low-asset industries', March.

services such as freight terminal operations is disaggregated). This may require GBR to make informed assumptions.

For open-access passenger services, the analysis would build on the ORR's current methodology (which estimates net revenue at the service code level), though there would be an explicit need to account for (i) the 'average efficient operator' (as discussed for Option 1 above); (ii) the reasonable rate of profit.

4.4.2 Feasibility

The net revenue approach depends on accessing reliable operator financial data and developing credible profitability models across market segments. While this information exists, commercial sensitivity, data granularity issues, and resource requirements would nevertheless create substantial implementation challenges.

Data requirements

Implementation feasibility depends critically on data availability, which varies substantially between passenger and freight sectors.

For freight services, data challenges are significant. No equivalent of LENNON or MOIRA databases exist for freight revenues, with rates often set through confidential bilateral contracts varying by type of haulage, commodity, volume commitments and wider commercial relationships. Freight operating costs are similarly opaque, varying by wagon ownership models, maintenance arrangements, crew utilisation, and operational efficiency. Building credible efficient operator models for diverse freight segments would require extensive industry engagement, potentially through confidential surveys, anonymised benchmarking exercises, or regulatory information requests.[55] Furthermore, the diversity of freight business models—where many operators serve multiple commodities—would make isolating segment-specific cost and revenue data particularly challenging.

For open-access passenger services, GBR would need to gain continued access to data sources used by the ORR (or collect equivalent data), and would need some new data for the reasonable rate of profit calculation.

[55] The small number of operators in some commodity markets creates additional confidentiality challenges for segment-level profitability analysis.

- Revenue data by service code and operator.[56]
- Cost data for GBR and open-access passenger operators.[57]
- Operational metrics by service code (e.g. train and vehicle miles).
- Additional financial data for a reasonable rate of profit calculation (e.g. data to calculate the WACC).

Capability requirements

The technical burden of profitability assessment would be substantial. Each market segment would require separate analyses, with models maintained and updated to reflect changing cost structures, revenue environments, and competitive conditions. Disputes could arise over cost allocation methodologies, appropriate efficiency assumptions, reasonable profit definitions, and revenue forecasts. The resource requirements may be manageable for a limited number of open-access passenger segments (as is the case currently), but become challenging if applied granularly across diverse freight markets.

4.4.3 Alignment with principles

The net revenue approach offers the most direct operationalisation of the principle that charges should not exceed what efficient operators can pay, by setting mark-ups based on modelling operator costs and revenues (and an assumed reasonable rate of profit). However, the approach is data intensive, and may be especially challenging to implement for freight operators.

Table 4.3 Alignment of Option 3 against the principles

Principle	Assessment
Charges should not exceed what an efficient operator can pay	**Strong alignment for freight and open-access passenger services:** by explicitly modelling net revenue and setting mark-ups based on rate of profit benchmarks, the methodology operationalises this requirement more directly than other options. The concept of efficient operator is directly part of the analysis. However, the robustness of this analysis relies on the quality of data available.

[56] If MOIRA and LENNON datasets were discontinued, a new database would need to be established.
[57] Data on the costs of GBR operators would be required as the net revenue analysis involves the estimation of costs at a service code level and, given their limited number, just using the cost data of OAOs is likely to be insufficient for a robust estimation. In its current approach, the ORR uses cost data of all TOCs. Consideration will be needed to determine whether the data is representative of efficient operators.

Principle	Assessment
Long-term planning and investment	**Sufficient alignment for freight and open-access passenger services:** the rate of profit benchmark used in the analysis can be set in a way that preserves incentives for investment. **Additional modifiers could also be used to further support this principle.** We note that while this option closely aligns with current arrangements for open-access passenger operators, it would represent a significant change for freight operators and therefore introduce additional uncertainty (which could dampen investment incentives in the short term).
Financial sustainability and fair contribution	**Strong alignment for freight and open-access passenger services:** mark-ups contribute to fixed cost recovery while ensuring fairness and non-discrimination within segments through a transparent, evidence-based framework.
Highest overall benefit. Promotes effective network operations, without penalising market growth	**Sufficient alignment for freight and open-access passenger services:** segments are identified based on evidence of profitability, meaning segment-specific characteristics can be taken into account. However, since each segment's ability to pay is analysed in isolation, the mark-up is not calibrated across all segments simultaneously, and therefore may not deliver the highest overall social welfare benefit. **Additional modifiers could be used to support this principle.**
The charge promotes the use of the network for the carriage of goods	**Strong alignment for freight:** the reasonable rate of profit assumed in the analysis for freight can be set in a way that increases incentives for rail freight growth. **Additional modifiers could be used to further support this principle.**
Transparent, evidence-based, and no more complex than necessary	Net revenue analysis is transparent, data driven, and provides a uniform framework that links segmentation to ability-to-pay analysis and mark-up level determination. However, it is sensitive to modelling assumptions. **Weak alignment for freight:** notwithstanding the above, there are severe data availability challenges for freight as discussed. **Strong alignment for open-access passenger services:** most of the data is currently available, meaning the approach could be implemented (on the assumption that GBR continues to have access to the required data). Some additional data would be required for the reasonable rate of profit calculation.

Source: Oxera.

4.5 Option 4: combined Ramsey–Boiteux + net revenue approach

4.5.1 Description

This option determines mark-ups for both freight and open-access passenger segments by applying two independent methodologies to each segment: (i) Ramsey–Boiteux pricing; (ii) net revenue analysis. The

lower (i.e. more conservative) of the two resulting mark-ups is then adopted for each segment.

In effect, this option replaces the 'affordability check' in Option 2 with a more robust net revenue analysis from Option 3.

Market segmentation

For freight and open-access passenger services, segments would need to be determined such that they simultaneously distinguish between groups with distinct demand elasticities (to support a Ramsey analysis) and distinct profitability characteristics (to support a net revenue assessment). The segmentation must be sufficiently granular to avoid grouping services with fundamentally different demand or profitability characteristics together.

In theory, segments characterised by relatively inelastic demand may also exhibit higher profitability, allowing for a consistent set of segments to be defined under both approaches. In practice, however, there are many potential issues with elasticity evidence as discussed in section 3.2.1, and this relationship cannot be assumed. A pragmatic approach could therefore be to develop segmentation primarily on the basis of one methodology (either elasticity or net revenue analysis) and then undertake a high-level cross-check to ensure the resulting segments are not materially inconsistent with the other framework.

Ability to pay and level of mark-up

For both freight and open-access passenger services, the ability to bear would be assessed through the two approaches described in Options 2 and 3. The Ramsey calculation would proceed as outlined in Option 2, estimating demand elasticities and applying the inverse elasticity rule. Simultaneously, the net revenue analysis would proceed as outlined in Option 3, modelling net revenue and taking into account a reasonable rate of profit for an average efficient operator. The maximum mark-up for each segment would be set at the lowest of the two levels calculated under each methodology.

Choosing the lower mark-up from the two methodologies would serve several purposes. It would build in conservatism by ensuring mark-ups did not exceed either the welfare-optimal level or commercially sustainable levels. It would mitigate the risk of unreliable data by limiting reliance on a single set of estimates. It could also provide confidence in GBR's approach to wider stakeholders, since:

- when Ramsey and net revenue results converge, this reinforces confidence in the underlying analysis;
- when Ramsey and net revenue results diverge, setting the maximum mark-up based on the lower of the two methodologies would be seen as a safeguard against erroneously set or unaffordable mark-ups.

However, the issues of adding additional constraints to a Ramsey approach, as discussed under Option 2, would apply (e.g. the allocation of mark-ups between operators may no longer be 'economically efficient' if the net revenue-based mark-up is below the Ramsey-optimal mark-up for a given segment).

4.5.2 Feasibility

The combined approach has the feasibility challenges of both the Ramsey- and net revenue-based methodologies, requiring all the data, analytical capability, and resources necessary for Options 2 and 3 simultaneously.

Data requirements

Implementation requires the full data infrastructure of both approaches: comprehensive elasticity evidence across all market segments for Ramsey pricing, plus detailed operator cost and revenue data for the net revenue assessment.

Capability requirements

The analytical and administrative burden would be significant. Each segment would require two full analyses using different methodologies and evidence bases. Maintaining both elasticity and profitability models would require ongoing economic and financial expertise. Consultations would also require stakeholder input on both approaches. Complexity would also pose a challenge to transparency, since stakeholders would need to understand both approaches to determine whether the approach led to the right answer overall.

4.5.3 Alignment with principles

The combined approach provides the most methodologically robust approach. However, this is also the most complex and data demanding option, which limits its feasibility or proportionality in practice.

Table 4.4 Alignment of Option 4 against the principles

Principle	Assessment
Charges should not exceed what an efficient operator can pay	**Strong alignment for freight and open-access passenger services:** the net revenue test assesses ability to pay directly and incorporates the concept of an efficient operator. Setting the mark-up based on whichever result delivers the lowest value (i.e. the 'minimum rule') would ensure this constraint binds where it produces lower mark-ups than under the Ramsey-based approach. However, the robustness of this analysis relies on the quality of data available.
Long-term planning and investment	**Alignment for freight and open-access passenger services largely depends on the modifiers used**—this is discussed in section 4.8. The complexity of this approach could add uncertainty, which could—at the margin—have a negative impact on investment (we note however that a guarantee of 'the lowest possible mark-up' under this approach might be viewed positively by operators and their investors).
Financial sustainability and fair contribution	**Weak alignment for freight and open-access passenger services:** the minimum rule systematically selects the lower charge. Therefore, even where a segment is able to pay a higher mark-up, if the Ramsey pricing approach yields a lower mark-up this will bind. While this may be economically efficient, it potentially recovers less of the fixed cost than other options.
Highest overall benefit. Promotes effective network operations, without penalising market growth	**Strong alignment for freight and open-access passenger services:** the Ramsey pricing part of the methodology, in theory, sets the mark-up in the most economically efficient way, reducing traffic volume distortions and maximising social welfare. If high-growth markets have lower elasticities of demand they could face higher mark-ups based on the Ramsey formula (if they can afford them), but **additional modifiers could be used to support this principle.**
The charge promotes the use of the network for the carriage of goods	**Alignment for freight largely depends on the modifiers used**: while the reasonable rate of profit used in the analysis could be set in a way that promotes incentives for rail freight growth, the Ramsey pricing element does not directly incorporate freight-specific policy priorities. However, **additional modifiers could be used to support this principle.**
Transparent, evidence-based, and no more complex than necessary	**Weak alignment for freight and open-access passenger services:** this option is the most complex and data intensive. Justifying the use of both requires stakeholders to understand both Ramsey pricing and profitability analysis. This also raises proportionality concerns if similar outcomes could be achieved with a simpler methodology.

Source: Oxera.

4.6 Option 5: holistic judgement-based approach

4.6.1 Description

This option establishes a structured, judgement-based framework for both freight and open-access passenger services, drawing on multiple sources of evidence to reach conclusions on market segmentation, ability to bear, and appropriate mark-up levels.

Unlike Options 2, 3, and 4, it does not rely on a single formal methodology. Instead, it involves weighing different analytical inputs and policy considerations in a subjective manner, to balance trade-offs when setting mark-ups. This approach somewhat resembles the ORR's current methodology for freight, through which it considers a broad range of evidence in the round (rather than applying a more formulaic approach).

Market segmentation

Market segmentation would be flexible, incorporating both traditional analytical criteria and emerging policy considerations relevant to GBR's statutory duties.

For freight, segmentation would reflect commodity type but could also take account of decarbonisation benefits, strategic importance, growth potential, competitive conditions, and infrastructure use. It would remain flexible, evolving in line with market developments and policy priorities, and supported by transparent justification and consultation.

For open-access passenger services, segmentation would combine route and service characteristics, with factors such as the degree of competition with GBR, innovation, service quality, and wider connectivity benefits. This would enable GBR to balance revenue considerations with market development and strategic connectivity objectives.

Ability to pay and level of mark-up

For freight, an ability-to-bear assessment would draw on multiple sources of evidence rather than a single methodology. This could include analysis of road–rail competitiveness, elasticity indicators where available, estimates of profitability for an 'average efficient operator', and market trends across commodity segments. It could also consider environmental policy alignment and stakeholder views on competitive pressures, investment barriers, and market dynamics. The weight given to each input would vary by commodity segment based on availability and robustness of evidence.

For open-access passenger services, the framework would draw on multiple analytical perspectives rather than a single metric. This could include net revenue analysis for an 'average efficient operator', elasticity evidence adapted from PDFH, and an assessment of competitive intensity and market constraints. It could also consider service quality, innovation, and wider policy priorities.

For freight and open-access passenger services, mark-up levels would be determined through structured judgement that explicitly balances the multiple objectives identified in GBR's statutory duties and charges scheme priorities. The framework would acknowledge that these objectives sometimes conflict, requiring transparent articulation of how trade-offs are resolved for each segment. Documentation would show the analytical pathway from evidence inputs through reasoning to mark-up decisions, enabling stakeholder scrutiny and regulatory oversight.

A strong governance framework would be important for credibility and to avoid legal challenge. GBR would need to establish clear decision-making criteria to explain how different forms of evidence had been weighted, transparent documentation clearly demonstrating the 'golden thread' from evidence to decisions, and robust consultation processes to ensure stakeholders had opportunities to provide input and challenge.

4.6.2 Feasibility

The feasibility requirements of this option differ fundamentally from more mechanistic approaches.

Data requirements

Rather than requiring comprehensive datasets to populate specific formulas, the judgement framework leverages the evidence that is available. For example, where robust elasticity estimates exist, they inform decisions; where they do not, alternative evidence sources substitute. This flexibility arguably makes the approach easier to implement given current data constraints, particularly for freight where comprehensive operator-level cost and revenue data may be unavailable. GBR could proceed with imperfect information, using best available evidence and its own judgement while being transparent about data limitations and uncertainties.

Capability requirements

The analytical flexibility offered under this option would need to be paired with strong governance mechanisms to oversee decision making.

Strong institutional frameworks would be needed to ensure that judgements were defensible and seen as fair. GBR would need clear methodological guidance on how different forms of evidence should be assessed and weighted, drawing on best-practice approaches.

4.6.3 Alignment with principles

The judgement-based framework offers maximum flexibility to pursue policy objectives, enabling pragmatic trade-offs between competing priorities.

However, this discretion also creates material risks of stakeholder challenge. While such an approach may be appropriate for an independent regulator such as the ORR, for GBR the risk of perceived bias or conflict of interest may be too great for this option to be considered viable—at least in the initial phase following GBR's inception.

Table 4.5 Alignment of Option 5 against the principles

Principle	Assessment
Charges should not exceed what an efficient operator can pay	**Weak alignment for freight and open-access passenger services:** in practice, whether this principle is met will depend on the evidence considered. Given there would be no mechanistic translation of the analysis into specific mark-up levels, mark-up levels would need to be set conservatively to mitigate risk.
Long-term planning and investment	**Sufficient alignment for freight and open-access passenger services:** the approach could incorporate GBR's priorities for encouraging investment. **Additional modifiers could be used to support this principle.** However, a lack of a clear analytical approach underpinning mark-up decisions would introduce considerable uncertainty, which would likely be damaging to investment.
Financial sustainability and fair contribution	**Weak alignment for freight and open-access passenger services:** depending on the evidence considered, mark-ups may need to be set conservatively to ensure compliance with the legislation. Moreover, if other objectives are being prioritised, fixed-cost recovery is likely to be reduced. Additionally, the risk is that the judgement-based aspects of the approach are perceived as insufficiently transparent or arbitrary.

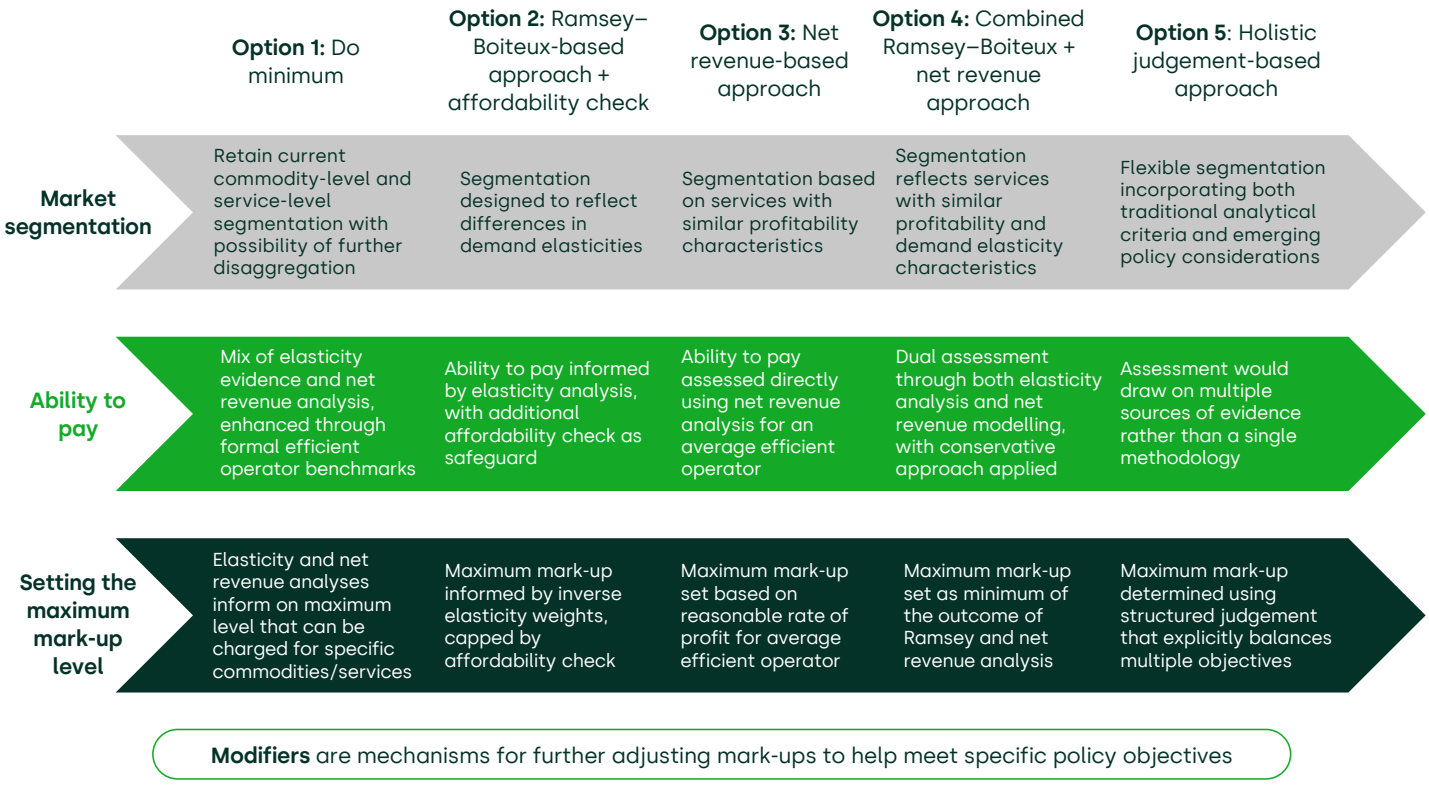
Principle	Assessment
Highest overall benefit. Promotes effective network operations, without penalising market growth	**Sufficient alignment for freight and open-access passenger services:** the flexible, judgement-based approach would allow GBR to balance competing objectives and make trade-offs aimed at maximising overall benefit. However, whether this principle is realised in practice would depend critically on how GBR evaluated the evidence and exercised its discretion in reaching decisions. **Additional modifiers could be used to support this principle.**
The charge promotes the use of the network for the carriage of goods	**Sufficient alignment for freight services:** as above, the flexible, judgement-based approach could allow GBR to make decisions in a way which promotes rail freight growth. **Additional modifiers can be used to support this principle.**
Transparent, evidence-based, and no more complex than necessary	**Alignment with this principle depends on how the option is implemented in practice:** the absence of mechanistic formulas creates scope for perceptions of arbitrariness unless decision criteria are clear and consistently applied. A governance framework is needed to demonstrate that evidence genuinely drives decisions rather than being selectively picked to justify predetermined outcomes.

Source: Oxera.

4.7 Summary of the five options identified

Figure 4.1 below summarises each of the options outlined above.

Figure 4.1 Overview of options



Source: Oxera.

Each of these five options describes methodologies for determining the maximum mark-up level for each segment. However, establishing this maximum level is distinct from the policy choice of what mark-up level GBR actually sets.

In practice, GBR may choose to set mark-ups below this maximum level—or adjust how they are applied—to help meet specific policy objectives (such as supporting market entry and the rail freight target) and to preserve investment and efficiency incentives. We refer to these adjustments as **'modifiers'**, and discuss them in the next section.

While the five options are presented as distinct choices, in practice GBR can develop its approach by drawing on elements from multiple options. For example, similar to the ORR's current approach, GBR could apply different methodologies for freight and open-access passenger services.

Moreover, it is important to note that the five options are presented at a high level, focusing on the conceptual differences between methodologies. In practice, the outcomes are entirely context-specific—assessing the implications of each option for mark-ups requires detailed consideration of the specifics of each market segment.[58]

4.8 Modifiers

As explained above, the five options outlined provide methodologies for determining the maximum mark-up level for each segment. After determining this maximum level however, GBR could choose to set the mark-ups below this level—or adjust how they are applied—for any given segment. We refer to these types of adjustments as **'modifiers'**.[59]

We consider that GBR could use modifiers to either:

- ensure investment and efficiency incentives are preserved (in specific contexts where those incentives might otherwise be weakened); and/or,
- pursue wider policy objectives.

We discuss each of these areas in turn, including the types of modifiers which might be employed to achieve either of these objectives. In any case, to ensure that modifiers are applied in an evidence-driven, transparent, and non-discriminatory manner, GBR will need to set out how it intends to use modifiers, and provide robust evidence to justify their use whenever employed for any given segment.

4.8.1 Preserving investment and efficiency incentives—'fair bet'

A widely accepted principle in regulatory economics is the idea of a **'fair bet'**.[60] The basic idea is that a firm will only undertake an investment if it expects to earn a reasonable rate of return on this investment.[61]

[58] To illustrate this point, Option 3 may yield similar outcomes to options 2 and 4 when the affordability constraint (rather than the Ramsey constraint) is the binding constraint in the latter two options. A Ramsey pricing-based approach will only lead to significantly different outcomes from an affordability-based approach when a segment is assigned a Ramsey-based mark-up that falls below that segment's ability to pay.
[59] This is separate from provisions in Clause 64(4) of the Railways Bill which provides for discounts on the 'cost that is directly incurred' charge. See Clause 64(4) of House of Commons (2026), 'Railways Bill', Bill 373 2024-26 (as amended in Committee), 10 February.
[60] The fair bet principle has been applied in other sectors such as telecoms. See for example Oxera (2017), 'Does Ofcom's approach in the WLA market review honour the fair bet principle?', 16 June, pp. 4–5; Oxera (2020), 'Oxera response to the targeted consultation on the revision of the Commission's access Recommendations', 7 October, p. 4.
[61] While related, rate of profit and rate of return are distinct concepts. Rate of profit measures operating profits relative to capital employed, whereas rate of return captures the total gain on an investment, including both profits earned and any appreciation in the value of the invested capital.

The returns a firm earns from any given investment are usually not known until after the investment is made.[62] More specifically, a firm usually knows there is at least some likelihood that the return could be lower than the reasonable level (i.e. in a 'bad' scenario—perhaps driven by lower demand and/or higher costs), as well as higher than the reasonable level (i.e. in a 'good' scenario—perhaps driven by higher demand and/or lower costs).

Where this is the case, for the firm to rationally proceed with the investment, it must expect that it will be allowed to retain surplus returns in the 'good' scenario, to offset downsides it would incur in the 'bad' scenario. **Absent this, the firm would expect to earn below the reasonable rate of return, and would not proceed with the investment since it would not be considered a 'fair bet'.**

In theory therefore, one issue with setting mark-ups based on ability to pay is that firms may be dissuaded from implementing initiatives which they expect could raise revenues or lower costs, since they might expect that GBR could 'claw back' these productivity improvements via higher mark-ups. Under the five options outlined in this report, we consider this risk is partially mitigated by the below.

1 **Mark-ups are fixed for five-years.** If an operator undertakes an investment that improves its efficiency and increases its assessed ability to pay, the mark-up will not be adjusted during the remainder of the period. Therefore, for investments made at the start of the control period, operators will retain the upside in a 'good' scenario for five years.

2 **Mark-ups are benchmarked to an 'average efficient operator', not individual operators.** When mark-ups are reassessed at the end of the five-year period, they are calculated by reference to the 'average efficient operator' benchmark rather than operator-specific ability to pay. Therefore, an individual operator's own efficiency improvements will only influence the benchmark based on that operator's weight within the segment.

Nevertheless, although in this report we refer to 'reasonable rate of profit' rather than 'reasonable rate of return', the basic issue—i.e. whether a firm is earning enough to justify its capital allocation decisions—still applies.

[62] One possible exception (at least in theory) might arise when a firm invests in a riskless asset, whereby it is guaranteed to earn the 'risk free rate'. In practice however, this is highly unlikely to be the case for most investments undertaken by passenger or freight rail operators.

However, a specific issue could arise for segments comprising only a small number of operators—or indeed a single operator. This is because each firm will know that improvements it introduces will affect the benchmark, and therefore could be 'clawed back' by GBR at the next mark-up reassessment. In such cases, operators may be discouraged from undertaking investments:

- late in the five-year charging period (when the window for retaining the benefits is short); or
- when the investment's payback period is longer (e.g. ten years).

Accordingly, to preserve investment incentives for these operators in line with the fair bet principle, GBR could consider applying a modifier to the mark-ups. Specifically, in segments with a small number of operators, GBR might consider fixing mark-ups for five years (or longer) from the point at which an operator implemented a major new investment or productivity improvement. There is precedent for using these types of rolling incentives in other regulated sectors.[63]

4.8.2 Wider policy objectives

GBR might also consider applying modifiers to help it pursue wider policy objectives, such as supporting the rail freight target or encouraging new market entry.

Any such modifier would need to be carefully designed and clearly justified. In particular, GBR would need to demonstrate how the modifier advances the stated policy objective, while remaining proportionate, transparent, and non-discriminatory.

We set out two potential modifiers below.

- **Market entry support mechanisms:** if mark-ups are set based on the ability to pay of incumbent operators, this may act as a barrier to entry for new entrants. Therefore, transitional arrangements could be considered, allowing phased introduction of mark-ups for new freight markets, open-access routes, or innovative services. This can provide predictable progression from reduced initial charges towards full mark-up levels over a defined period to reduce barriers to entry and support business development for new railway operations.

[63] For example, rolling incentives for operating expenditure (OPEX) efficiency have been used in UK electricity network price controls, where network companies were able to retain the benefits of efficiency improvements for a fixed period regardless of when in the control period the savings were delivered. See Ofgem (2003), 'Electricity distribution price control review', December, p. 26.

Based on existing precedents, a phase-in period of three to five years is common. This typically provides operators with sufficient time to establish their operations and reach an efficient scale, while avoiding a disproportionately prolonged period of transitional support.[64]

- **Supporting the rail freight target:** in addition to the market entry support mechanism, GBR could consider applying modifiers to stimulate demand for rail freight. For example, GBR could compare forecast volumes against the rail freight target, and assess whether reducing mark-up levels could help close any gap. This would require an understanding of the competitive dynamics across the rail freight segments, including the extent to which any mark-up reductions would likely pass through to end users—and in turn stimulate demand—or would mainly drive higher operator margins.

4.9 Treatment of non-GBR publicly owned or contracted operators

As noted above, following the introduction of GBR there will still be a number of non-GBR publicly owned or contracted operators running services on GBR infrastructure.

We consider bespoke charging arrangements will be required for these operators—this is because the presence of public subsidies greatly complicates any assessment of ability to pay. We explain the reasons for this below.

[64] The current phase-in mechanism for new open-access passenger services subject to the ICC spans five years: no ICC is payable during the first two years, rising to 25 % in the third year, 50 % in the fourth year, and reaching the full ICC in the fifth year of operation. ORR website, 'Access charging framework for use of Network Rail infrastructure: user guide', accessed February 2026. There is also EU precedent for a phase-in mechanism. European Commission guidance on setting mark-ups states that 'the possibility of market entry should be considered and encouraged. In the absence of competition from other modes, a single rail operator in a given market segment is likely to have a higher ability to pay than several RUs competing with each other. However, if the application of a high mark-up is sustainable only for a monopolistic operator, it can be a barrier to entry into the market. In those circumstances, lowering mark-ups can favour market entry and bring about the benefits of competition for the end user'. See European Commission (2025), 'Interpretative guidelines concerning the setting up of charges for the use of railway infrastructure', May, p. 13. In addition, there is precedent for such transitional or phased charging arrangements in other parts of the rail sector in the UK. For example, Getlink (through Eurotunnel) has applied reduced access charges to support the launch of new international rail services, explicitly aiming to lower costs during the initial market-entry phase while demand builds. Under Eurotunnel's incentive, services that launch before 31 December 2030 are eligible for time-limited support. Similarly, London St Pancras Highspeed has developed incentive schemes for new international services that provide time-limited discounts on access charges, tapering over three years per service (with Year 1: 50 % discount, Year 2: 40 %, Year 3: 30 %) before full charges apply, in order to facilitate entry and service growth. See Eurotunnel (2024), 'Fixed link usage annual statement'; London St. Pancras Highspeed (2025), 'International growth incentive scheme', October.

4.9.1 Excluding public subsidies when assessing ability to pay is inappropriate

If subsidies are excluded from the ability to pay analysis, subsidised operators would not be able to pay any mark-up because they are not profitable without public support. As a result, no fixed costs would be recovered from these operators, placing greater burden on all other market segments (to the extent they are able to pay) and/or the DfT (which will continue to cover all fixed costs not recovered through track access charges).

It may initially appear that alternatively, the analysis could be conducted at a service level to identify profitable services (that do not require subsidy) and upon which a mark-up could be levied. This would effectively treat non-GBR publicly owned or contracted operators on a service-by-service basis similar to OAOs.

However, this approach risks undermining the policy autonomy of non-GBR public entities. This is because bundling profitable and unprofitable routes into a single PSC enables cross-subsidisation, reducing overall subsidy requirements from the funder. Charging mark-ups on profitable routes within a PSC would therefore undermine this cross-subsidisation mechanism, critically, limiting the autonomy of public authorities to design PSCs that optimise the balance of profitable and unprofitable services.

4.9.2 Implications of including public subsidies when assessing ability to pay

Under current arrangements, publicly owned or contracted operators pass the mark-up (i.e. the FTAC) on to their funder.[65] In an ability to pay analysis, subsidised operators would appear capable of bearing any level of mark-up, as these costs are transferred directly to the funder.

However, this transforms the question from one of economic methodology to one of policy choice: should GBR's fixed costs be funded by DfT (through direct funding where track access charges fall short of cost recovery) or by the funders of non-GBR services (through mark-ups passed on from operators via higher subsidy requirements)?

[65] This is the case under current arrangements for publicly owned or contracted operators—FTACs are generally paid by the funder and the operator does not bear the financial risk associated with fixed-cost variations, and the level of FTAC is effectively a mechanism for ensuring that the remainder of Network Rail's fixed costs—those not covered through ICCs or other income—are met by public funding to the operators.

Therefore, non-GBR publicly owned or contracted operators are best treated as a distinct segment, with methodologies tailored to reflect these specific considerations.

4.9.3 Fixed-cost recovery approach for non-GBR publicly owned or contracted operators

When the key consideration is the balance of funding between DfT and devolved funders, the recovery of fixed costs from non-GBR publicly owned or contracted operators is best operationalised using a lump-sum charge.[66] This ensures a simple, transparent process for apportioning funding requirements among funders, providing certainty on each funder's commitment—generally the lump-sum charge is fixed at the start of the control period.

Indeed, in Europe publicly funded services are generally treated as a distinct segment and pay lump-sum charges—see section 3.

We understand that the current thinking is for a similar amount to be recovered from non-GBR publicly owned or contracted operators using a similar mechanism as the FTAC currently in use.

The FTAC is in effect a lump-sum charge. It is set at the start of the control period based on each operator's allocation of Network Rail's avoidable fixed costs based on traffic forecasts for the control period, net of income from other charges (e.g. the ICCs), Network Rail's 'other single till income', and network grant funding—see section 2.1. Therefore, it does not vary in response to changes in the level of operators' services or Network Rail's costs during a control period.

The feasibility of implementing a lump-sum charge similar to the FTAC under GBR depends on maintaining a fixed cost allocation model comparable to Network Rail's current model. The Railways Bill mandates that GBR carry out a transparent cost apportionment process, which will be critical to enabling such a charging mechanism.[67]

In adapting the FTAC mechanism to the GBR context, the following additional factors should be considered.

[66] This approach is sometimes referred to as a 'two-part tariff', formed of a variable and fixed component. In the context of rail infrastructure, the variable component is the charge for costs directly incurred while the fixed component is a charge that does not vary with the actual use of the rail network to recover fixed costs.
[67] See Clause 64(5) of House of Commons (2026), 'Railways Bill', Bill 373 2024-26 (as amended in Committee), 10 February; Department for Transport (2025), 'A Railway Fit for Britain's Future: Government Response', November, p. 71.

Consistency with 'efficient operator' concept

The Railways Bill requires that the mark-up does not exceed 'the amount that an efficient operator would be able to pay'.[68] On the assumption that the non-GBR publicly owned or contracted operators pass on the lump-sum charge to their funder, the ability to pay is external to the operator and the practical ceiling of the charge will be the allocated infrastructure avoidable fixed costs. Therefore, the concept of 'efficient operator' may not have practical relevance in this context. For a given volume of traffic, whether the operator is more or less efficient in its operations will not change its lump-sum charge and, critically, the operator will be able to pay it as it passes it on to the funder.[69]

GBR could consider whether to introduce additional mechanisms within the lump-sum charge to incentivise efficiency among non-GBR publicly owned or contracted operators. However, such incentives are likely better addressed directly by the funder—either through performance management frameworks for publicly owned operators or through contractual specifications for contracted operators.

Netting off grant funding and other income

GBR will need to establish a fair, non-discriminatory, and transparent methodology for calculating each operator's final lump-sum charge by subtracting income from other charges, 'other single till income', and network grant funding from the operator's allocation of GBR's infrastructure avoidable fixed costs.

Currently, expected network grant funding is subtracted from each operator's pre-grant FTAC in proportion to their share of total FTAC.[70] Under GBR, this approach should remain feasible subject to the following two conditions.

- **Consistent cost allocation methodology:** GBR must allocate infrastructure fixed costs across all operators, including its own services, in a consistent manner. This will enable the calculation

[68] See Clause 64(3) of House of Commons (2026), 'Railways Bill', Bill 373 2024-26 (as amended in Committee), 10 February.
[69] This is in contrast to an open-access operator, where the 'efficient operator' concept, implemented at the segment level, is intended to: (i) avoid perverse incentives for operators to be inefficient to reduce their segment's assessed ability to pay and the resulting mark-up; (ii) create incentives for individual operators to increase their efficiency above the 'average', as these gains are not clawed back through the mark-up.
[70] See Office of Rail and Road (2021), 'PR23 - Review of Network Rail's access charges', July, pp. 17–18.

of a 'shadow lump-sum charge' for GBR services, which is necessary for apportioning network grant funding proportionally.

- **Transparent funding segmentation:** the future funding model must clearly segregate funding for GBR infrastructure and GBR passenger operations, so that the infrastructure component can be used to calculate the lump-sum charge.

GBR will also need to transparently identify what other income will qualify for subtraction from the lump-sum charge and how it will be allocated across GBR and non-GBR operators. This will require clear accounting separation between GBR infrastructure and passenger operations.

Incentives for new services

Currently, the FTAC is fixed for the five-year control period based on traffic forecasts. Therefore, it does not vary in response to changes in the level of operators' services or Network Rail's costs during a control period. This provides certainty for Network Rail on available funding, as well as for operators and, by extension, their funders on the level of charges.

However, this fixed approach has implications for Network Rail's incentives to add capacity during the control period and for operators' incentives to consider the long-run infrastructure avoidable fixed costs caused by adding new services to the network. In effect, operators do not cover the infrastructure avoidable fixed costs of any services added during the control period that were not initially forecast.

To address this, the ORR designed an FTAC annual adjustment mechanism (the 'wash-up'), which would have adjusted an operator's annual FTAC in proportion to variations in timetabled train miles, relative to a pre-determined baseline. However, this was never implemented.[71]

GBR will have the opportunity to consider whether to introduce a similar mechanism, balancing the trade-off between funding certainty and the incentives created for efficient network utilisation.

[71] See Office of Rail and Road (2021), 'PR23 - Review of Network Rail's access charges', July, pp. 20–22.

Related to this issue, GBR will be keen to ensure its charging approach does not discriminate between non-GBR publicly owned or contracted operators and OAOs.

If the lump-sum charge is fixed for the control period, publicly owned or contracted operators would not pay towards infrastructure avoidable fixed costs of new services that were not initially forecast. To prevent this from creating an unfair advantage over OAOs, GBR could adopt a modifier (as discussed in section 4.8) when setting mark-ups for new OAO services, such as a phase-in mechanism.

5 Conclusion

GBR will be required to develop a track access charges scheme for non-GBR operators, including freight, open-access passenger, and publicly owned or contracted operators. As part of this, GBR will need to determine how to set fixed cost recovery mark-ups.

To inform the development of GBR's charges scheme, this report presents five options for setting mark-ups for freight and open-access passenger operators. These options are informed by the ORR's current approach to setting access charges and relevant European precedents, while also accounting for GBR's legislative and policy context.

Each option has strengths and weaknesses regarding its alignment with legislation and charges scheme priorities, and differs in terms of implementation feasibility. In practice, the outcomes delivered under any of these options will depend on the specific characteristics of each market segment and the technical details of how the options are implemented.[72]

Our report also makes clear that, when it comes to setting fixed cost recovery mark-ups, non-GBR publicly owned or contracted operators are best treated as a distinct segment, with a bespoke methodology to reflect the existence of public subsidies. We consider that recovery of fixed costs from these operators is best operationalised using a lump-sum charge, similar to the existing arrangements for the FTAC.

Next steps

This report does not recommend a specific policy option, as we understand that Network Rail intends to explore the issues further with industry stakeholders—including through formal consultation—before determining its preferred approach. Our understanding of Network Rail's next steps is set out below for reference.

- **Stakeholder engagement:** Network Rail intends to test and refine the findings of this research with industry stakeholders, primarily those outside of GBR, through planned workshops. These sessions will explore the practical implications, incentive properties, and potential risks of the options identified.

[72] For example, this includes the specific analytical methodologies and the data sources to be used.

- **Further policy development:** based on the findings in this report, Network Rail will undertake further analytical and policy development work to translate the identified options into an implementable charges framework. This will include consideration of differential application for freight and open-access passenger operators where appropriate, and alignment with changes to the broader charges scheme to ensure internal consistency. This analysis will inform GBR's policy decisions on mark-ups for Funding Period 1 (2029–34).

- **Formal consultation:** the industry will be formally consulted on GBR's proposed mark-up policies as part of the charges scheme development process. This will provide stakeholders with the opportunity to respond to specific policy proposals, supporting analysis, and implementation details.

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