

# Rail Baltica Infrastructure Management Study

Final Report

RB Rail AS

28th February 2019

# Notice

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This document has 585 pages including the cover.

## Document history

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Client Signature	

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# Executive Summary

## Study Objective

The primary aim of this study has been to review and comprehensively analyse the different relevant models of infrastructure management and identify the optimum model for Rail Baltica from the project life-cycle, economic efficiency and market functioning perspectives, covering a broad range of institutional, technical/operational and commercial factors, while bearing in mind the unique nature of this project.

The result of this study is a proposed detailed infrastructure management concept. This executive summary is aimed to provide an overview of our findings and recommendations, but the nature of the report is inherently technical in nature.

## Strategic Purpose

The strategic purpose of this study is to provide a comprehensive independent analysis of feasible infrastructure management models for Rail Baltica, thereby aiding and promoting a diligent, well-informed and substantiated future political decision-making process with regard to Rail Baltica infrastructure management.

## Conclusion and Recommendations (WP9)

Following an extensive programme of international benchmarking, stakeholder consultation and detailed multi-criteria analysis, covering 85 options in depth, with associated cost analysis, Atkins has identified a preferred option of Infrastructure Management (Option 57), compliant with the 4<sup>th</sup> Railway Package. Option 57 was defined as being an infrastructure manager with;

*Partial commercial freedom without the right to seek to acquire land with freight REGULATED pricing for single entity which cannot act as passenger concession letting agency, with minimally modified share ownership/governance and no rail haulage.*

Hereafter, this is referred to as Rail Baltica New Entity ('**RBNE**'). The core characteristics of Option 57 which resulted in it in scoring highest in our multi-criteria analysis were the following: -

### Pros

- Some economies of scale related to in-house services.
- Single point of contact for all bodies able to act coherently across all functions
- Some innovation capacity linked to degree of commercial services freedom
- Balance between commercial freedom and minimal modification of ownership/governance
- Less risk for shareholders from right to acquire land
- Less potential for ancillary functions to cause RB to lose management focus
- Minimal changes required to share/governance arrangements

### Cons

- RB constrained functionality may make it harder to recruit expertise

Our international benchmarking, while providing valuable lessons learned around the risks of interfaces at national borders, confirmed that there was no ready-made model of Infrastructure Management for the Rail Baltica route. Further challenges around stakeholder views (detailed below) meant that the design of the final entity was therefore heavily influenced by the multi-criteria analysis and cost analysis, the detail of which was provided to the beneficiaries for their review as part of our engagement process.

The outcome of this is that RBNE (building on the initial proposition in Option 57) is proposed to be;

*'a single infrastructure manager for the route, strongly focused on the core functions of the railway, acting as the landlord for the intermodal terminals on the route, working in a highly ethical and transparent framework, structured to present the best chance of success at delivering the business case, but with a governance regime that will allow commercial freedom to evolve as the organisation matures.'*

Underlying this are broadly two findings. Firstly, that a single, coherent entity controlling the railway across all three countries will perform significantly better than multiple infrastructure managers and thus have a greater chance of successfully delivering the business case. Our second key finding is that an option based around multiple infrastructure managers would prove somewhat cheaper in terms of absolute cost (€6.8m per annum once fully established). More detail can be found commencing from page 239.

Atkins is aware that this outcome does not fit comfortably with those parties who were either seeking an unequivocal endorsement of either a single or multiple model of infrastructure management, but the reality is that this is a complex project, with multiple factors at play. Despite the headline lower costs of a multiple infrastructure model, sensitivity analysis has shown that the cost differential is not material in the selection of the final option.

Atkins therefore endorses the creation of a single, multi-national infrastructure manager as described in this document, the previous draft of which (Version 1.6) has also been reviewed by RB Rail AS, ProRail, EIM (European Rail Infrastructure Managers), ERA (European Union Agency for Railways) and DG Move, with their feedback being incorporated into this final document.

## Political Context

As stated, the target operating model we have identified will not meet the aspirations of all parties; many of the stakeholder aspirations have proven to be mutually exclusive.

For the Rail Baltica project to succeed and indeed for this model of infrastructure management to succeed, all parties must be prepared to compromise and work to deliver a solution which Atkins is confident can unlock significant benefits for all.

Many parties cited national legislation as reasons why their own preferred outcome for infrastructure management was required, something that disregards the direction of travel towards transport harmonisation which comes with membership of the European Union. These goals have shaped our assessment criteria of the optimum model, which reflects that we believe national legislation may be changed (if required) to deliver an optimal model for the Rail Baltica route, resulting in the RBNE being aligned with European legislative requirements.

This point holds at its heart the most fundamental challenge for the successful implementation not just of the infrastructure manager, but for the success of the Rail Baltica project as a whole. While all parties were supportive of the Rail Baltica project, the long term vision for Infrastructure Management on the line has been materially different across the three nations as well as RB Rail AS. During our stakeholder consultations, at no point did any individual make reference to the aspirations of the European Union for the project, something which, given majority European Union funding, should be reflected upon during the political decision making process.

The option which is proposed will, however, enable the creation of a high performing infrastructure manager that will best unlock the greatest potential of the route, while balancing potential risks amongst the beneficiaries.

The reasons for this are complex, but fundamentally, the heterogeneity of Railway Infrastructure Management that exists today is already set in a world with increasingly tighter application of regulations<sup>1</sup> and an ever-strengthening legal framework that will be the day-to-day world for Rail Baltica when it is completed. The aspirations of stakeholders were, in almost all cases, focused on the current status quo, either from the perspective of trying to preserve it or to change it from the perspective of trying to overcome perceived inequities.

While all sides have had some validity to their points of view, in designing the Infrastructure Management model for Rail Baltica, we need to look ahead to a period where the economic, legal and industrial strategies of the European Union will expect equal treatment of timetabling and traffic, a world of open competition, clear freight corridors, more effective interoperability and increasingly common approaches to safety management; the 4th Railway Package being followed in spirit as well as in letter.

We are therefore not trying to design an Infrastructure Manager that addresses all the demands of stakeholders today, but to create an entity that will be fit to meet the challenges of tomorrow.

For this option to be given the best chance of success, all stakeholders will need to learn to work together in a mature manner which will unlock benefits both nationally and across the region.

## Scope Of The Infrastructure Manager

Atkins is recommending that a single entity, with a permanent headcount of 288 be created for the purposes of Infrastructure Management along the entire length of the Rail Baltica route, covering Estonia, Latvia and Lithuania. Internal headcount will be broadly split 50/50 between staff focussed on core operations and those looking after maintenance on the network. Significant amounts of work will still be outsourced, resulting in commercial opportunities for the supply chain in the region.

## Governance

RBNE will not own any of the assets along the route (asset ownership remains with the nation states) but will have an obligation to maintain the assets across the route, ensuring availability of the train paths, while also having, within clearly defined boundaries, the opportunity to commercialise those assets.

Atkins makes no assumption as to whether or not RBNE should be formed out of RB Rail AS, but regardless of how the entity is propagated, to have the best possible chance of success, it will need to be more insulated from political interference than has appeared to be the case for RB Rail AS.

The corollary from this is that RBNE must sit within a clear governance structure which constrains the commercial activity of the new entity within defined boundaries in order to limit the financial exposure of the beneficiaries to the same. More details of this are shown on page 272.

The governance structure proposed to increase this independence has been designed to meet the highest standards of transparency and ethics. During our stakeholder consultation, numerous concerns were raised around the behaviours of different actors in rail markets across Estonia, Latvia and Lithuania, predominantly around the perception of anti-competitive behaviour and something that

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<sup>1</sup> Example: Office of Rail and Road. *Penalty Notices*.

in some instances appears to have polarised views about the potential structure of the approach that should be taken with regards to Infrastructure Management.

## Responsibilities

Under this governance framework, we see RBNE holding the vision for future development of the route, setting out the strategy and the associated business case for Rail Baltica in terms of services and infrastructure as it moves forward. This is different to a regular Network Statement which is effectively a stewardship and asset condition report and is considered a normal function of infrastructure management, required by EU regulations. Linked to this, we also see the new entity acting as the International Rail Relations Lead going forward, acting as the collective body for negotiations for *commercial* relations with other countries (e.g. Poland, Finland).

Enabling this, we believe the new entity should, for the entirety of the route, have responsibility for traffic management, capacity allocation, train path definition and allocation as well as collection of charges across the entire route. Atkins believes that 145 heads will be required to discharge these responsibilities. Full detail can be seen from page 332.

This model, while creating a strong entity, does not mean that it can exist in a vacuum. RBNE will need to work alongside the other national Infrastructure Managers in a range of areas. Examples where we see the need for close cooperation include effective emergency and contingency planning as well as wayfinding in joint stations.

Passengers and customers must benefit from effective interactions where the networks align (such as at multi-modal terminals and stations), with all parties thinking about the customer journey experience, which in many cases will not just be restricted to the Rail Baltica route. This will require a mature approach from all parties to ensure that the best outcomes are achieved.

The RBNE will also be responsible for maintenance and renewals across the entire route, ensuring that the assets are managed to ISO55000 standards. To do this, we are proposing not just in-house asset management capability but the development of a competent in house maintenance team supported by transparently procured outsourced contracts.

This should provide ensure that the new entity develops strong in-house competence but can also leverage the market to ensure that value for money is achieved. We have received strong challenge regarding the resource levels in this area, but believe that on balance, given the fact that the assets will be relatively homogenous, that they will all be new and without legacy interfaces and issues a lean organisation can be achieved.

## Multi-Modal Freight Terminals

One major concern flagged by freight stakeholders consulted was the difficulty in establishing operations in an environment where near monopolistic positions are held by existing state funded actors. Partly in light of this and partly to ensure that the vision of seamless and effective operation, we believe that RBNE should act as the landlord for the new multi-modal terminals on the route. In this role, RBNE should in the first instance work to ensure that the market has the confidence to invest in the freight terminals, but we also believe that it would be sensible for RBNE to develop a contingency plan to provide backstop services in the event that market investment does not materialise. More details of this can be seen on page 288.

The working relationships in the area of multimodal port development will however remain complex, with existing infrastructure managers and the RBNE having to work side by side to ensure effective outcomes for customers, particularly around the coordination of freight between the 1435mm and 1520mm gauge networks (the latter of which we still see as remaining completely within the control of the existing national infrastructure managers).

While a number of parties expressed the desire for RBNE to be permitted to conduct extensive commercialisation in this area, Atkins did not in the first instance find justification for this, given the appetite for the market to invest in facilities, subject to an appropriate environment being created.

## Commercial Activity

Our approach to more general commercialisation of the assets also recommends a relatively modest approach to commercial activity for RBNE. While there are undoubtedly a wide range of potential commercial activities which the RBNE could engage in, the appetite for this needs to be tempered at this stage – focus must be retained on the core function of delivering railway services.

The development of commercial activity by state funded enterprises carries inherent risks, complexities and challenges around state aid and the potential for anti-competitive behaviour to emerge, regardless of the intentions of those operating the infrastructure manager. We have therefore recommended that commercial activity is predominantly restricted to low complexity exploitation of the physical assets which shall be controlled by the RNBE, something that will not just ensure the new entity is strongly focused on core railway operations, but that also minimises financial risk exposure for the beneficiaries. Details of this can be seen on page 322.

## Gross Value Added (GVA)

We are aware that for some stakeholders, this will not meet their aspirations for the new entity. Several parties expressed their belief that deep commercialisation is needed in order to unlock the broader GVA benefits of the scheme. Atkins view is that in many circumstances, providing a platform for the market to commercialise the asset will prove a more effective long-term solution, rather than creating an Infrastructure Manager which replicates many of the structures already seen in the National Infrastructure Managers, something which other stakeholders strongly criticised due to the impact on competition.

We also believe that under the remit we believe RNBE will still be able to exercise a positive influence to unlock significant GVA opportunities along the route. With flexibility to control the method of track access charging (which we propose to be on a gross tonne / km basis), RBNE will, in the longer term, have a basis whereby it can encourage products to be moved on the network that have the potential to have a GVA benefit to those countries on the route. More detail of how this would function is shown from page 311.

The development of such strategies should however be constructed with the engagement of the appropriate beneficiaries to ensure that this effectively aligns with the economic objectives of each country.

## Headcount and Recruitment

In addition to the 145 staff identified above, a total of 143 individuals are expected to staff the maintenance organisation with a further outsourced workforce of 598 across the route. To operate effectively with resourcing of this level, while we would expect that some elements of maintenance (e.g. signalling) where specialist skills are required, will need geographically mobile staff and this should be incorporated into outsourced contracts as appropriate. Further details of the proposed approach to maintenance can be seen from page 337.

To build this new organisation, we believe that RBNE should be open to sourcing its staff under a hybrid model, based upon the best individual for the position. This may mean building a team comprised of both new hires, long term secondments from the existing Infrastructure Managers and the transfer of strategic personnel from RB Rail AS.

Over time, we would expect this position to stabilise creating an entity with common vision, ethics and mindset and individuals employed on a permanent basis but should help mitigate risks around recruitment for the new business.

**Memo:** There are a limited number of areas where we have not made any allowance for headcount. Specifically, with regards to any staff required for station operations such as train despatch and frontline passenger support as we see these functions being conducted by the Railway Undertaking(s) for the route. Similarly, as we see a relatively limited role for the new entity in the management of the rail freight terminals, our headcount figures are predicated upon a relatively small number of individuals discharging 'landlord' responsibilities, rather than delivering services (see 'Multi-Modal Freight Terminals' below).

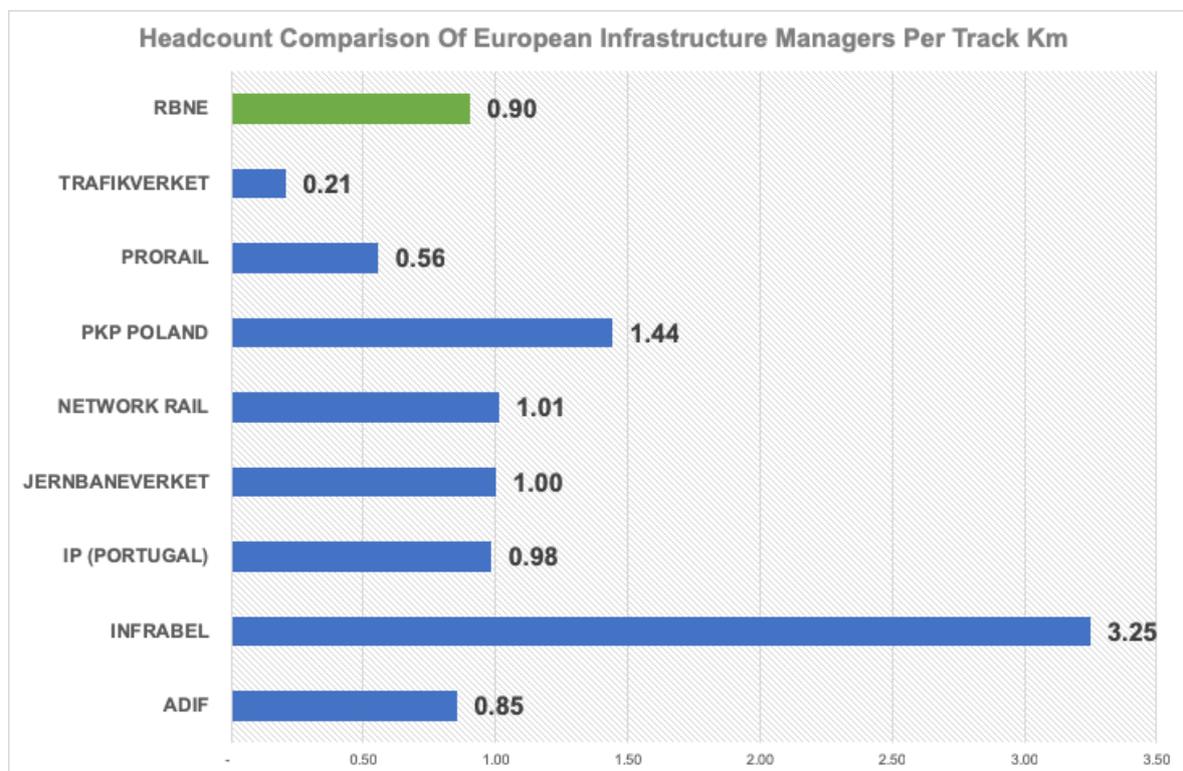
Further to this, headcount associated with the delivery of commercial activity, other than for initial business case development is not included. We would expect this to be identified on a case by case basis as part of each individual business case.

### Headcount Sensitivity Analysis

Significant challenge has been received with regards to the numbers of personnel which Atkins believes will be required for RBNE to operate efficiently. We have conducted sensitivity analysis in order to validate our calculations<sup>2</sup>.

While there is significant variability, excluding the two outliers (Trafikverket and Infrabel) the headcount differential across the average of the other infrastructure managers is 0.07 per track km, meaning that relative to the this average position, RNBE is anticipated to have 61 heads less, a relative efficiency challenge of 6.5% and a figure which we believe to be reasonable given the relative simplicity of the infrastructure (new build, BIM based records and lack of legacy issues to contend with), coupled with the proposed use of new technologies such as remote condition monitoring and predictive maintenance.

### Headcount Sensitivity Analysis Vs Other EU Infrastructure Managers



<sup>2</sup> Data sourced from Annex 14- Governance of Rail Infrastructure Managers (EIM Internal Report) provided to the consultant by RB Rail AS on 12<sup>th</sup> November 2018.

## Headcount and Costs

### RBNE Organisation Structure At Year 10

	Headcount	Cost (€) p.a.
Core Infrastructure Manager Headcount	145	5.4m
Maintenance Headcount (Insourced)	143	5.6m
<b>Total Headcount for RBNE</b>	<b>288</b>	<b>11.0m</b>
<b>Procured Services</b>		
	Headcount	Cost (€) p.a.
General Supply Chain	N/A	27.0m
Outsourced Maintenance	588	19.6m
<b>Total External</b>	<b>N/A</b>	<b>46.6m</b>
<b>Total annual cost (EUR)</b>	<b>N/A</b>	<b>57.6m</b>

**Memo:** All figures cited in this study, both with regards to headcount or cost are 'single point', derived from clear calculations without the addition of confidence intervals reflecting uncertainty analysis. We would anticipate that at the point RBNE is established, sufficient flexibility and budget headroom is granted to allow the business to operate effectively around these points.

Exclusions with regards to the organisational structure assessment as described in 'Headcount and Recruitment' above also need to be recognised.

# 1. Work Packages

## 1.1. WP1 Background Information and International Benchmarking

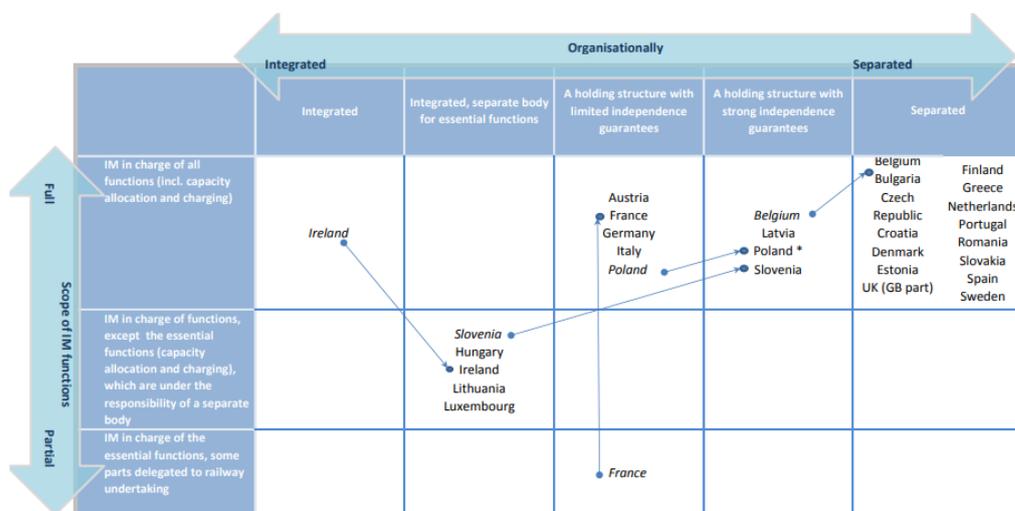
### 1.1.1. Context for the Rail Baltica Infrastructure Management Study.

In order to determine a suitable infrastructure management model for Rail Baltica, we must first understand what is required from an infrastructure manager. We will look at this from a number of different angles; the legal obligations of an infrastructure manager in Europe (defined as the ‘essential functions’), the expectations for the infrastructure manager based upon our experience and those functions that emerge as best practice from the benchmarking and research which we conduct.

We will also consider the existing performance of existing regional infrastructure managers as, while Rail Baltica is a greenfield project, in the event that the existing IMs are used as the basis of infrastructure management, then their current operating performance cannot be disseminated from our remit to identify a solution that reflects best practice. This is critical as, while the output of this study is to identify a suitable IM model for Rail Baltica, the result cannot be just a functional model, but a high performing solution so that the business case is realised.

All Infrastructure Managers from EU Member States operate within the geo-political framework and rail policy related objectives of the European Union. While this does not always result in operating rules, the underlying principles of the union must shape the outcome of this study; “*The development of a Single European Railway Area with an internal railway market, based on an integrated infrastructure network and interoperable equipment, is a fundamental aim of European rail policy.*”<sup>3</sup> but within the framework provided by European Legislation, there remains considerable scope as to how this is achieved, and there is no standard model, as shown in the ‘Report from the Commission To The European Parliament and The Council, Fifth Report On Monitoring Developments of The Rail Market’<sup>4</sup> and as shown in the matrix below.

**Figure 1-1 - Institutional setting in the Member States** <sup>5</sup>



<sup>3</sup> European Commission. *The Performing Rail Infrastructure Manager*. p1.

<sup>4</sup> European Commission. *Commission Staff Working Document, accompanying the document Fifth report on monitoring development of the rail market*. p16.

<sup>5</sup> European Commission. *Commission Staff Working Document, accompanying the document Fifth report on monitoring development of the rail market*. p16.

This complex landscape reflects that “*Each Member State has one 'main' (incumbent) infrastructure manager taking care of the core part of the network, and other smaller infrastructure managers (mostly [a] few...).* These smaller infrastructure managers are responsible e.g. for specific lines, for regional infrastructure or for lines linking railways and service facilities”<sup>6</sup>

We can therefore see that a whole range of potential models are open to Rail Baltica for Infrastructure Management under existing legislation, although as noted by ProRail in their review of this document, some models remain under greater scrutiny than others.

Infrastructure managers operating efficiently and responding to the needs of their customers can make rail transport more attractive for new operators and customers – a critical aspect for a self-sustaining railway to emerge out of the Rail Baltica Project. Our test for efficacy in any model needs to show how this will work, as well as ensuring that the aims of Directive 2012/34/EU are addressed, by demonstrating how each option could ensure the smooth functioning of the Single European Railway area; difficulties in managing cross-border operations and infrastructure interoperability barriers must be overcome. ProRail noted that the metrics and benchmarks could be of use in this area to develop the same. Atkins requested access to the PRIME datasets in May 2018, but this was rejected by DG MOVE (Unit C3), but stated with regards to the potential value of the data held, stated that “*to manage your expectations - please note that PRIME has just started the data collection and due to insufficient maturity or completeness, most of the data remains for internal use only.*”<sup>7</sup>

The EU recognises that effective governance of railway infrastructure and cooperation of infrastructure managers at EU level is vital for the development of the Rail Freight Corridors and coordinated implementation of the European Rail Traffic Management System ERTMS. Mechanisms exist for this today, but these reflect an evolution of existing assets and relationships – they do not necessarily mean that they are best solution for this specific project.

The challenges of the Rail Baltica project are not unique, but the number of the potential interfaces between railway infrastructure managers creates risks which unless managed successfully could jeopardise the business case for the project. As the EU recognises, “*Infrastructure managers not cooperating across borders may neglect the impact of their decisions on international traffic and traffic beyond their network. This leads to mismanagement of traffic disruptions and temporary traffic restrictions due to maintenance and renewal of tracks, especially when more than two infrastructure managers are concerned. A better cooperation can help to avoid too severe capacity restrictions that may result from... maintenance works on different routes in different Member States.*”<sup>8</sup>

As part of our assessment, we will therefore need not just to look at the structural options for the infrastructure manager, but also the behaviours of the parties who are engaged in the scheme; effective operation of the Single European Railway area is built on cooperation and the way existing parties work together is important.

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<sup>6</sup> European Commission. *Commission Staff Working Document, accompanying the document Fifth report on monitoring development of the rail market.* p16.

<sup>7</sup> Annika KROON, Deputy Head of Unit/ PRIME coordinator, European Commission, DG MOVE, Unit C3 - Single European Rail Area, *Email Correspondence, 30th May 2018*

<sup>8</sup> European Commission. *The Performing Rail Infrastructure Manager.* p4.

## 1.1.2. The Existing Regional Landscape for Infrastructure Management

The Rail Baltica project is not being created in a vacuum. All the existing infrastructure management companies across Lithuania, Latvia and Estonia are signatories to the 'Rules of Procedure of the European Network of Infrastructure Managers'<sup>9</sup> which covers the key elements of any infrastructure manager and embodies PRIME (Platform of Rail Infrastructure Managers in Europe).

The aim of PRIME is to facilitate the provision of efficient and effective rail services within the Union, with the parties to take up the role of the European Network of Infrastructure Managers as foreseen in Article 7f of Directive 2012/34/EU, as amended by Directive (EU) 2016/2370<sup>10</sup>. By December 2018, all the main IMs in Europe will be participating.

By virtue of this membership and in conjunction with the information which we have gleaned from the stakeholder interviews, we believe that all parties, despite significant preferred differences in approach to Infrastructure Management for Rail Baltica are committed to delivering an effective outcome for the project. These differing views and this commitment has significantly shaped the changes to our methodology versus our initial tender proposition.

PRIME effectively operates as the European Network of Infrastructure Managers as envisaged under the 4th Railway Package to:

- develop Union rail infrastructure
- support the timely and efficient implementation of the single European railway area
- exchange best practices
- monitor and benchmark performance and contribute to the market monitoring
- tackle cross-border bottlenecks
- discuss application of charging systems and the allocation of capacity on more than one network

All of these issues are at the heart of effective operation for Rail Baltica and as such, PRIME provides a route to address these – we therefore can be confident that a base option of independent infrastructure managers cooperating to operate Rail Baltica is a valid option for consideration.

Given that all the key regional Infrastructure Managers are part of PRIME, it is a reasonable question to ask why a different infrastructure management model is being considered for Rail Baltica; the answer lies not just within the complexity of multi border management, but within the core premise of the Trans-European Transport Network (TEN-T).

There is a greater strategic framework for the design and selection of an infrastructure manager, in that Rail Baltica will constitute a core part of the TEN-T network. The European Commission document 'Delivering TEN-T' confirms that "*Commissioner Bulc supports the vision of a Transport Union aiming at 2 priorities: (i) promoting efficiency in the EU single market, and (ii) connectivity on a global scale. These goals are empowered by: decarbonisation, digitalisation, investment, people's benefits, innovation and global leadership.*"<sup>11</sup>

While many of these areas may be neutral with regards to the end shape of the infrastructure management organisation, two areas stand out as worthy of specific consideration. These are Digitalisation, where the objective is to "*develop a seamless digital layer through the entire single European transport area*" and People's benefits, with specific regards to rights, safety, security, jobs and establishing "*transport as an asset for competitiveness of the EU economy*". Unlocking the benefits of digitalisation may be possible under both commercial and non-commercial models. By way of example, under an ambitious commercialisation model, an infrastructure manager could look to develop software applications to improve passenger travel and then monetise these, unlocking the

<sup>9</sup> PRIME. *Rules of procedure of the European network on Infrastructure Managers – PRIME*. p1.

<sup>10</sup> Official Journal of the European Union. *Directive (EU) 2016/2370 of the European Parliament and of the Council*.

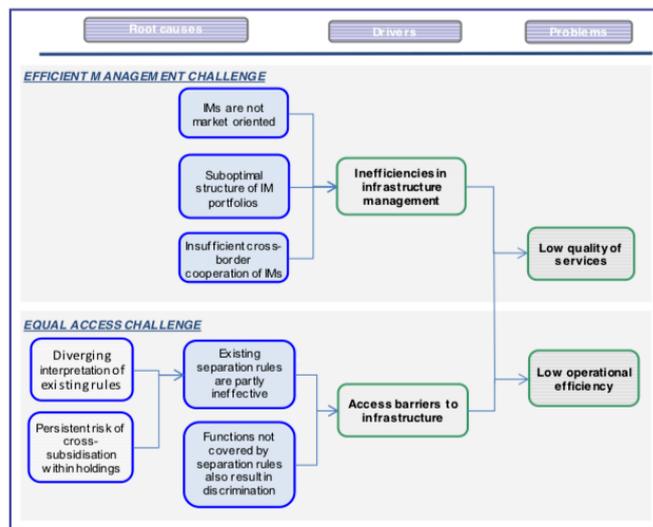
<sup>11</sup> European Commission. *Delivering Ten-T*. p4.

<sup>8</sup> European Commission. *Delivering Ten-T*. p4.

benefits of digital infrastructure gathered across the network. However, a simpler model would be to make available the data feeds, without cost for 3<sup>rd</sup> parties to develop and monetise the same. This could provide similar outputs, but with negligible commercial risk to the Infrastructure Manager,

These ambitions reflect the ultimate objective of TEN-T to close gaps, remove bottlenecks and eliminate technical barriers that exist between the transport networks of EU Member States, strengthening the social, economic and territorial cohesion of the Union and contributing to the creation of a single European transport area.

**Figure 1-2 - Mapping between Problems, Problems drivers and their root causes** <sup>8</sup>



As a greenfield project, we therefore need to take into account the opportunity afforded to do something different, not for the sake of difference, but to see if with a clean sheet we can deliver items such as perturbation management for passenger and freight trains.

We will therefore seek to understand how different infrastructure management models could affect the delivery of these objectives; our study is not just about what exists today, but what an optimal solution could look like – one which addresses the twin risks of equal access and efficient management as identified by the EU.<sup>12</sup>

### 1.1.3. Existing Landscape for International Corridor Management

In support of the objectives of PRIME, there are a range of other bodies which exist in order to deliver effective operation of international Rail Freight Corridors.

RailNetEurope ('RNE') was formed in 2004 and is an umbrella organisation comprised of Infrastructure Managers and Allocation Bodies which looks to support the planning, selling and management of international train paths – at this stage it does not cover the Baltic states in full; Lithuania is engaged in a 5 year plan for implementation post 2015, while Estonia and Latvia were seeking to commence implementation after 2015.<sup>13</sup>

RailNetEurope states that "2018 has seen an enormous progress in the ongoing work of the 'Redesign of the international timetabling process' programme (TTR), with the start of three pilot lines, on which innovative elements are being tested, with ÖBB INFRA's agreement to launch a network pilot and several IMs starting to test further elements'. In addition [the year has seen]... increased

<sup>12</sup> European Commission. *Commission Staff Working Document Impact Assessment*. p30.

<sup>13</sup> Rail Net Europe. *RNE as a coordination platform for RFCs' core processes and tools*.

*maturity of the definition of framework conditions (IT, legal framework and commercial conditions) and the ongoing addition of details in the complete process description”.*

The developments currently planned include:-

- Temporary Capacity Restrictions (TCRs)
- Timetabling strategy and advanced planning
- Capacity model with capacity partitioning
- Request method “Annual request”
- Request method “Rolling Planning request”
- General process components
- Leading entities
- Priority rules
- Commercial conditions
- KPIs

These will undoubtedly strengthen the performance of a critical component of the European railway landscape and these developments strengthen our view that we see the use of RailNetEurope systems as essential to all railway infrastructure management. As such, we regard that their systems and processes shall be used under all Options considered and RailNetEurope is not an intrinsic differentiator between the different Options.

Key points on rail freight traffic identified by RNE relate to the fact that freight is not typically corridor specific. This means that we need to recognise that freight will flow onto and off the network from areas outside the core scope of our study and that while our commission will look to optimising the Infrastructure Management of the Rail Baltica route, other factors may still exist that act as challenges and performance inhibitors. Our methodology will therefore need to consider how freight users will interact with the route, particularly in light of the complexity associated with the 1520/1435 gauges used across the region and the associated complexity of multimodal handling.

Other key items identified include the fact that the majority of Railway Undertakings are active across multiple TEN-T corridors and that the majority of rail freight traffic does not start or end on a specific rail freight corridor. To manage this complexity, RNE has developed an IT system called RNE PCS (‘Path Coordination System’) which *‘handles the communication and coordination process for international path requests and path offers’*.<sup>14</sup> – a planning system, this is being supported by the development of further work packages to support freight Regulation 913/2010 covering:-

- Regulation
- Coordination of possessions
- Corridor Information Documents
- Punctuality Targets
- Traffic Management
- Train Information Systems
- Priority Rules
- Path Coordination
- Pre-Arranged Paths.

Work is also ongoing around the creation of a Customer Information Platform.

Based upon the level of adoption of RNE across Europe and Rail Baltica’s place in the wider TEN-T network, we consider that whatever the outcome of the Infrastructure Management study, the

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<sup>14</sup> Rail Net Europe. *RNE as a coordination platform for RFCs’ core processes and tools.*

Infrastructure Manager will need to sit within both the PRIME and RNE environment, something that was endorsed by ProRail in their independent review of this document.

Outside this, opportunities for best practice may be found by further benchmarking to deliver the optimum freight solution. For example, in the UK, *“In recognition of the shortcomings of this for freight and as part of the introduction of the central freight team in 2012, round the-clock freight controllers were introduced into NR’s National Operations Centre at Milton Keynes to manage cross boundary issues and ensure freight is not discriminated against during operational perturbation.”*<sup>15</sup>

#### 1.1.4. Political Environment

In addition to the legislative environment that shapes the design of Infrastructure Management companies, it needs to be understood that the political views of countries involved differ on many issues regarding Infrastructure Management and that there are significant elements of choice in the design of the same.

Views on the required responsibilities of infrastructure managers have a tendency to shift over time, with functions often moving into and out of operators (both within individual countries or railways over time), especially when political or corporate administrations change. These shifts can be radical, triggered by major events (such as a major safety failure such as with Railtrack and the Hatfield disaster in the United Kingdom) or through a deterioration in public willingness to subsidise the railway and affordability challenges.

Throughout this inception report and the subsequent documentation, we will therefore develop our view as to what the best design for the infrastructure management of Rail Baltica will look like firstly in terms of the legal options applicable to the European Union, secondly in terms of those elements which demonstrate common best practice and finally those elements which we believe to be desirable.

Atkins recognises that, from a political perspective, it may appear expedient to try to seek a pragmatic, lowest common denominator solution to ensure the Infrastructure Management Organisation can be established in a timely manner, rather than to propose a more challenging solution that does not have immediate ‘buy-in’. Such an approach could however have serious implications on the long-term success of the business case.

It is also important to recognise the overall landscape of where Rail Baltica sits, where the majority of initial funding will come from the European Union through CEF, but where the risk of the long term operating costs of the railway will in one form or another most likely rest with the individual nation states which the project covers.

Siim Kallas, former Vice-President of the European Commission has said that *“...infrastructure management becomes more efficient when all functions necessary for the sustainable operation, maintenance, and development of the rail infrastructure are managed in a consistent manner by a single entity.”*<sup>16</sup> – a worthy aspiration, but one that does not consider the complexities of a multi-national railway whose success is predicated upon an interconnected business case.

Today we also see significant variation across European infrastructure managers, with differences with regards to government ownership, levels of debt, the form of financing and even whether or not the IM actually owns the network which it manages. The ability of the European Union to accommodate such national variation to date should be seen in the context of the development and history of the European Union, the varying levels of integration and capability amongst the member states to harmonise and not necessarily an end state.

Current frameworks provide a mechanism for railway infrastructure operators to work together and to operate across borders, but this does not mean that existing mechanisms are perfect, nor does it

<sup>15</sup> DB Schenker. *System Operation: A consultation on making better use of the railway network.* p4.

<sup>16</sup> European Commission. *The Performing Rail Infrastructure Manager.* p1.

mean that they have been optimised for Rail Baltica; but our remit is to deliver a suitable solution for a railway that will not carry traffic until 2029 – we anticipate a different environment.

The heterogeneity that exists today is already set in a world with increasingly tighter application of regulations<sup>17</sup> and an ever-strengthening legal framework that will be the day-to-day world for Rail Baltica when it is completed. We need to look ahead to a period where the economic, legal and industrial strategies of the European Union will expect equal treatment of timetabling and traffic, a world of open competition, clear freight corridors, more effective interoperability and increasingly common approaches to safety management; the 4th Railway Package being followed in spirit as well as in letter.

### 1.1.5. Economic benefits of high speed rail

Another important aspect to consider the economic benefits that high speed rail will bring, in order to ensure that the Infrastructure Management structure of Rail Baltica will be optimised to deliver these.

This section briefly looks at the economic benefits that are expected from the development of High Speed Two (HS2), using information from the strategic and economic cases, as well as examples from other countries.

In the strategic case for HS2, the Secretary of State for Transport wrote "The case for the new line rests on the capacity and connectivity it will provide ... We need the connectivity because bringing people together drives economic growth." <sup>18</sup> This growth is brought about by increased productivity due to reduced journey times between core cities on the network, as well as the surrounding areas. This also leads to agglomeration benefits – the positive impact of increased competition between businesses, and improved interaction and coordination. Other benefits from high speed rail are improved service reliability, crowding reduction and highway decongestion<sup>19</sup>. In addition to these national benefits, there are also many local benefits that are more difficult to quantify, such as the effect of new stations acting as economic catalysts driving regeneration in deprived areas. The infrastructure management organisation for Rail Baltica must have sufficient flexibility to ensure that these benefits are effectively unlocked.

The figure below lists the HS2 benefits to transport users by business passengers and other passengers with the economic benefits clear by the amount of money saved in relation to journey time savings and other benefits high speed rail brings.

**Table 1-1 - Benefits to transport users, by business passengers and other passengers for London - West Midlands (£ million, 2011 PV/prices)**

Benefit	Business	Other	Total
Journey Time Saving	7,400	2,600	10,000
Improved Reliability	2,200	1,000	3,200
Reduced Crowding	700	2,100	2,900
Other Rail User Impacts	1,500	1,700	3,200
Other Impacts	400	400	800
<b>Total Benefits</b>	<b>12,300</b>	<b>7,800</b>	<b>20,100</b>

Similarly, an AECOM study<sup>20</sup> of the Chicago-based Midwest High Speed Rail service highlights the economic benefits that high speed rail can bring, including employment, business sales, new tourist spending (which is estimated to be \$314 million annually in downtown Chicago). In Vickerman's paper 'Can high speed rail have a transformative effect on the economy?'<sup>21</sup>, he states that transport

<sup>17</sup> Example: Office of Rail and Road. *Penalty Notices*.

<sup>18</sup> <https://publications.parliament.uk/pa/ld201415/ldselect/ldconaf/134/13410.htm>

<sup>19</sup> [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/3650/hs2-economic-case-appraisal-update.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/3650/hs2-economic-case-appraisal-update.pdf)

<sup>20</sup> [https://www.midwesthsr.org/sites/default/files/studies/MHSRA\\_2011\\_Economic\\_Study\\_Brochure.pdf](https://www.midwesthsr.org/sites/default/files/studies/MHSRA_2011_Economic_Study_Brochure.pdf)

<sup>21</sup> <https://www.sciencedirect.com/science/article/pii/S0967070X17301002>

infrastructure such as high speed rail by itself is not likely to be transformative in terms of the economy but, with a number of policy interventions, it can contribute to a positive effect. From the economic benefits of HS2 stated above, it is clear that policy and transport infrastructure can come together to provide a successful high speed rail line.

The indirect benefits which High Speed Rail unlock require us to look therefore not just at the narrowly defined essential functions of an Infrastructure Manager, but the broader activities which are seen in high performing organisations.

### 1.1.6. Benchmarking Approach

The objective of conducting benchmarking in the Rail Baltica Infrastructure Management Study was to look at a broad distribution of cross border operations and to demonstrate the impact of relative scale and operational challenges (cross border operations, freight dominance etc.) on the InfraCo design, structure and performance.

The initial proposal consisted of :-

#### Two Country Examples

- (1) The English Channel Tunnel Railway Route
- (2) Hong-Kong-Shenzhen-Guangzhou
- (3) Addis Ababa – Djibouti
- (4) *Lotschberg Tunnel*
- (5) *Gotthard Basistunnel*
- (6) Øresund bridge & Tunnel
- (7) Dublin – Belfast Route

#### Multi Country Examples

- (8) Ncala to Moatize
- (9) Kunming Railway (Laos, Thailand, Malaysia to Singapore)
- (10) Kuala Lumpur – Singapore (Southern End)

With the removal of the Lotschberg Tunnel and Gotthard Basistunnel, a further case study relating to Lyon-Turin was added.

While these case studies were designed to provide different insights for Rail Baltica, the EU recognises that “... *studies prepared on functioning of rail models in other major economies outside Europe (e.g. in USA, Canada, Russia, Japan, China) should be interpreted with care. They do not allow comparison between separated and integrated structures and can only evaluate whether performance of an integrated company has evolved positively over time.*”<sup>22</sup> - and our benchmarking has confirmed this. While we have extracted significant value from the work, it remains more qualitative than quantitative in nature.

In light of this challenge – and also because it has become apparent that some stakeholders are interested in considering a model for infrastructure management based around the existing national infrastructure managers and as a consequence we have included a high level assessment of the existing Infrastructure Management performance across Estonia, Latvia and Lithuania.

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<sup>22</sup> European Commission. *Commission Staff Working Document Impact Assessment*. p16.

### 1.1.7. Deliverables – Work Package 1.1

#### **Work Package 1.1: International best practice benchmarking with regard to cross-border railway infrastructure management with relevant case studies (both positive and negative);**

For WP1.1, upon commencement of the contract, Atkins proposed to Rail Baltica a range of infrastructure companies for detailed review.

These were designed to provide a broad distribution of cross border operations and to demonstrate the impact of relative scale and operational challenges (cross border operations, freight dominance etc.) on the InfraCo design, structure and performance.

Following discussions with the Rail Baltica team, a subset of these was produced, permitting increased depth of study in each area.

How well railways perform when they travel through more than one country or jurisdiction depends greatly on governance arrangements, safety regulations and standards, ownership and regulatory administration as well as on the remit for the railway in the different countries and the maintenance and revenue regimes. These are complex factors and as a result, while it may be possible to establish correlation, it is harder to establish causation.

It is notable that only a small subset of these are based in Europe, a factor driven by our requirement to look at Cross-Border infrastructure management, of which there are very few examples in the region. Because of this, we have endeavoured to look at each case study in line with the objectives of the European Union Agency for Railways, this being to “*contribute to the further development and effective functioning of a single [European] railway area without frontiers, by guaranteeing a high level of railway safety and interoperability, while improving the competitive position of the railway sector.*”<sup>23</sup>

Our work sought to establish differences in performance between the railways and the ways in which those differences relate to the governance regimes and organisation structures and as such has reviewed available published data and such unpublished data as we have been able to obtain (from ex-clients, for example).

Given the nature of much of the data we have been seeking to obtain, there are natural differences in the completeness of each case study we have developed. Setting aside local differences in interpretation, much of the information we have sought is commercially sensitive and we have therefore had to overlay professional judgement and expertise in order to draw out themes against which we could inform the development of the target operating model.

The one thing that our research has been unable to draw out is the political detail which led to each individual infrastructure management model being established; from the stakeholder engagement which we have conducted, we believe that this may emerge as the most important element of ensuring that an infrastructure manager can be successful in a multi-territory environment.

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<sup>23</sup> European Commission. *Regulations of the European Parliament and of the Council on the European Union Agency for Railways and repealing Regulation (EC) No 881/2004.*

## 1.1.8. Overview of Research

Comparative data regarding the case studies is included as separate Appendices.

These reflect:-

- (a) Purpose and Performance
- (b) Essential Functions - How the 'essential functions' of infrastructure management are discharged, answering the questions:-
  - a. Is there a single control centre?
  - b. Is there a single entity controlling IM Across borders?
  - c. Single allocating entity – one bill.
  - d. Economic and Safety Regulation
  - e. Traffic Management
  - f. Maintenance Controls

These items were selected specifically so that we could understand how the essential functions of infrastructure management were discharged, but our findings have effectively indicated that there is no underlying trend or natural alignment. Selection of these functions appears very much around the specific needs of each project - there is no 'cookie-cutter' model for Rail Baltica to follow.

### 1.1.8.1. Case Study One: Channel Tunnel / Eurotunnel / Get link

The Channel Tunnel is a 50km rail tunnel linking the United Kingdom with France and operates with a maximum speed of 160kph. The tunnel carries high-speed passenger trains, a 'Shuttle' for road vehicles and international goods trains, connecting into the LGV Nord (France) and High Speed 1 (UK) high-speed rail lines. The infrastructure manager is Getlink, operating under a concession agreement that is valid until 2086.

The decision in principle by the British and French governments in 1964 to build a tunnel started a process that was eventually completed 30 years later in 1994.

It took 10 years of preliminary work until construction work actually started in 1974, but the project was cancelled the next year and only approved (this time as a privately-funded Build-Own-Operate-Transfer project, see diagram on right) in 1981. The governments gave Eurotunnel a 55-year operating lease, extended to 65 years in 1993, a year before the tunnel entered into operation.

Project management was not ideal. The tunnel was only one year late in starting operation, but it was 80% over budget and usage was far lower than expected: passenger journeys even now, in 2018, are still 13% lower than planned and freight 89% lower. The immediate result of this was that financing cost was 140% higher than forecast and in the first years Eurotunnel made heavy losses.

Both governments guaranteed its debt, but in 2004, Eurotunnel was therefore forced to convert £5bn of its debt to equity. To this, Douglas McNeill of Charles Stanley commented on the project as a whole: "It's a wonderful thing from which we've all benefited, apart from the people who paid for it to be built who lost substantially all their money."

In 2017, the private sector ownership renamed itself Getlink, with four brands: Eurotunnel (including both the infrastructure manager and the passenger and freight rail shuttle operator), rail freight operator Europorte, ElecLink the 1,000 MW high voltage electricity connection between the countries and a railway training centre; so, it is far from being an infrastructure manager independent of all train operation, as specified in the EU's 4th Railway Package.

On the other hand, carrying the ElecLink connection is an indication of successful multi-income stream use of the main asset of the company, the tunnel itself. One could also make the point that since there is no road tunnel, the extensive and dominant shuttle service as well as passenger and freight trains also uses the tunnel's value and income generation capacity to the maximum – but there

is always a conflict between the shuttle service operated by Eurotunnel or Getlink itself and fair and objective treatment of the other train service operators.

Indeed, after the cessation of UK-French government freight train subsidies of £52 million per annum to cover the tunnel "Minimum User Charge," EWS, the main freight operator, announced that its trains would soon stop running. Effectively, the shuttle service had won and the dedicated freight trains had lost. But the EU complained that Eurotunnel was discriminating against freight operators other than those using its freight shuttle trains, leading to Eurotunnel countering this by dropping its prices.

The dominance of the ro-ro freight and passenger shuttle services is a significant and unusual characteristic of the Channel. Not until 2006, 12 years after the tunnel opened, did Eurostar passengers equal passengers travelling by shuttle. Since that time, the numbers are approximately equal, but in freight, the shuttle traffic continues to be dominant, with 89% of freight travelling by shuttle and volumes continuing to increase to the present time – whereas the passenger and freight volumes have been stagnant since 2013 – the causes of which are complex.

*"Rail freight undertakings operating in France, the United Kingdom and Sweden for instance enjoy moderate levels of infrastructure charges that are by and large competitive with road. This has allowed rail freight to grow for example within the UK, however, the number of international freight trains through the Channel Tunnel to and from London did not grow or has even dropped, though the link accommodates trains with the main continental track gauge and has capacity available. This appears to be due to charging issues and operational barriers in the tunnel and on its main links in the UK and France. A better coordination of charging policy between the four different IMs involved might open the opportunity to attract more trains and at the same time safeguard the financial interest of all companies involved."*<sup>24</sup>

Despite this, the increase in shuttle traffic means that the profitability of the tunnel has now risen to the extent that it has fully overcome its previously excessive debt burden – a positive result.

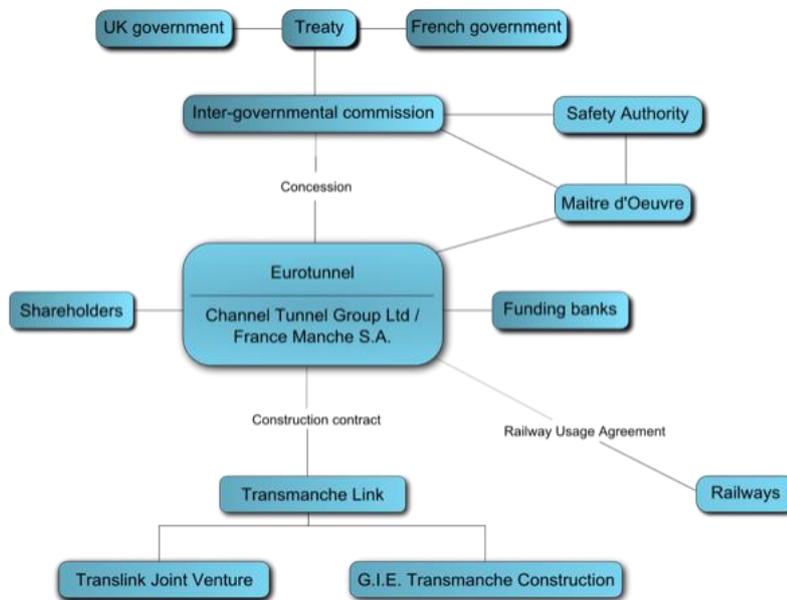
In terms of stakeholder, political and customer acceptance, the Channel Tunnel has had a mixed record. The users of the tunnel are generally positive, but politicians in the UK are acutely aware that although it has contributed to general economic growth in the area, it was not a financial success because most of the shareholders lost more or less all their investment.

In France, both the government and population at large tend to blame the management of Eurotunnel for the excessive passenger and freight forecasts and the City of London, that financed the debt, for the consequent 140% rise in financing costs.

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<sup>24</sup> European Commission. *The Performing Rail Infrastructure Manager*. p5.

Figure 1-3 - Channel Tunnel ownership structure



### Intergovernmental Control

The Channel Tunnel is controlled through an Intergovernmental Commission with a complex framework of agreements underneath it. This is the means by which the Governments exercise their rights and obligations.

*“The Intergovernmental Commission (IGC) was set up to supervise, in the name and on behalf of the two governments, all matters concerning the construction and operation of the Fixed Link. It is the conduit for discussion between the public services of the two States involved with the Fixed Link. It is granted prescriptive powers and has a permanent surveillance and control function. It has the necessary regulatory powers to put a “unified safety regime” in place in the Tunnel. As such it is concerned with, for example, the transposition of European directives having relevance within the limits of the Eurotunnel Concession.”<sup>25</sup>*

*The functions of the IGC are defined by Article 10 of the Treaty of Canterbury and is the safety authority for the Fixed Link in terms of Directive 2004/49/EC on rail safety while also holding an economic regulatory role as a result of Article 12 of its Binational Regulation of 3 July 2009 implementing the First Railway Package. The role of the IGC is governed by two texts; The Treaty of Canterbury<sup>26</sup> and the Concession Agreement<sup>27</sup>*

The Intergovernmental Commission carries out its duties in accordance with Article 10 of the Treaty of Canterbury. In the safety field it benefits from the advice of the Channel Tunnel Safety Authority (Article 11 of the Treaty) and in the field of security it works in co-ordination with the “Joint Security Committee”. It has also has a role of regulatory body.

The structuring of the agreements for the Channel Tunnel are highly relevant for Rail Baltica because they show the level of detail and complexity which have had to be established to ensure the effective operation of the concession.

<sup>25</sup> Channel Tunnel The Intergovernmental Commission (Website).

<sup>26</sup> Treaty of Canterbury concerning the Construction and Operation by Private Concessionaires of a Channel Fixed Link with Exchanges of Notes.

<sup>27</sup> The Channel Fixed Link Concession Agreement.

We have drawn out a number of key points from the Treaty of Canterbury relevant to the project:-

- To speed up traffic flow, there is provision for 'public authorities to exercise their functions in an area in the territory of the other State where controls are juxtaposed; (Article 4), but with each Government responsible for the recovery of the costs of its own controls. This would appear not to be required for Rail Baltica due to Estonia, Latvia and Lithuania all being signatories to the Schengen agreement.
- Defence and security are subject of special arrangements, including the free circulation through the link of public officials, but with the intent that the Governments coordinate their activities on the same.
- The agreement defines the border within the tunnel based upon a break point relative to the Greenwich meridian, with jurisdictional responsibilities aligned with this. During the construction phase, there was flexibility with regards to the border location based upon the point from which works had commenced (Article 3)
- Safety and Labour Laws (Article 7) allow for supplementary laws on social security, employment, health and safety at work – helping to create a harmonised environment.
- Taxation of profits and gains (article 9) are in accordance with the laws of the two states, including any convention for the avoidance of double taxation and tax evasion.

These points should be considered with regards to the creation of the inter-governmental agreement, in the event that a cross border infrastructure management option is progressed.

The concessionaire is the infrastructure manager for the Channel Tunnel.

With regards to the Concession Agreement, it is apparent that the concessionaire has considerable commercial freedom and they are at liberty to determine their tariffs and commercial policy and the type of service to be offered, to the extent that 'laws relating to control of prices and tariffs shall not apply to the prices and tariffs of the Fixed Link.'; this extends only to railway related activity. Any other options, such as the use of the tunnel for the purposes of energy or telecommunications transmission require prior consent.

This aside, concessionaires may not discriminate with regards to the traffic carried into the tunnel (save under normal commercial terms) and are required to give public notice as to their tariffs.

The operation of the tunnel is also covered by a range of subsidiary agreements, all of which are designed to support this: -

This 'IGC Regulation on usage of the tunnel' applies to international passenger and freight services by railway undertakings and is intended to ensure non-discriminatory access conditions. Further to this, the concessionaire is responsible for the production of a network statement which describes the conditions of access and principles of capacity allocation – all to be done without prejudice.

*"The Concessionaires shall establish an allocation body to allocate infrastructure capacity in the Fixed Link. The allocation body shall ensure that infrastructure capacity is allocated on a fair and non-discriminatory basis and in accordance with Community law, and shall respect the confidentiality of any commercial information provided to it in the exercise of this function."*

The concessionaires' profit and loss accounts and balance sheets relating on the one hand to the provision of transport services by railway undertakings and on the other for business relating to the management of railway infrastructure shall be kept and published separately. This in principle aligns with the core principles of the 4<sup>th</sup> Railway Package with regards to separation; any public funds paid to one of these two areas of activity may not be transferred to the other.

Despite this, it was found that Eurotunnel's Network Statement for 2014 did not comply with all the requirements of the Bi-national Regulation on the use of the Channel Tunnel or Directive 2001/14/EC on the allocation of railway infrastructure capacity, and the levying of charges for the use of railway infrastructure, and safety certification.<sup>28</sup> This would indicate that even in well-structured agreements, the risk on market distortion and monopolistic behaviours can persist, something that was flagged as a concern by a number of stakeholders during the interview process.

The Concessionaires may agree with any railway undertaking or international grouping a framework agreement covering a number of years, setting out the characteristics of the infrastructure capacity required by the railway undertaking or the international grouping and offered by the Concessionaires over any period exceeding one timetable period. A framework agreement shall not specify the path or paths in detail but be drawn up so as to meet the legitimate commercial needs of the railway undertaking or the international grouping.

### **Cooperation**

The concessionaire is obliged to co-operate with other infrastructure managers to achieve the efficient operation of train services with an 'aim to guarantee the optimum competitiveness of international rail freight and ensure the efficient utilisation of the Trans-European Rail Freight Network.' To support this the Infrastructure Manager there is discrete charging body that operates in accordance with Directive 2001/14/EC.

### **Safety**

Safety is governed by The IGC regulation on safety of the Channel Tunnel and reflects two key principles, a common safety management system with unified safety rules, reflecting the unique nature of the tunnel, but which also assesses any risks arising as a result of the activities of third parties and; the use of the Railway Management Maturity Model (RM3) covering the capability of health and safety management The unified safety rules are on line with Directive 2016/797/EC and 8 of Directive 2004/49/EC and are in addition to the relevant technical specifications for interoperability. The concessionaire is also responsible for vehicle cross-acceptance requirements.

### **4<sup>th</sup> Railway Package**

On the 5 October 2016 a Memorandum of Understanding was signed between the Channel Tunnel IGC and the European Union Agency for Railways in preparation for implementation of the technical pillar of the 4th Railway Package.

### **Regulation**

Autorité de Régulation des Activités Ferroviaires (ARAFER) and the Office of Rail and Road entered into a cooperation agreement on 16 March 2015 to ensure cooperation based on 'reciprocity, transparency, and trust.

The agreement aims to deliver 'coordinated and effective cooperation', with a view to ensuring the economic regulation of the Channel Tunnel and describes how the regulators work together, establishing common working methods. These are both a Bi-national Committee, consisting of representatives of ARAFER and ORR and the Permanent Service, this being an ongoing advisory working group. The Bi-national consists of three members from both national regulators, supervising the Permanent Service and agreeing joint positions to ensure coherent, shared decisions are made to regulate the Channel Tunnel.

Each year, the two regulators issue an opinion on the Eurotunnel Network Statement – checking that it is non-discriminatory. The two authorities act as a single appellate body under Directive 2012/34/EU (Article 56(1)) where railway undertakings can appeal if they suffered unfair treatment such as refusal of access to the infrastructure.

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<sup>28</sup> Eurostar International Limited appeal to the Channel Tunnel Intergovernmental Commission (IGC) – notice of IGC's decision

They are also obliged to review every complaint made and may impose penalties such as fines on the Infrastructure Manager.

## Customer Perception and Brand

Under the concession agreement, there is a requirement to establish a permanent public information point, a register for user's complaints and suggestions, as well as a remote information for use in particular in the case of prolonged perturbation. Despite this, branding remains unclear; *"Confusingly for many, it (Eurotunnel) does not operate Eurostar trains, only the train shuttles that carry vehicle traffic. That confusion may yet continue for passengers looking to book, as the spokesman confirmed: "The Eurotunnel brand is one of our jewels so that won't change."*<sup>29</sup>

Rail Baltica may need to consider the implications for customer management in the event that a model is selected that will result in a single point of contact but where the underlying operational structure diverges.

### 1.1.8.2. Case Study Two: Hong Kong to Guangzhou

#### Background

*"The Kowloon-Canton Railway Corporation was established in 1982 under the Kowloon-Canton Railway Corporation Ordinance for the purposes of operating the Kowloon-Canton Railway (KCR), and to construct and operate other new railways. On 2 December 2007, the MTR Corporation Limited, another railway operator in Hong Kong, took over the operation of the KCR network under a 50-year service concession agreement, which can be extended. Under the service concession, KCRC retains ownership of the KCR network with the MTR Corporation Limited making annual payments to KCRC for the right to operate the network."*<sup>30</sup>

The Kowloon-Canton Railway or KCR, as this used to be called, dates from 1910, but was only electrified in 1983, with new rolling stock introduced for the cross-border route in 1998. This enabled the through train service (which does not stop at the border or boundary) to be increased from 4 to 12 per day in each direction.

Together with substantial investment in the terminal station in Hong Hum (near Kowloon) and improvements in customer service, this led to an increase in modal share of the cross-border market from 14% in 1998 to 25% in 2006, an increase of 137% in passenger numbers. We do not have data for KCR's investment involved, because it was incremental, but the upgrade of the service was clearly extremely successful.

After the merger of KCR's merger with MTR Corporation of Hong Kong, the service has been operated by MTR, which like KCR is an integrated railway, with only a functional distinction between the functions of infrastructure management and train service operation.

*"KCRC and MTRCL remain as separate entities. KCRC employs a small number of management staff answerable to its Managing Board, with specialist legal, financial and other support being provided through outsourcing and consultancy arrangements. The Corporation's key responsibilities include overseeing and fulfilling its obligations with respect to its service concession with the MTRCL, raising new financing as needed to service its debts (over HK\$10 billion was raised in 2009), ensuring compliance with its obligations under a number of cross-border leases covering its rolling stock and other assets, and being the majority shareholder for West Rail Property Development Limited, which is responsible for the development of some 13 residential property sites along West Rail."*

*In addition to the revenue earned from the concession payments made by the MTRCL, it earns rental revenue from leasing out four floors of Citylink Plaza above Shatin Station. KCRC also retains a 22.1% shareholding in Octopus Holdings Limited (OHL), which was first established in 2005 and is owned by the major public transport operators in Hong Kong. OHL is the holding company of Octopus*

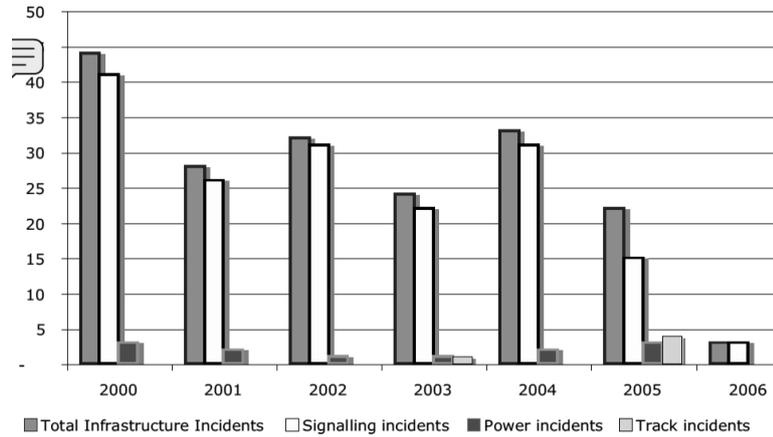
<sup>29</sup> The Guardian. *Eurotunnel renamed Getlink in preparation for post-Brexit era.* (Article)

<sup>30</sup> Wikipedia. *Kowloon-Canton Railway Corporation.* (Website).

*Cards Limited, which is a world leader in smart card payment systems used not only for making public transport journeys within Hong Kong but also for making small purchases in supermarkets and other convenience stores.*<sup>31</sup>

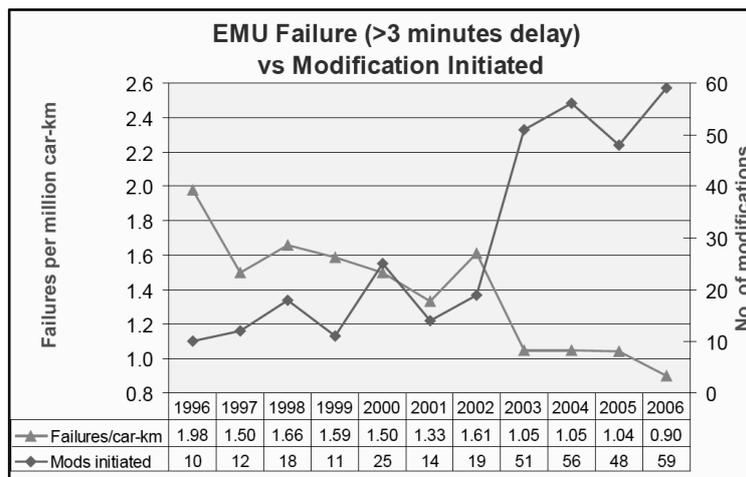
Indeed, the integrated nature of the railway with its close cooperation between the in-house infrastructure manager and operator enabled KCR to reduce infrastructure incidents per year causing delays of 5 minutes or more on this line from 44 to 3 per year (graphic below right), while at the same time that it was reducing the number of failures on the EMU fleet which shared the track with the KTT Intercity trains, from 2 per million car-km to only 0.9 (graphic below).

**Figure 1-4 - Number of infrastructure failures per year on East Rail**



One of the characteristics of this line is the diversity of traffic types, and the fact that the EMU commuter traffic is far more frequent, with only 2.5 minutes between trains, each carrying up to 3,750 passengers at peak hours. So whereas in Ireland as in many other countries, the intercity railway is considered to have priority, in this case the commuter traffic clearly represents far more passengers and therefore, the intercity KTT trains have to stay within the two EMU train-paths allotted to them, which involves them travelling below their normal operating speed, to allow the EMUs to stop at each station (though the EMU trains may be required to stay at certain stations to allow the KTT intercity train to pass).

**Figure 1-5 - EMU Failure vs Modification Initiated**



<sup>31</sup> Wikipedia. *Kowloon-Canton Railway Corporation*. (Website).

**Governance**

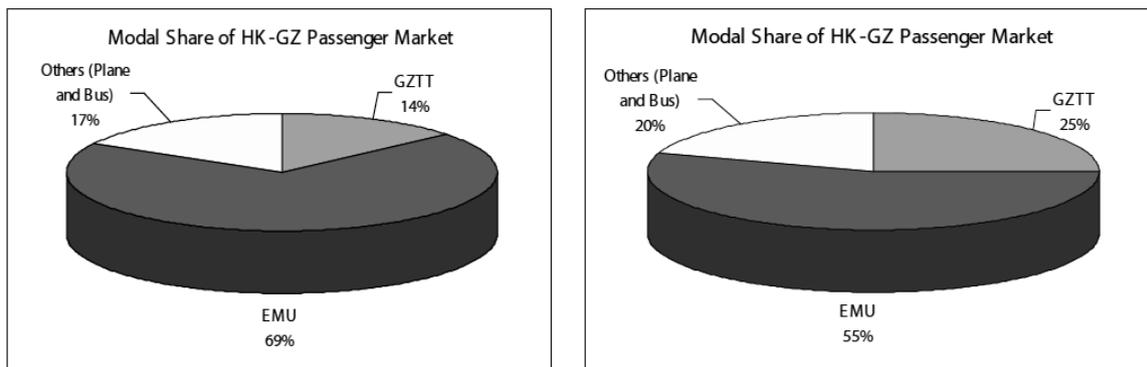
From corporatisation in December 1982 until the rail merger 25 years later, corporate governance issues periodically troubled the corporation. Reflecting this were the changes that took place in the relationship between the chairman of the managing board and the head of the executive management team.

Initially the root causes of this were the commercial and political tensions arising from the change from a government department to an organisation expected to operate in a prudent commercial manner so as to make a return on its fixed assets. While expected to make a profit to comply with its mandate under the KCRC Ordinance, because the corporation remained 100% government owned, it faced at the same time strong public and political pressure not to increase fares. These difficulties were further complicated by corporate governance issues involving senior management and members of the corporation's managing board.<sup>32</sup>

While this railway will be partially superseded and may lose its intercity trains when the new high speed XRL route from Kowloon to Guangzhou and the Chinese national high speed network comes into operation in the autumn of 2018, we expect the governance of the two lines is likely to be similar, as well as the financial approach – that of prudent commercial operation.

This involves the setting and regulation of fares that are market-oriented, with higher prices for those destinations that are in very high demand and lower prices for those that are not. The fare regulation system allows fares to be adjusted in line with labour costs in Hong Kong, less a factor to allow for continual productivity improvement.

**Figure 1-6 - Comparison of the Mode Share of HK-GZ Passenger Market**



As a general rule, this means that fares in Hong Kong are in the second quartile of urban and suburban railways worldwide. So they are never among the most expensive, while also never being cheap, although the productivity factor means that they have tended to gradually become ever more affordable in terms of local purchasing power and average earnings – something that should make passenger usage more predictable.

**1.1.8.3. Case Study Three: Addis Ababa - Djibouti**

**Background**

The Djibouti-Ethiopia Railway is the only rail line connecting landlocked Ethiopia with Djibouti, and is the most direct link from the Red Sea to Addis Ababa and is comprised of a \$3.4bn 780km railway, broadly following the line of a previous railway built at the start of the 20th century, but which had deteriorated.

<sup>32</sup> Wikipedia. *Kowloon-Canton Railway Corporation*. (Website).

The reinvigoration of Ethiopia's railways formed part of a programme of national building through infrastructure under Meles Zenawi (Prime Minister 1995 –2012) and continued under Hailemariam Desalegn (2012-2018). Some parallels can be drawn to the nature of investments made under CEF.

In 2010, when the present five-year plan was launched, the stated aim was to increase freight capacity by at least five million tons. The cost of constructing the network was put at about \$2.5bn over seven years. Both of the productivity and the cost have since risen dramatically.

The Djibouti-Ethiopia Railway (Chemin de Fer Djibouti-Ethiopien, or CDE) Project consists of a 25-year railway operating concession for the 780-km railway running from Djibouti to Addis Ababa through Dire Dawa. The railway, constructed at the beginning of the 20th Century, had deteriorated during periods of war and famine due to lack of maintenance, poor management, and a consequent lack of commercial focus.<sup>33</sup>

While some initial funding came from the EU, the railway line is operated under a PPP concession agreement which was enabled in 1998 following an amendment to the 1981 Agreement with Djibouti, facilitating the introduction of private-sector participation in management of the railway, with associated legislation also being passed by the government of the Republic of Djibouti.

Ethiopia and Djibouti signed a deal with a consortium formed of the China Railway Group Ltd (CREC) and China Civil Engineering Construction Corporation (CCECC) to manage the joint railway line, with the Chinese companies undertaking the operation and management of the railway line circa five years. The costs and details of the management and operation contract remain confidential and we have been unable to obtain these.

Both companies had previous experience of working on rail projects in the country and the Infrastructure Management model appears to follow a similar one to that used for Addis Abbaba Light Rail scheme built by the China Railway Group Limited, in that the railway is managed over a defined period in order to enable the successful knowledge transfer of operations and maintenance to the local workforce, with the aim that future schemes can be carried out by in country expertise. To support this, a railway technology academy has been built at Bishoftu with the aim of creating a centre of railway excellence in Africa.

### Operational Performance

Operational performance for the line appears to be poor from a passenger and freight perspective; "Train operation is still unpredictable. According to the timetable, passenger trains are to leave Addis on every odd numbered day, but in January there were still problems with keeping to the timetable because of collisions with various animals on the way as well as occasional power cuts – despite the fact that the system had been tested for more than a year.

As for the freight trains, there is still no reliable information about the amount of goods transported through the railway from Djibouti, but since the main station there is also outside of the city proper, there are a few pessimistic opinions about the operation. According to official data, the freight trains can move up to 3,500 tons at a time, but the actual transports will not be able to reach the desired capacity for many years."<sup>34</sup>

### Impact of Poor Performance

The potential parallels for Rail Baltica are significant in that the business case was predicated around improving trade flows - "*This railway was built in order to help the landlocked country to reach maritime trade routes, and also to import much needed fuel as well in order to boost the economy. Failing to generate income needed to repay the loans might have negative consequences for the ERC and thus on future projects, not to mention the Ethiopian government.*"<sup>35</sup> Understanding the causal factors for this failure to exploit the network is challenging given the commercial agreements that underlie the Infrastructure Manager, but it is reasonable to assume that Rail Baltica will need to ensure that whatever Infrastructure Management model is adopted, it must reduce the risk of such failure.

<sup>33</sup> The Infrastructure Consortium for Africa. *Briefing Memorandum: The Djibouti-Ethiopia Railway.*

<sup>34</sup>The Diplomat. *China and Ethiopia, Part 2: The Addis Ababa–Djibouti Railway.* (Article)

<sup>35</sup>The Diplomat. *China and Ethiopia, Part 2: The Addis Ababa–Djibouti Railway.* (Article)

#### 1.1.8.4. Case Study Four: Nacala to Moatize (Ncala Logistics Corridor)

“The Nacala Logistics Corridor is a rail line developed for the purpose of transporting coal from mines in western Mozambique east to the port of Nacala via Malawi. The project included both construction of new trackage and the rebuilding of existing lines.”<sup>36</sup> The line is 912km in length.

In 2000, the government awarded a concession to an American and a Mozambique investor to operate the Nacala-Moutize railway for 20 years, but the concessionaires performed badly and it was only when Vale, the Brazilian mining corporation, got involved in 2007 that progress was made, leading to a change in investors in 2009.

Vale had decided to transport coal from its mine at Moatize to a new export terminal in Nacala, on the other side of the bay from the existing port. Between 2013 and 2017, in excess of US\$3 billion was invested in rehabilitating existing and constructing new rail and port infrastructure.

This upgrade ensured that the corridor had the capacity to export up to 18 million tons of coal and 4 million tons (coal equivalent) of general cargo on an annual basis.

The line was formally opened on the 16th May 2017, with line is now fully operational and safety is reported to be the best in the region. Maintenance is outsourced to local contractors, although this has not been independently verified.

**Figure 1-7 - The Nacala to Moatize Corridor**



In 2015 the concession was extended for another 20 years, with Vale taking the 85% of the investment before selling half to Mitsui, who are also partners in the Moatize coal mine. The Nacala main line railway between Moatize and the Nacala terminal has since been rebuilt to a high standard to handle up to 18 m.t.p.a. of coal exports, 20.5 t axle loads, using special wagons able to carry 63 t of coal, with current train lengths of 120 wagons.

Capacity can be increased by either lengthening the passing loops and trains or by providing additional passing loops. A dual track may be economically viable when freight volumes increase beyond about 40 m.t.p.a. The passing loops for the coal trains are 1800 m long. Up to seven coal trains per day will operate in each direction at full capacity, but currently there are four or five trains per day. The Concession Agreements require the provision of at least two general freight trains per day, initially 35 to 42 wagons long, using the older passing loops which are about 600 m long.

<sup>36</sup> Wikipedia. *Nacala Logistics Corridor*. (Article)

The mainline is designed to carry 18 m.t.p.a. of coal exports, using trains lengths of 120 wagons, four locomotives (1,680 m long with 1,800 m passing loops). This equates to seven operating slots per day in each direction, plus an allowance of two operating slots for general freight and one for passengers, a maximum number of 10 slots per day in each direction.

The general service is currently limited to 42 wagons, often less, carrying 40 t per wagon, yielding a capacity of 1.12 m.t.p.a. in each direction. A report by Rail Gazette international said that “the first coal trains began to use the new route in November 2014, and by April 2016 the line had carried its first million tonnes. Operations have steadily expanded from two 20-wagon trains per day to 22 trains of 120 wagons, each hauled by four high-horsepower locomotives.

As a result, “according to Vale, coal production at Moatize has risen from 3.7 million tonnes in 2012, the first year of operation, to 5.5 million tonnes in 2016; opening of the new rail link will allow this to increase 18 million tonnes per year.”<sup>37</sup>

While the primary purpose of this railway line is to transport the coal produced in Moatize in Tete Province to Nacala Port for export. The consortium started rehabilitation work of the Cuamba-Lichinga line as well as part of its Corporate Social Responsibility obligations. One of the concessionaire conditions is to ensure transportation of other companies’ cargo and passengers, equivalent to non-discriminatory open access.<sup>38</sup>

The primary lesson to be learned from this railway is that a railway appears to be far more effective and profitable if its development is driven by its main stakeholders, in this case not the country but the two partners in the mine, Vale and Mitsui and that this is not incompatible with achieving (relatively) high level of safety standards and ensuring ancillary.

### Governance

The Nacala rail & port infrastructure business is controlled by a holding company of Vale and Mitsui: approx. 70% (Vale's subsidiary: 50%, Mitsui's subsidiary: 50%) plus Mozambican company and Portos e Caminhos de Ferro de Moçambique (CFM): approx. 30% who is primarily responsible for port operations. Their scope is defined as ‘the transport and shipment of coal, general commodities and passengers’ and reflects the fact that the concession agreement has changed significantly 5 times between 2000 and 2015<sup>39</sup>. The current structure for the management of the corridor is shown below and should hopefully now prove a stable basis for the operation of the railway. Going forward, the Rail Infrastructure Manager<sup>40</sup> will have a very stable cost profile with exceptionally low risk, with the anchor customer (Moatize Coal) being based on a long term take or pay type contract.

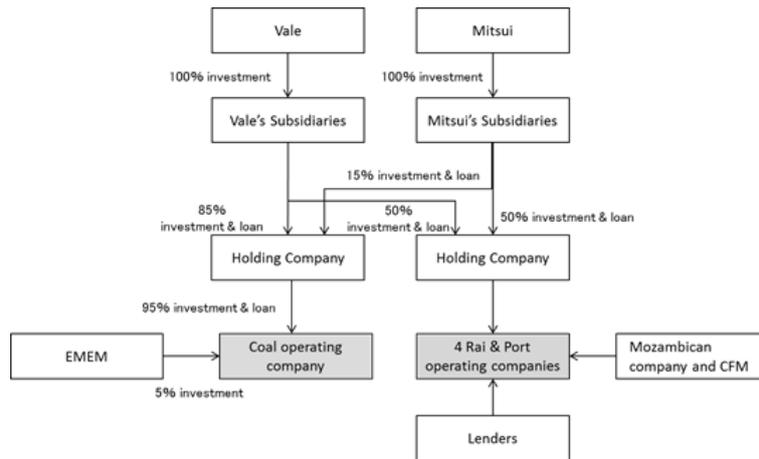
<sup>37</sup> Railway Gazette. *Nacala Corridor officially inaugurated*. (Article).

<sup>38</sup> Japan International Cooperation Agency. *Analysis Report: Strategic Master Plan on Strengthening of Nacala Corridor Region-Wide Freight Network for Agricultural and Mining Sectors*.

<sup>39</sup> Claudio Mussa. *Corridor and Operations in Nacala and Moatize*. (Video).

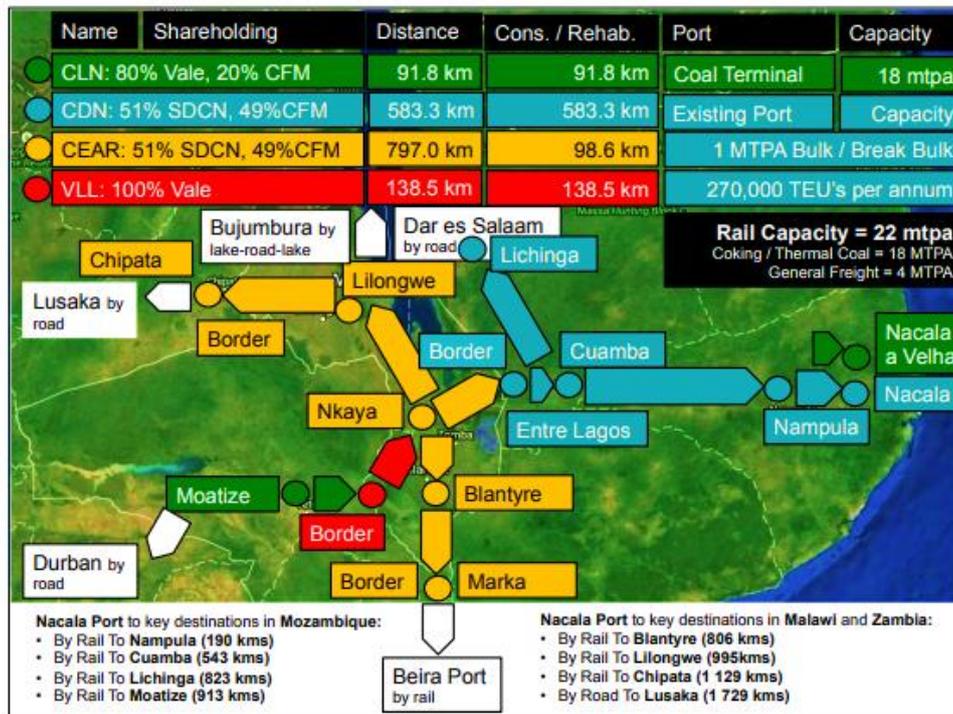
<sup>40</sup>Mitsui & Co Ltd. *Mitsui’s Participation in Coal, Railway & Port Business in Mozambique*.

Figure 1-8 - Management Corridor Structure



Similarly, while we have been able to identify that Vale has a local workforce of around 2 000 Mozambican and Malawian employees (plus 1400 contractors) and that they are 'significantly transforming the employability of the local labour force', the drivers for this are unknown. On a similar scheme, the company is investing heavily in personnel development in Mozambique, with more than 1000 people moving receiving technical training.<sup>41</sup>

Figure 1-9 - Interlocking rail and port concessions on the Nacala corridor



The infrastructure management appears to extend onto branch lines of the Ncala Railway which are more focussed on the transportation of crops, wood, fertilizers etc., although we have been unable to determine if this is the result of an obligation on the IM or as a result of new commercial opportunity. It appears that some form of open access operation is in existence; there are four linked rail concessions which prioritise the movement of coal, but 3<sup>rd</sup> party access is also available. The four rail concessions are as follows:-

<sup>41</sup> Railway Gazette. *Nacala Corridor officially inaugurated.* (Article).

- Corredor Logístico Norte (CLN) is responsible for handling the 18 million tons annually, of coking coal cargoes from the pit at Moatize to the new Nacala-a-Velha coal terminal.
- Corredor Desenvolvimento Norte (CDN) is responsible for handling the balance of 4 million tons annually of general cargo in Mozambique, from Entre Lagos to the port of Nacala.
- Central East African Railway (CEAR) is responsible for handling the balance of four million tons annually, of general cargo in Malawi, from the junction at Nkaya to Entre Lagos
- Vale Logistics Limited (VLL) owns the newly built section of railway from the Mozambique border, near Cambulatsissi, to the Nkaya junction in Malawi. The CDN-CEAR concessions are a main focus assignment. CDN-CEAR is run as an integrated general freight rail company.

### Metrics and Performance Management

FastPath2 is used by the Infrastructure Manager to measure the performance of transit-transport time, cost, and reliability parameters for exporting or importing commodities along a given corridor segment and compares this with comparator corridors before recommending targeted improvements.

The Infrastructure Manager uses the traffic forecasts across the route to model the potential impact of improving turnaround times on the operational efficiency of the corridor rail network, focusing initially on the existing highly traded and potentially highly traded routes. This has resulted in opportunities for improvement being identified around the potential to develop a freight exchange to match backhaul and reduce transport costs.<sup>42</sup>

Performance management also appears to be seasonal, with assessment of agricultural value chains to look at seasonal demand patterns, perhaps something to be considered with regards to the timber industry in the Baltic region. There also appears to be some indication that the Infrastructure Manager may be seeking to support the development of plantation forestry as an export sub-sector in order to drive further traffic on the network.

#### 1.1.8.5. Case Study Five: Øresund and Fehmarn

##### Background

The Øresund Bridge is a combined railway (twin track electrified with a speed design of 200 km/h for passenger trains and 120 km/h for freight trains) and motorway bridge across the Øresund strait between Sweden and Denmark. The bridge runs nearly 8 kilometres from the Swedish coast to the artificial island Peberholm in the middle of the strait.

The crossing is completed by the 4-kilometre (2.5 mi) Drogden Tunnel from Peberholm to the Danish island of Amager. The Øresund Bridge is the longest combined road and rail bridge in Europe and connects two major metropolitan areas: Copenhagen, the Danish capital city, and the Swedish city of Malmö. It connects the road and rail networks of the Scandinavian Peninsula with those of Central and Western Europe.

The Øresund link has almost as long a gestation as the Channel Tunnel. From the date on which the Swedish and Danish governments agreed to build a fixed Øresund link in 1973, there were 27 years before the final link came into operation in 2000. It has promoted itself as being privately funded, but in fact the funding came from equity participation in the companies investing in the joint venture and from state and EU guarantees of the loans that provided most of the financing.

Just as in the case of the Channel Tunnel, there was some hesitation on the part of one of the stakeholders (in this case the Swedish government) before progress could be resumed. But once construction started in 1995, the whole project was completed in only 5 years.

##### Financing

The financing for the project was based upon defined access fees for crossing the link, with rail companies each paying DKK 150 million/year for the use of the link (1991 prices), with the charging

<sup>42</sup> SPEED+. *Nacala Corridor and Port Performance Assessment*.

of fees for the construction justified on the basis of the advantage provided to public transport from the scheme.

Øresundsbro Konsortiet's parent companies (in the consortium) are the Danish A/S Øresund and the Swedish Svensk-Danska Broförbindelsen, SVEDAB AB. The two companies have built and financed the hinterland infrastructure in Denmark and Sweden.

As the graphic (location) shows, this means that the Øresund link is itself jointly owned by state-owned companies. It obtained its initial funding from DKK 50m in equity funding for the two parent companies and then debt funding by each of the parent companies and the consortium company, which came partly from national and international financial markets and partly from the Swedish National Debt Office and Denmark's national bank.

Unlike the Channel Tunnel, the Øresund link consists of both road and rail links, so road traffic grew far more quickly after completion. While rail passenger capacity is now more or less fully utilised, it was still 36% below forecast 5 years after the link came into operation.

It appears that the rail capacity may have been over-estimated, though the introduction of double-deck rolling stock could increase the seat capacity by up to 50%, alleviating passenger congestion.

Freight, on the other hand, is 24% above forecast (Freight transport was initially estimated to be 10-11 million tons/year of which 50% will be on rail), economic activity has increased substantially in the whole region and as a result, the whole project is seen widely in both countries as a great success. The political support given to the link by both governments has brought satisfaction and the consortium has ensured that all its stakeholders have gained benefits from the link.

Within the restrictions of the initial fee agreement, the consortium is run as if it were a private company, with train fares and toll charges that are much higher than in the rest of either rail or road network, so that despite the state involvement, its policy is a prudent commercial approach, the same as the Channel Tunnel and both the Guanzhou-Hong Kong links.

### Governance

The Øresund link is a combined road and rail connection, governed by a regulatory framework comprised of two laws, one Swedish and the other Danish as well as an overarching political agreement. The laws in both countries fundamentally mirror each other; with regards to this study, we have reviewed the Danish implementation of the same.

The basis for the law was the political agreement between Denmark and Sweden on the 23rd of March 1991 concerning a fixed link across Øresund which defined the link as a road and a rail connection, plus necessary land works on the Danish side.

To deliver and manage the link, holding companies were established by both Denmark and Sweden with a view to establishing a consortium to establish the fixed link. The consortium was authorized to take the necessary loans with a state guarantee, these being aligned with the construction costs totalling DKK 16.9 billion for the whole link. A common board with 50/50 representation from Denmark and Sweden was established for the consortium, with an independent CEO and any disagreements to be resolved through arbitration.

The question of whether the link and its governance fulfils the requirements of the EU's 4th Railway Package is more nuanced than in the case of the Channel Tunnel. The consortium does not itself operate any rail services and from the Swedish side there appears no conflict of interest: Transdev took over the longer distance train operation from SJ and regional traffic from Skåne County is served by Pågatågen, operated by Arriva, while DB Cargo operates the freight services. In their review of this document, ProRail also noted at this point that Trafikverket are a multimodal infrastructure manager,

But from the Danish side, there have been difficulties in ensuring the full independence of the passenger train operation: DSBFirst Denmark, a 75:25 joint venture with First Group, took over in 2009, but First Group's participation only lasted two years. DSB attempted to keep some separation by operating through their subsidiary DSB Øresund until 2015, when it took over all of its services.

Since DSB is the state operator, there is therefore bound to be a perceived or actual conflict of interest in allocating train paths.

### Network Access

Terms of access and the conditions of contract are described in the national network statements e.g. the Danish Network Statement.

### Roles & Responsibilities

When it comes to functional description of superior coordination responsibility Øresundsbron (the infrastructure manager) discharges its responsibilities as follows:-

- a. Banedanmark takes every task related to the line (on land) from Copenhagen Central to Copenhagen (Kastrup) Airport.
- b. Trafikverket takes care of all tasks related to the Swedish landside, that is from Malmö Central to Lernacken.
- c. Coast to coast is the Øresundsbron Consortium.
- d. Coordination Copenhagen to Malmö is: Traffic control – Banedanmark
- e. Rail supervision – Trafikverket
- f. Capacity – Banedanmark
- g. Administration of traffic agreements – Banedanmark,
- h. Rail fees – Banedanmark and administrative user fees – Øresundsbron.

The principle is, that the Øresundsbron (the consortium) holds primary responsibility, but that tasks can be authorized or delegated to Banedanmark and Trafikverket.

### Performance

Capacity on the rail connection (coast to coast) was estimated to be 2 IC3 trains, 2 snabbtåg and 2-4 regional trains in each direction + 2 freight trains (length up to 750 meters) in each direction. However, the popularity of the railway and the lack of train sets almost every day since 2009 has led to crowding on the line.

### Implications For Rail Baltica

The Øresund link, while less complex than Rail Baltica, demonstrates that where two high performing (national) infrastructure managers exist, it is entirely feasible for an effective model to exist where there is a lean, centralised infrastructure manager that discharges the majority of its responsibilities through third parties.

### Implications For Fehmarn

When Denmark and Sweden signed the governmental agreement in 1991 concerning the establishment of the fixed link across Oresund on 23 March 1991, Denmark declared itself ready to work for the establishment of a fixed link across Fehmarn Belt on the condition it was positive with regard to the economy and environment.

The law proposal concerning Fehmarn Belt was based on a treaty between the Kingdom of Denmark and the Federal republic of Germany of 3rd September 2008. The Danish law proposal was put before the Danish Parliament on 25th February 2015 and finally adopted on 28th April 2015.

The fixed link across Fehmarn Belt consists of an immersed tunnel between Puttgarten in Germany and Rødbyhavn in Denmark and is comprised of a double track electrified railway and a four lane motorway. The immersed tunnel has a length of 17,6 km. Land work on the Danish side was 5 km long and on the German side 3,5 km long – close working relationships to establish this were obviously required.

Using ETCS level 2 signalling, the line has a design speed from Copenhagen to Puttgarten of 200 km/h for passenger trains and 140km/h for freight trains.

Contrary to the fixed link across Øresund , where the loan guarantee and risk was spread 50%/50% between Denmark and Sweden, the state guarantee and the risk on Fehmarn Belt was taken completely by Denmark (100%).

The socio economic effect of the Fehmarn Belt fixed link was predicted to reflect a general internal rate of +5%, whereas for Denmark the internal rate of the investment was +5,4%. The positive results being due to large savings in travel time after the link was established. The project was also seen to have a highly positive environmental impact, partly due to a 160km reduction in journey length for freight trains, which today drive over the Great Belt fixed link.

#### 1.1.8.6. Case Study Six: Dublin to Belfast

The Belfast–Dublin line is a main international railway route in Ireland that connects Dublin Connolly station in the Republic of Ireland and Belfast Central station in Northern Ireland. It is operated by Iarnród Éireann and Translink.

Irish Rail (Iarnród Éireann) is the Irish national rail company and the network Infrastructure Manager. It operates more than 2700km of broad gauge tracks (Irish gauge is 1600mm).

Signalling on the route is controlled using the Centralised Traffic Control system located at Dublin Connolly station.

As in the case of the Guangzhou-Kowloon Intercity railway, the Dublin-Belfast one is by no means new and it is difficult to pinpoint any precise transformative investment that can be assessed for its impact, other than the purchase of the new Enterprise rolling stock and formal public launch of the service in 1997, its mid-life refurbishment in 2014, or the track investment with continuously welded track, enabling speeds of 145 km per hour on the whole Irish Rail portion of the route and many of those in Northern Ireland.

But it has not been possible to obtain figures either for the cost of these improvements or of the impact that such improvements have had on passenger numbers. The figures that we do have for passenger numbers indicate that they dropped by 22% over the 10 years to 2012. Improvements in road quality and the downturn in the Irish Republic's economy are some of the factors causing this reduction in patronage.

Intercity rail travel dropped 20% in the Irish Republic overall over the period, while rail travel rose in Northern Ireland on all other routes. As in the case of Hong Kong, the railways in Ireland, both north and south of the border, are essentially integrated, with no independent infrastructure manager, though Irish Rail have now re-structured to provide rather more transparency of the profitability and processes of the different functions such as infrastructure and train operations.

In neither country is there any independent train operator, nor is there any question of operators from other countries requesting train paths from the incumbent railway company. The responsibilities of train operators, freight and passenger and those railways' infrastructure divisions, end in the case of the Dublin-Belfast route at the border with the other country, the other railway taking over at the border in the same way. The same applies to the safety regulators – again they hand over responsibility at the border. Only the joint unit operating the Enterprise service functions on both sides of the border. Ireland has the third lowest train km per route km and second lowest per head of population in Europe, ahead only of Greece.

The Enterprise service, as it is called, runs only 8 trains a day in each direction between Dublin and Belfast. Overall, Irish Rail generally runs infrequent trains, which are fuller than anywhere else other than in Switzerland and Spain. It also has the second lowest freight tonne-km and virtually no cross-border rail freight at all. But – partly because of the rural nature of most of its network – it is among the safest railways in Europe. A key lesson for Rail Baltica of the Dublin-Belfast route is largely that a very infrequent service is not sufficient to create enough demand for rail travel. As a result, the modal share of rail in Ireland is only 3%, compared with 7.5% in England and 8% in Sweden.

The underlying factors that are driving this are hinted at in a 2011 study by Aecom, the 'Dublin-Belfast 2030 Rail Network Strategy Review Final Report', which says that "*The Dublin to Belfast corridor*

*carries a relatively high level of passenger demand, although much of this is accounted for by outer-commuting services to Drogheda and Dundalk. InterCity services perform extremely poorly in relation to the route's population catchment and trip length. The low level of business travel on this corridor is particularly notable.*"<sup>43</sup>, identifying that "A key issue on that route is the presence of significant speed restrictions north of the border."<sup>44</sup>

There is a clear lesson to be learned here, that without coordination or drivers to ensure that all elements of a route are successfully maintained, by differing infrastructure managers, the overall commercial viability of a route can be compromised as different performance on the route (caused by different treatments of the asset), will impact the potential revenues gained by those parties who do maintain their assets to the required standards.

## **Governance - Rail Market and Economic Regulation**

The Department of Transport, Tourism and Sport is responsible for policy and legislation for the economic regulation of railways in Ireland and ensures compliance with EU requirements.

Ireland recognises that "*In order to ensure a robust regulatory regime for the railway market in Ireland, the EU requires compliance with rules concerning the establishment of a single railway area, and market access. In particular, rules have been developed to open the markets for domestic and international rail freight and international rail passenger services. The 4th Railway Package which is currently under negotiation, contains further proposals for the opening of domestic markets.*"<sup>45</sup> and has recently decided not to continue with its previous derogations from EU legislation.

## **Customer Experience**

While the Infrastructure Management may be conducted by two different entities, the interaction between the Railway Undertakings is relevant for Rail Baltica in that there is a common 'Enterprise Passenger's Charter'<sup>46</sup> across both countries. Cross Border customers can claim compensation under the terms of the charter or under the Passenger Rights Regulations of the European Parliament relating to International rail customers.

The performance of the RU is independently monitored every 6 months, with the results being published and the charter is signed by the Group Chief Executive of Translink (IM and RU) and the Group Chief Executive of Iarnród Éireann (RU).

The charter confirms that 99.5% of all trains will run as planned, with 90% of trains on time (<10 mins late). Timetable changes are notified to the public at least four weeks before the new timetable comes into effect, showing a degree of coordination between the IMs. Similarly, with regards to engineering work, at least 28 days' notice of possible delays and any diversions are provided. Memo : ProRail, in their review of this document, noted that this definition is not common across Europe.

Common Compensation Arrangements are in place, with a length of Delay Discount value voucher scheme being in place, but despite this, passenger treatment remains national, with no Single Point of Contact (national call centres even operate different opening times).

The network (other than from a safety perspective) is not seen as a success "*...the cross border rail service over the last decade has performed worse than any other major mainline in the UK or Ireland. The combined effect of the massive improvements in the road serving the corridor and the deterioration in the speed of the cross border rail services to Northern Ireland during the last decade has made rail largely uncompetitive.*"<sup>47</sup> – this despite local services growing on the route.

<sup>43</sup> AECOM. 2030 Rail Network Strategy Review.

<sup>44</sup> AECOM. 2030 Rail Network Strategy Review.

<sup>45</sup> <http://www.dttas.ie/public-transport/english/railway-regulation-and-safety>

<sup>46</sup> Translink. *Passenger Charter*.

<sup>47</sup> Irish Rail. *Briefing Note on the IE Timetable Consultation to the Committee for Regional Development*.

## The 4th Railway Package

Both Northern Ireland and Irish Rail have until recently enjoyed derogation in relation to facing possible competition to provide cross border services (due to the scale of the market and its physical separation from mainland Europe) although the Irish Government has indicated that it would encourage private companies to run services on the route - given the poor infrastructure performance, this will likely prove challenging.

Other steps have however recently been taken to move towards the principles of the 4th Railway package, with a separate body now set up to deal with capacity allocation and access charges.

## Challenges in Investment

The report 'Proposed Modified Timetable for the Belfast – Dublin Enterprise Service' published by Iarnród Éireann in November 2015 highlights major concerns with regards to the potential impact of poor infrastructure management and investment on the route, reflecting that in 2011 over GBP600m needed to be spent over 20 years to maintain the network to a high standard and facilitate growth in passenger numbers. It identified that *'Failure to implement this 'maintenance package' will result in further temporary speed and service restrictions as the condition of the network, vehicles, facilities and systems deteriorates.'* and that there were a 'plethora of temporary speed restrictions... on... Belfast to the border... introduced more than 10 years ago'<sup>48</sup>

The performance of the Dublin-Belfast corridor therefore demonstrates clearly the risks that will be presented to Rail Baltica if there is a disconnect either in national treatment of maintenance or simply an ability to invest in the network by the national infrastructure owners - some element of centralised management of this risk area seems essential.

### 1.1.8.7. Case Study Seven: Turin-Lyon high-speed railway

The Turin-Lyon high-speed railway is a proposed 270km railway line connecting the two cities via a 57km base tunnel under Mont Cenis. Part of the TEN-T rail network (Corridor 6), the line will carry freight and passenger trains at speeds of up to 220km/h, shortening journey times between Paris and Milan to around 4 hours from nearly 7 hours currently, as well as providing capacity for up to 180 freight trains per day.

In January 1996, the Franco-Italian Inter-Governmental Commission (IGC) was established to undertake preliminary work for the delivery of the Montmélian – Turin section. The IGC is made up of French and Italian members representing the two countries' various ministries, and is chaired alternately by France and Italy. It has set up several working groups to assist it with the decisions it proposes to the two governments on technical issues relating to public security during construction, management, and operation of the works. Protests by environmentalists and those sceptical of the project's economic feasibility beset the first twenty years of planning, but the scheme was finally approved by the Italian and French governments in 2015, with an estimated completion date of around 2030. To date, the only significant construction progress has been a 9km reconnaissance tunnel which will eventually form part of the southern bore of the base tunnel, with construction set to begin in earnest later this year.

The new line is divided into three sections, each to be managed separately: the French section (between Lyon and Saint-Jean-de-Maurienne) under SNCF Réseau management; the Italian section (between Turin and the Susa Valley) to be built by RFI, the Italian state infrastructure owner; and the international section (including the Mont Cenis base tunnel), managed by TELT, a joint venture between RFI and SNCF. The line will connect to the existing regional networks at both sides. Upon completion, TELT will be responsible for the operation and maintenance of the cross-border section of the railway, as well as being responsible for the maintenance and management of the historic Mont Cenis tunnel<sup>49</sup>.

<sup>48</sup> Irish Rail. *Briefing Note on the IE Timetable Consultation to the Committee for Regional Development.*

<sup>49</sup> The Transalpine. *Financing.* (Website).

TELT will also construct railway facilities associated with the operation of the international section – however, whether this includes traffic management is unclear, as precise agreements to undertake ancillary works necessary for railway operations are to form part of later intergovernmental agreements<sup>50 51</sup>. The European Union will provide 40% of the funding required for the construction of the international section (estimated to be €8.6billion<sup>52</sup>), with Italy providing 35% and France 25%. If revenues exceed this cost, any surplus will be divided equally between France and Italy<sup>53</sup>.

An inter-governmental agreement in October 2009 commits the French and Italian governments to the establishment of a Franco-Italian piggyback service using the Mont-Cenis base tunnel, similar in nature to the Channel Tunnel's 'Shuttle' service. This service is to be allocated line capacity by common agreement of the Infrastructure Managers involved in the Mont-Cenis capacity allocation, and the governments are to ensure that the necessary facilities (terminals, in particular) are available to run the service<sup>54</sup>.

We have requested an interview with the Turin-Lyon railway company but have not yet had a response.

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<sup>50</sup> FS News. *TELT: Engagement De La Phase Operationnelle Du Lyon-Turin*.

<sup>51</sup> Accord entre le Gouvernement de la République italienne et le Gouvernement de la République française pour la réalisation et l'exploitation d'une nouvelle ligne ferroviaire Lyon-Turin, 30.01.2012 (revised 24.02.2015)

<sup>52</sup> TELT-SAS. *The Turin-Lyon Link: A Great European Project*. (Website)

<sup>53</sup> *Agreement between the Government of the French Republic and the Government of the Italian Republic for the final work of the cross-border section of the new Lyon-Turin railway line*

<sup>54</sup> *Accord entre le Gouvernement de la République française et le Gouvernement de la République italienne relatif à la mise en place d'un service de ferroutage entre la France et l'Italie*

### 1.1.9. Benchmarking: Common themes Emerging

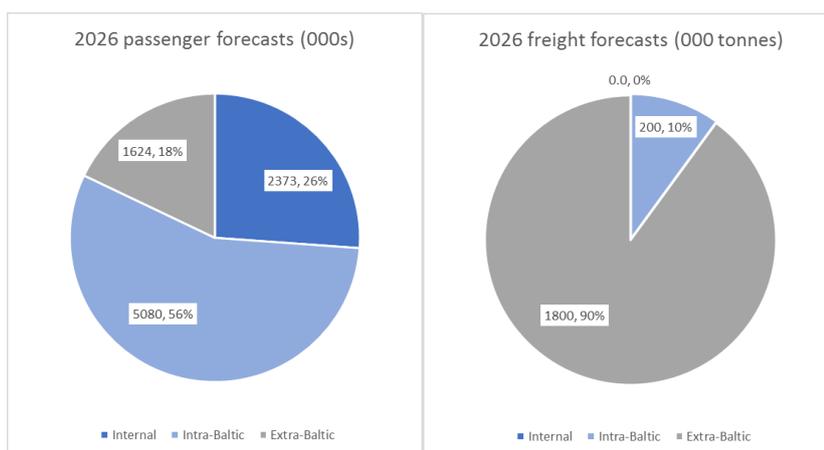
Passenger numbers tend to be considerably lower than forecasted and construction costs generally higher than budget, varying from 30% to 80% or more, though the implications of this to the infrastructure manager in an environment where the majority of railways remain heavily subsidised remains debatable, in that lower passenger numbers are likely to result in lower wear to the infrastructure, while a higher out turned cost does not necessarily result in higher long-term maintenance costs.

These elements would therefore not *necessarily* require an adjustment in the way that an infrastructure management company was established, though it does raise the possibility that greater potential for open access operators could exist versus initial plans in the majority of cases of new build and that the Infrastructure Manager should have the capacity, capability and culture to deliver the same.

It does however emphasise the importance of establishing a model which enables the successful operation of the train plan for Rail Baltica and that the end model must have sufficient flexibility to adjust to the changes which will inevitably occur.

With 26% of forecast traffic flows from internal (national) usage of the Rail Baltica route, the importance of a model which balances national network development needs with intra-Baltic and extra-Baltic travel is manifest, even if this cannot be at the expense of the overall project.

**Figure 1-10 - 2026 forecasts for passenger and freight traffic**



The obverse of this element of our research is that rail freight appears to exceed forecasts if there is a powerful enough influence from a freight operator in the running of the railway, meaning that the long term success of the railway itself may be tied to how well the Infrastructure Management company can foster, develop and facilitate freight usage (ProRail noting on this point that this is one of many factors in success). We therefore believe that in designing the Infrastructure Management organisation for Rail Baltica, it is essential that the freight operators have a clear voice to ensure that the business case has the best chance of success.

Unlocking this should be viewed as key to Rail Baltica and local knowledge is likely to be key in this development, given that freight pricing will likely be heavily influenced by road pricing in order to avoid market distortion, maximising utilisation will likely stem – in a world where multiple products will be carried across varying journey legs – and this will need effective operational relationships with customers.

This localisation also appears to provide benefit in that while all railways normally take a long time to prove themselves and borrowings tend not to be paid off for several decades, the greater involvement of local investors, the greater the chance of long-term success.

For all these elements however, it is important to note that while we can see a correlation between performance, this does not imply direct causation – these are complicated assessments and as such we have used these to help inform the stakeholder consultation process so that we may put these into the specific context of Rail Baltica.

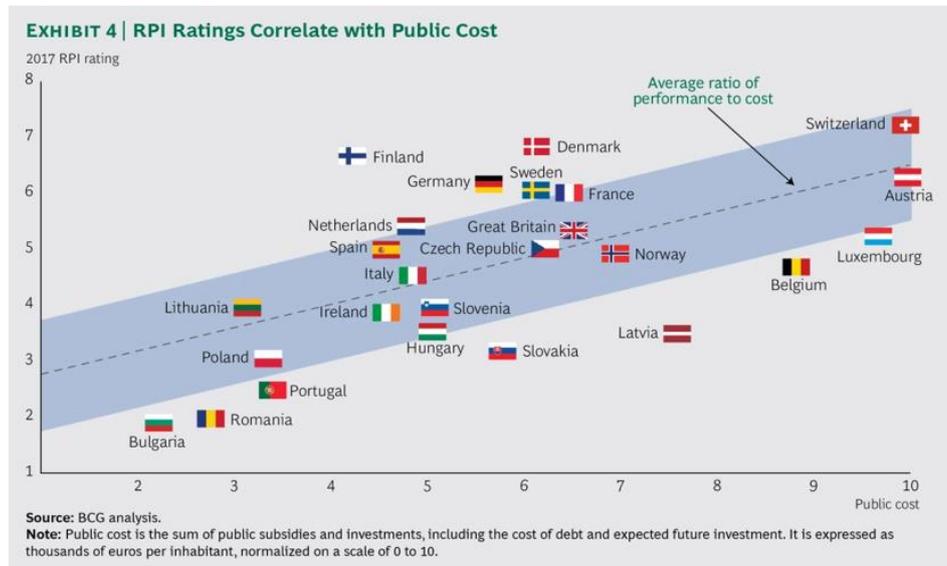
One important factor to note is that country safety regulation regimes all hand over at the border – in the case of Rail Baltica, this will be required under EU law, but it is important to note that there are no exceptions to this rule. In the case of Rail Baltica, this could present some unique challenges, given the need to develop in country competencies (such as around ERTMS) in order to ensure effective regulation as the scheme includes technologies which are not presently deployed in the three states.

### Other Relevant Research

While we have identified many areas of interest for Rail Baltica from our benchmarking activity, it has proven impossible to gather data in a way that gives us the confidence to inform Rail Baltica that a single type (or types) of infrastructure manager will result in a high performing business. This is not altogether unsurprising.

Work previously conducted by the Boston Consulting Group in 2017, using robust UIC datasets has indicated that the performance of an Infrastructure Manager is to a large degree disconnected from the structure and shape of the entity.

**Figure 1-11 - 2017 RPI Ratings Correlate with Public Cost<sup>55</sup>**



They “...again found that a railway system’s overall performance typically correlates with the level of public cost, which we define as the sum of public subsidies and investments in the system [this] ...correlation strengthens over time: the more a country increases investments in its railway system, the greater the improvement in the system’s performance. We also again found that the value derived from public cost rises or falls along with the percentage of public subsidies allocated to infrastructure managers. The study found only weak correlations between performance and the degree of liberalization or the choice of governance mode<sup>56</sup>.”

For the Rail Baltica route to be a success, the Boston Consulting Group work would appear to indicate that the need to protect the correct levels of investment on maintenance on the route will be key to ensuring high levels of performance, otherwise the risk of which would be that network performance would be jeopardised if brought down to levels which appear to be insufficient to maintain a high performing network. From our benchmarking, we have therefore identified the following core findings:-

<sup>55</sup> Boston Consulting Group. *The 2017 European Railway Performance Index*. (Article).  
<sup>56</sup>tro

## Core Findings

Our three core findings from our benchmarking review are as follows:-

- a. Ensuring that the needs of the users of the service, particularly freight are key to success.
- b. The needs of the route with regards to maintenance should be protected.
- c. Some elements of central control appear to be of benefit in optimising the route.

### 1.1.10. Review of Previous Literature

Stage Two: Structured Research

As part of our tender commitments, Atkins proposed to build on the identified source documents listed in Section 3 'Source Information to be considered', by applying a further layer of research in order to help inform the Multi Criteria Analysis.

The aim of this was to identify not just the right mix of services that must be supported, but also how effectively each proposed infrastructure management organisation delivers the same.

While we have garnered comparative data from sources such as published company reports, our benchmarking has made it clear that while it is possible to map the functions performed by each of the organisations, taking structural information, financials and activity data from information such as Company Reports, establishing anything other than high level Critical To Quality metrics from 3rd party source material is challenging.

We have identified three key data sources that we propose to use as the basis of our comparison work. These are:-

- a. Rail Market Monitoring Service Datasets<sup>57</sup>
- b. Rail Net Europe User Satisfaction Survey (Freight)<sup>58</sup>
- c. UIC (International Union of Railways) Datasets<sup>59</sup>

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<sup>57</sup> European Commission. *Rail Market Monitoring*. (Website).

<sup>58</sup> Rail Network Europe. *RFC User Satisfaction Survey*. (Website).

<sup>59</sup> International Union of Railways. *RAIL Information System and Analyses UIC Statistics*. (Datasets)

## Rail Baltica Documentation Library – Literature Review

A literature review has been conducted to review previous studies, academic research and documents to understand the role of infrastructure management companies and railway operations, especially where cross border operations have been in place.

### Rail Baltica Previous Documents and Presentations

#### Rail Baltica Global Forum Day 1

##### Rail Baltica – a New Economic Corridor

Ms Baiba Rubesa, CEO and Chairperson of Management Board for RB Rail AS presented Rail Baltica as a new economic corridor. This corridor will bring the added benefits of:

- **New economic corridor:** Regional Integration, synergies of North-South and West-East Freight Flows, catalytic effects, secondary economic benefits, new supply chains and a Baltic-Adriatic corridor
- **New opportunities for multimodal freight logistics development:** Division of labour, intermodal and multimodal logistics and diversified Baltic freight industries.
- **New Platform for digitalisation and innovation:** Smart Data, Internet of trains, intelligent transport systems, next generation communication network and smart energy.

All of the above should be taken in to account for the chosen infrastructure manager. Intelligent transport systems and providing a platform for digitalisation and innovation will be vital for the chosen Infrastructure Management Model.

##### Transport infrastructure and accessibility: how to foster the impacts on economic development

The presentation heightened the cooperation between public authorities and private firms, through the following case studies:

- Société du Grand Paris: working groups gathering the major actors of urban development around each station
- Seine Nord Escaut: road shows for attracting private firms along the waterway, and fostering intermodal platforms
- Japan Railways: the station operators act as developers around the stations

All of the above examples highlight the cooperation needed between stakeholders of Rail Baltica, this integration is vital to the success.

##### Finnish Business Opportunities with Rail Baltica

A survey was conducted in Finland to understand business opportunities that Rail Baltica could bring. The importance of competitive ability of the new route was one theme highlighted. Companies have performance KPI's but the cost level of transport is the main decisive factor.

The long distances in intermodal transport are long, the need for better interoperability was mentioned. Many of the interviewed companies had experiences of intermodal transports in Central Europe and they had faced some difficulties in this respect.

Where intermodal transport is planned for Rail Baltica, careful thought must be given as previous companies have experienced difficulties with this aspect of the railway.

##### Baltic Business Opportunities with Rail Baltica

- Main business areas are stated as construction & maintenance, rolling stock maintenance and logistics.

### Benefits of High Speed Rail in France

The presentation discussed the benefits high speed rail brought to France. It discussed that the market reacts very quickly depending on: journey time, fare policy and economic environment. It was stated that a key point for economic assessment in high speed project is consistency between: traffic forecast and the operating programme.

### Rail Baltica Urban Impacts: Improved City Planning in a Connected Region

There is a need for cross border cooperation and collaboration between cities with ongoing exchange of knowledge and experience, of which the chosen Infrastructure Management Model will need to implement this.

### High Speed Rail Infrastructure as a Platform for Digitalization and Innovation. Recommendations for Rail Baltica.

UNIFE currently represent European rail supply industry (90 member companies). The rail industry faces huge challenges with competitive modes of transport, new business models and changes in citizens needs, whilst digital trends offer opportunities as well as challenges for the railway industry.

The existing digital technologies that improve performance are: Signalling solutions, energy management solutions (high political priority), digital based maintenance, cyber security/physical security, communication solutions and internet/apps. The existing digital technologies improving the end customers satisfaction: Infotainment (entertainment/ internet on board), real time passenger information, seamless access, e-ticketing, digital tracking.

- Roll2Rail objectives include: increasing availability, operational reliability and therefore punctuality of the vehicles and reducing the life cycle costs of the vehicle and the track

## Rail Baltica Global Forum Day 2

### Rail Baltica – Project of the century

#### Main Coordinator:

- RB Rail AS

#### Beneficiaries:

- Estonia's Ministry of Economic Affairs and Communications
- Latvia's Ministry of Transport
- Lithuania's Ministry of Transport and Communications

#### Implementing Bodies:

- Rail Baltic Estonia OU
- Estonian Technical Regulatory Authority
- Eiropas Dzelzcela Linijas SIA
- Rail Baltica statyba UAB
- Lietuvos gelezinkeliai JSC

### Rail Baltica Procurement Organisation and Regulation

#### RB Rail Procurement:

- Studies
- Design
- Common Standards
- Business Development
- Marketing and Branding

### Consolidated procurement

- Sub-systems (CCS & ENE)
- Raw Materials and Key Components
- Cross-border track Sections

### Supervised national procurement:

- Track construction
- Major engineering structures
- Local facilities

### Dr G Troche: Managing Infrastructure for cross-border rail freight

- GYSEV ZrT (Hungary 439km, Austria 70km)
- Passenger trains 422/day
- Freight trains 56/day
- East-West (central Europe to south-eastern Europe/turkey)
- North-south (port-hinterland traffic Koper to central Hungary-Slovakia)
- Important traffic functions of GYSEV's rail network: important route for east-west and north-south, traffic to/from Sopron intermodal terminal and freight yard, diversionary route in case of disruptions on other corridors – improving resilience of the European rail network, “flat route” east of the Alps
- Ownership (65.6% Hungary, 28.2% Austria, 6.1% Straburg) – Historical, Straburg are private (huge construction company)
- Attractive infrastructure for efficient freight (Hard Factors: good infrastructure standard, efficient access points to infrastructure. Soft Factors: smooth administrative processes, operational rules and good customer communication)
- Customers use more than one network, therefore cooperation is crucial
- Standard and quality of our infrastructure influences the competitiveness of our customers – Key minimum target standards for rail infrastructure include: Electrification, Axle-load 22,5t, train length 740m, ERTMS (GSM-R + ETCS), Line Speed 100km/h and intermodal loading gauge: P/C 400)
- Rail network standard should be in line with – or exceed – the standard of neighbouring networks (avoid bottlenecks in infrastructure standard)
- Investment cycles for infrastructure are long – therefore always consider beyond legal minimum requirements when planning works
- Active member in the EU Rail Freight Corridor (No. 7, 9 and 11) – majority of GYSEV network is included in one or several RFCs – active role in management etc of these RFCs
- Benefits for customers: provision of dedicated capacity for international freight, corridor-one stop shops for allocation of capacity to cross-border freight, joint for a with customers to discuss cross-border issues with all IMs along a corridor, joint activities of IM to facilitate cross border traffic (language issues, operational rules etc)
- Incentives to use corridors: some discounts on train access charges

## Rail Baltica Documentation Library

### AECOM Rail Baltica Final Report

The operational framework for Rail Baltica aims to utilise the infrastructure asset to the maximum extent possible. This not only utilizes the assets but lowers operating costs.

- 1) *The timetable has been based on a 24 hour day operating on six days of the week.*
- 2) *The track will need to be inspected roughly once a week.*
- 3) *Sundays have been identified for a limited service to enable planned maintenance or reactive maintenance should inspection and testing require it.*
- 4) *Facing and trailing crossovers will be situated along the track to facilitate single line working*
- 5) *Maintenance can be carried out on a single line at a time (this will not apply to crossover areas where all lines will need to be blocked to undertake works.*
- 6) *Periodic blocks of a longer period (18-27 hours) will be available but not on a planned weekly basis*
- 7) *Time difference between Warsaw and Baltic States not taken into consideration duration are critical factors in determining service provisions. Exact and time zones need to be clarified at final design stages and integration with local arrivals and departures.*

The assumptions provided above enable the passenger and freight traffic to meet the market demand and in a cost effective manner.

### 1.1.11. Other Academic Research

#### Analysis of the possibilities of building the railway Rail Baltica in Lithuania

The journal investigates the objectives and possibilities of the Rail Baltica line through the Lithuanian territory. The introduction of the line will enable a fast railway across the Baltic states with integration to the European transport network. This not only brings economic development but also social development in the Baltic region. The creation of new jobs in areas of stations and logistic centres, such as Vilnius and Kaunas.

#### Developing benchmarking methodologies for railway infrastructure management companies

The article discusses the changes in rail result from the European Commission as well as highlighting the importance and value of rail infrastructure companies (InfraCos) undertaking benchmarking.

The changes from the European Commission has led to the separation of a number of essential functions, including: licensing, allocation and charging.

The primary reason that Infraco's undertaking benchmarking is to understand the best practices to ensure performance improvement is achieved. Not only is it undertaking for performance measures but also the following may be the reason for benchmarking:

- Enabling easier explanation to stakeholders
- Justifying financial commitments
- Better understanding of future costs and revenues
- Monitoring and evaluating contractual performance

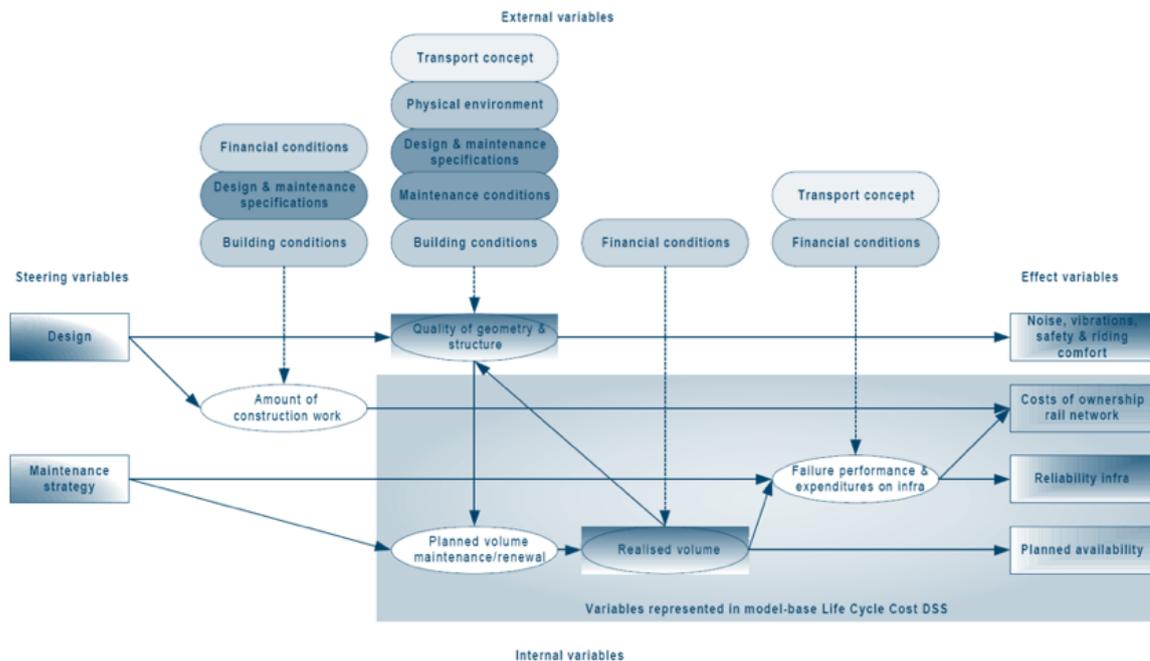
#### Life cycle cost analysis for managing rail infrastructure

Since 2000 the way railway infrastructure is managed in Europe has changed. This is mainly due to the restructuring of railways and governments increasing demands on the performance of such operations. A number of factors are becoming increasingly strict, namely: budget, reliability and

operation conditions. As a development from such demands and changes IMs have increasingly started to use computer-based tools for quantitative analysis such as Life Cycle Cost Modelling. This combines a number of management areas such as construction and maintenance.

The below presents a conceptual model on the factors influencing the performance of rail infrastructure. Such performance is defined by reliability, availability cost of ownership, noise, vibrations, safety and riding comfort. Feasible design and maintenance strategies are constrained by maximum speed, minimum headway etc. Factors such as the physical design directly affect the cost of ownership and volume of construction work.

**Figure 1-12 - Factors influencing the performance of rail infrastructure**



Moreover, the paper uses the High-Speed Line South, which is the Dutch section of the line from Amsterdam to Brussels, Paris and London. The Infrastructure Provider (IP) is obligated to Design, Build, Finance and Maintain (DBFM) the rail line. The IP is penalised for poor performance especially in train delays and cancellations. ProRail note here in their review of this document that that the Dutch HSL is an outlier in the network: it is the only part that has not been built by the current IM (ProRail) or its predecessor nor is it maintained directly by ProRail.

The importance of life Cycle Cost Modelling is highlighted in this journal, with explanation of the multiple factors affecting the costs and performance of a rail line. The application of the costing to the Dutch high-speed rail line has highlighted how different designs and maintenance strategies can affect both cost and performance. It is noted that key stakeholders should be involved in the life cycle costing at an early stage to improve the positive effects of life cycle cost modelling.

## Managing Multinational Infrastructure: An Analysis of EU Institutional Structures and Best Practice

The article explores cross border infrastructure and explains this through two main arguments:

- 1) For any cross-border infrastructure project to be successful there needs to be 'multilateral initiatives' or 'tri-partite' relationships. These would be the coordinators, state-owner companies alongside development banks as co-owners.
- 2) The paper argues that the management of transnational infrastructure is not supra-national and in fact financing is often complementing national budgets and private funding.

Policy created for transnational infrastructure originated with the 'Delors II package' in 1994-1999 budget period. Such package was created to address the fears of regional divergence from the creation of the single market. It created cohesion funds for cross-border transport corridors and infrastructure in countries where GDP per capita was below 90% of the EU average.

### Cost burden sharing

Cross-border infrastructure projects have uneven impacts on countries funding such projects. The EU therefore plays the role of the 'facilitator', which ensures 'intermodality'. The article provides a mini case study for Thalys International (the Railway Undertaking), a multinational cross-border infrastructure project. It is cooperatively owned by French SNCF holding 62%, Belgian SNC/NMBS holding 28% and German DB holding 10%.

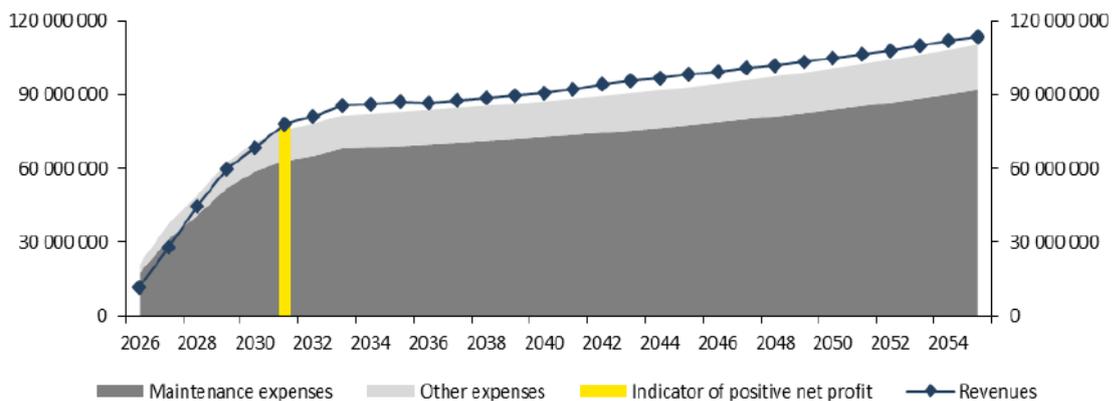
Cross-border networks depend on interoperability considerably. There are directives for EU member states to adopt in harmonisation, which focus on key requirements of: safety, reliability, environmental protection and technical compatibility. This approach does not need specific methods or technologies, the different operators can achieve the requirements through different methods as long as they meet the technical specification.

This paper draws upon the combination of multiple stakeholders working together to achieve and reach one goal of achieving safety, reliability, environmental protection and technical compatibility.

### Rail Baltica Global Project Cost-Benefit Analysis: Final Report

The Cost-Benefit Analysis report details conducts a financial analysis of the infrastructure manager of Rail Baltica. The below has been based on infrastructure access charge revenue of which is based from passenger and freight carriers.

**Figure 1-13 - Infrastructure manager financial performance (EUR)**



Operating profitability will be achieved in 2028 by the Infrastructure Manager and will remain profitable from then onwards. Therefore, in the long term the Rail Baltica Infrastructure Manager is profitable in the long term. The below highlights the forecasted financial statement for the Rail Baltica Infrastructure Manager, stating revenues, maintenance costs and operating profit.

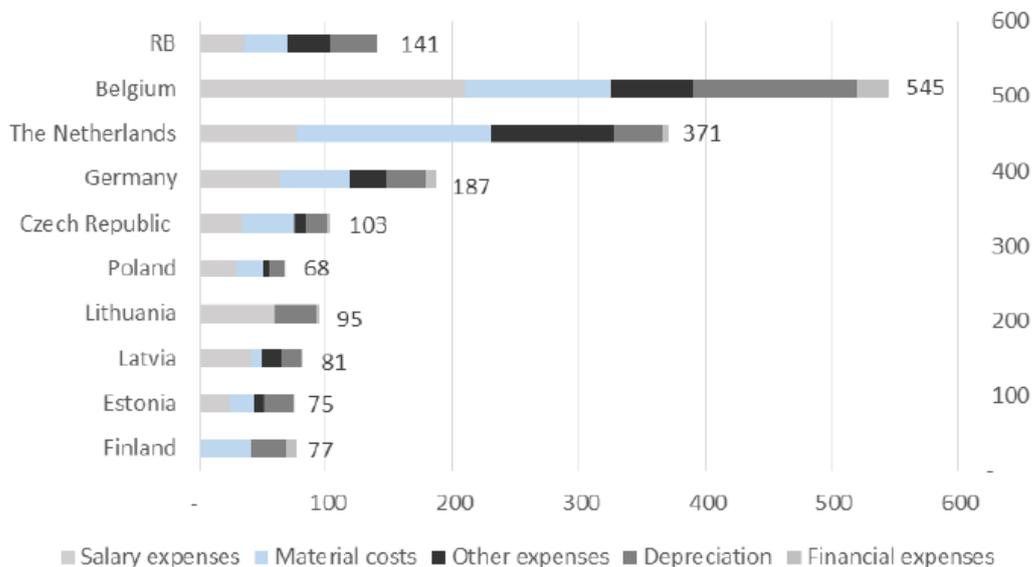
**Table 1-2 - Infrastructure manager financial statement**

M EUR	2030	2035	2040	2045	2050	2055
<b>Revenues</b>	<b>68.5</b>	<b>87.2</b>	<b>90.8</b>	<b>98.2</b>	<b>105.0</b>	<b>113.7</b>
Revenue from PAX carriers	2.9	9.5	10.2	12.5	13.1	13.6
Revenue from Freight carriers	65.7	77.6	80.6	85.7	91.8	100.1
<b>Maintenance cost</b>	<b>58.9</b>	<b>69.2</b>	<b>72.8</b>	<b>77.6</b>	<b>84.0</b>	<b>91.9</b>
Track	18.0	22.1	24.5	27.6	31.8	37.0
Interlocking & remote control	3.6	4.5	4.9	5.6	6.4	7.5
Traction	12.0	13.5	13.5	13.5	13.5	13.5
Power current Tele & IT. Buildings. etc.	5.8	7.1	7.9	8.9	10.2	11.9
Bridges/ tunnels	11.0	12.4	12.4	12.4	12.4	12.4
Terminals	1.9	2.1	2.1	2.1	2.1	2.1
Depots.yard and service centre	2.9	3.3	3.3	3.3	3.3	3.3
Stations	3.8	4.2	4.2	4.2	4.2	4.2
Other costs	<b>11.8</b>	<b>13.8</b>	<b>14.6</b>	<b>15.5</b>	<b>16.8</b>	<b>18.4</b>
<b>Operating profit</b>	<b>-2.2</b>	<b>4.1</b>	<b>3.4</b>	<b>5.1</b>	<b>4.2</b>	<b>3.4</b>

From 2031 the Rail Baltica Infrastructure Manager will achieve positive operating profit. However, due to increasing maintenance costs from 2030 to 2035 (from 69.2 to 72.8 million euros) and increasing other costs increasing by 0.8 million euros in the same time period, in 2040 negative profitability is experienced.

Figure 1-14 below conducts a benchmarking exercise across infrastructure managers for costs per km in the various countries presented including the three Baltic countries, Lithuania, Latvia and Estonia. The figure shows Lithuania spend more per km than Latvia and Estonia.

Figure 1-14 - Infrastructure manager cost benchmarking (absolute values, EUR/km)



### Trends in IM Industry – PRIME 10

The current trends in the IM industry was presented in Sopron, Hungary at PRIME 10. Currently, there is a lot of change happening with European Infrastructure Managers. Some Infrastructure Managers such as the Scandinavian and Czechs are state agencies whilst the Finnish IM is currently a state agency but being transformed into a public company. Moreover, one third of IMs have their own network whilst others manage a network which it isn't the owner of. Multiple European IMs are also heavily indebted including the Austrian, British and Swiss.

Firstly, governance trends are presented. The first trend presented is that on reinforcing national regulations. Such rise in regulators has seen a decrease in tariffs of the Italian high-speed rail line which is compensated by the increase on the international services network, Network Rail fines being defined by the Office of Rail and Road (ORR) and the regulator intervening the choice of SNCF Reseau's CEO. It is pertinent to note that regulators have a varied influence in their retrospective nations with the least advanced focussing on non-discriminatory access to the network and the advanced regulators having a key focus on economic efficiency and pricing.

Secondly European regulation has advanced and changed. This broadly comes under three categories:

- **Legal Approach:** Included opening up competition and equal treatment of both timetabling and traffic.
- **Economic Approach:** performance contract.
- **Industrial Approach:** Improvements in interoperability and safety regulation, as well as environment and freight corridors.

This again highlights the importance of safety of infrastructure and the key role it plays in meeting requirements of regulations.

The third trend presented was the strengthening of the state's supervision.

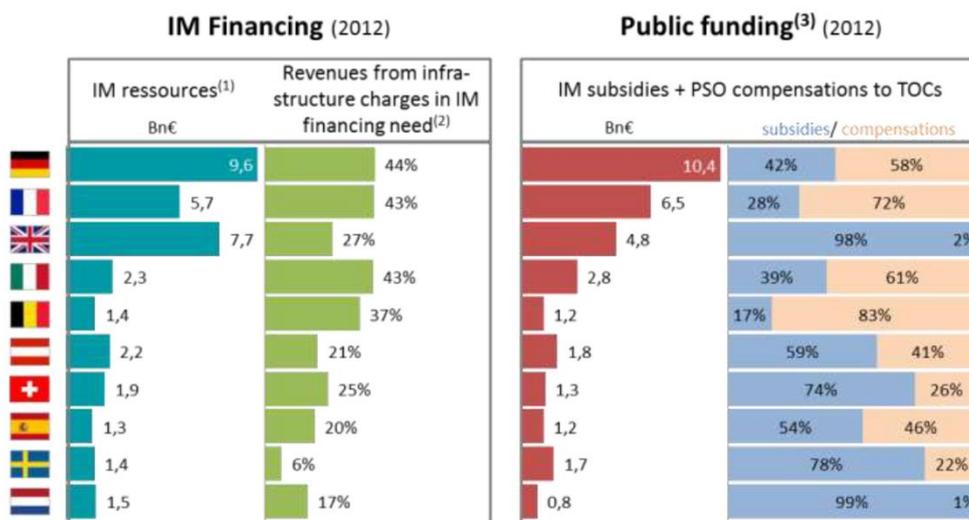
This has been in the form of several member states reinstating the Infrastructure Manager in public administrations such as the classification of Network Rail as a public sector body in 2014. When the Infrastructure Manager is a public company the influence of the state remains strong in development of enhancement and renewal strategy, though as noted by ProRail, the influence of the state does not necessarily align directly to public or private ownership.

A number of issues are highlighted as up for discussion of which could be useful to discuss in this Infrastructure Management study for Rail Baltica, including:

- Will there be a rebalancing of responsibilities between Regulatory bodies and Governments?
- Will European rail IMs remain under strict budgetary control of the States or can they opt for a path that would lead to more managerial autonomy?

Secondly, business trends were highlighted. One challenge is that of finance, with IMs having two main flows of public rail funding including subsidies to IMs and compensations to RUs. The debt of IMs in Europe is presented with the question whether it is sustainable being the main talking point. The IMs of Latvia, Lithuania and Estonia will want to ensure the company is sustainable from a debt perspective and profitable.

Figure 1-15 - Infrastructure managers financing and public funding



**Reading:** Total resources of the German IM are 9,6 Bn€, including revenues from infrastructure charges (representing 44 % of its financing need). The German rail system receives 10,4 Bn€ of public funding – 42 % are subsidies to IM and 58 % compensations to train operating companies for public service obligations.

Switzerland: CFF only. (1) Ressources : revenues from infrastructure charges + public funding + other ressources.

(2) Financing need: revenues from infrastructure charges + public funding + other ressources + debt flow (negative cash flow).

(3) Minor public funding may exist (subsidies for freight, investment subsidies to local IMs, etc.).

Sources of data: RMMS, BCG, european IMs; collected by M. Finger (EPFL, 2015), reshaped by SNCF Réseau, S. Séguret/DREG/AR, 2017.

Figure 1-16 - Debt of rail infrastructure managers in Europe (2015)



The second challenge of business is whether security could jeopardise the business model of an IM. Terrorism and cyberattacks are two security issues highlighted with the need of intelligence, protections and technologies to help combat such risks.

The business trends also discuss four ambitions:

- Ambition 1: Asset Management with renewals volume likely to increase until 2020.
- Ambition 2: Digitalisation is now an opportunity and reality for the IMs and could become a driver for IMs with new signalling architecture (ERTMS and centralised signal centres), open data and innovation.
- Ambition 3: Opening up to competition of the passenger market. This could bring financial challenges with more clients for IMs meaning more revenues but also regulators may challenge the tariff sustainability.
- Ambition 4: Multimodality is potentially the next trend for IMs.

These ambitions are important to note and any chosen Infrastructure Management model should draw upon them and incorporate where possible, to ensure success.

**The role of the infrastructure manager in European future mobility**

The role of infrastructure manager in European future mobility was presented by Trafikverket (Swedish Transport Administration). Global challenges including safety, congestion, health and the environment are leading to the development of new solutions. A four-stage principle is presented as:

- 1) Rethink: measure what could influence people's mode of transport
- 2) Optimise: develop existing infrastructure
- 3) Rebuild: reconstruct existing infrastructure
- 4) Build new: new investments and projects

IMs role in European future mobility will be enhanced by more cooperation throughout society with a number of partners, which will ensure customer satisfaction and efficiency in products. The IM should also be the 'market catalyst' and there is a need to introduce 'dynamic corporate governance'.

The chosen IM model for Rail Baltica will therefore need to ensure cooperation and customer satisfaction, of which should be measured through a number of metrics, some of which the Infrastructure Managers will already be using and monitoring.

### Strategic discussion by Trafikverket

Strategic discussion around the future of railway infrastructure. It is highlighted that more funding is needed to ensure the maintenance and development of networks, of which member states have a pivotal role to play by doing their outmost best with their struggling budgets. IMs have a significant role in finding innovative and creative ways of managing their tight budgets and networks. The Director General of Trafikverket gave the following examples of ideas they have supported in relation to doing more for less funding:

- New nation-wide traffic management IT system
- New interactive tools and database for tracking and analysing the status of their assets
- Introduction of a long-term maintenance plan and strategy with innovative procurement
- New innovative solutions

The available capacity should also be stretched of which Trafikverket support:

- New capacity allocation which is client orientated
- Flexible timetabling
- Support in the coordination of end users such as steel and mini companies to avoid empty transports

The chosen Infrastructure Management Model and chosen IM for Rail Baltica should be creative and thinking of innovative ways to use their budgets, ensuring maintenance and development of their networks. Ensuring flexible timetabling will be key to the coordination of Rail Baltica between the three Baltic States.

### Opportunities of Rail Corridors for Infrastructure Managers (freight transport)

A round table discussion was held at the 7<sup>th</sup> PRIME plenary meeting in Brussels, November 2015. The discussion was focussed around if there is a need to review Regulation 913/2010/EU, which has had a positive impact on both infrastructure managers operational activities and an improved business environment for railway operators. However, there is need for some change as it is a challenge to fulfil all commitments made in such regulation and some provisions may not suit the market needs.

The discussion brings attention to the fact that a number of trains now run on more than one 'corridor' successively, even with different rules, of which sometimes are conflicting. Therefore, there is a need for harmonisation in the governance of these corridors. Such coordination is not needed to be brought together by law (as the rail sector sees it) and nor does there need to be one rail freight corridor (RFC) organisation. Instead of such actions the sector has taken its own initiative and coordination.

If existing RFCs or additional freight corridors are prolonged the Infrastructure Managers concerned should be consulted very closely, and the Infrastructure Manager of whose network the corridor is to be altered has to give consent.

Such discussion around the effectiveness of regulation is crucial for Rail Baltica. If the model of three separate IM's for the three Baltic nations were to be chosen, there would need to be strong regulation

in place, alongside coordination and ensuring rules of each nation were not conflicting and would not affect the maintenance of infrastructure, nor have a negative impact on the railway operationally.

### Implementing rail infrastructure charging reform – barriers and possibly means of overcoming them

Nash and Matthews discuss the difficulties in setting railway infrastructure charges due to the varied objectives and aims of decision makers involved. Britain, Sweden and Germany are used as three case studies to present three different charging regimes.

The European Commission have introduced policy to separate railway infrastructure from operations and such opening up has led to explicit methods of how to charge for the use of rail infrastructure. Such open access is seen as extremely important in ensuring efficient rail transport. The European Commission have an interest in a comparable approach from member states to the charging to avoid any major distortions from neighbouring countries.

Different paths have been taken by Britain, Sweden and Germany:

- **Britain:** Britain's railway infrastructure is owned and managed by one private sector monopoly with numerous passenger operators and freight operators owned privately with open access. Additionally, there is an independent regulator.
- **Sweden:** Sweden has complete separation of infrastructure and operations, however with a publicly owned infrastructure company, Trafikverket. Their passenger and freight operating companies are publicly owned, however those that require subsidy are open for competitive tender, with open access for freight. Therefore, public and private companies share the track.
- **Germany:** Germany host infrastructure and operations in the public sector.

The three countries also have different approaches in regards to railway infrastructure charges. Following such information it is pertinent to note that there is large differences in the way countries create and develop charging systems of their railways.

Important to highlight is the open access of railways, of which is a theme across the three case study nations, not dependent on how the railway is owned.

The paper notes the following barriers to marginal social cost pricing:

- *Problems of measurement*
- *Complexity of tariffs*
- *Financial implications*
- *Equity*
- *Technical efficiency*
- *Fair competition within the rail sector*
- *Fair competition with other modes*
- *Acceptability on behalf of train operators and infrastructure managers*
- *Acceptability on behalf of end users and the general public.*

There are five main factors that influence the cost when a train uses the infrastructure, all of which are appropriate for Rail Baltica:

- Wear and tear costs
- Congestion costs
- Scarcity costs
- External accident costs
- Environmental costs

There are complexities in such tariffs, however, this is not seen as a serious issue because of the systems that are now in place that can handle this. Moreover, they note that Directive 2001/14 ensures infrastructure managers undertake a cost-benefit analysis to calculate the cost on expanding capacity.

### Study of traction rolling-stock using in Lithuanian sector of railway line "Rail Baltica"

One way of which Rail Baltica will be a success is its ability to play a major role in the freight transportation in the Baltic region, especially the movement north to south. Freight transportation is one of the biggest revenue earners and freight transportation can therefore, bring profitability to Lietuvos geležinkeliai.

Although not specifically mentioning the Infrastructure Manager, the article mentions Lietuvos geležinkeliai of whom have an infrastructure manager directorate. Therefore, it is understood that freight transportation can bring profitability to the IM.

### Major infrastructure projects and the foreign policy of the Baltic States in 2010-2014

Discussion of railway infrastructure and the Rail Baltica project is detailed with one statement suggesting that considering the structure of the Baltic States economies any railroads cannot be productive without Russia's participation. The key objective of the Rail Baltica project is to ensure regional integration between the Baltic states and interconnect the region with the European railway network, of which will be connect by the standard European gauge. The importance of having joint ventures for common infrastructure is highlighted.

Furthermore, Mezhevich notes that a lot of time on Rail Baltica in the past has been spent solving challenges arising from the actions of individual member states. This is of particular note. The Infrastructure Management study will ensure the needs of all three Baltic states are considered and no one country will receive such focus as stated in the article noted here, it is important to show the collaboration and interconnectedness between the three nations.

### The Benefits of Separating Rail Infrastructure from Operations (Thompson, 1997)

In this article, Thompson provides examples of the successes and failures that have occurred from separating rail infrastructure from its operations.

- Reasons to separate rail infrastructure from operations:
- Reduce unit costs
- Create intra rail competition
- Improve the focus on services provided
- Clarify public policy
- Help improve the balance between public and private sectors.

#### Case study – Sweden:

In 1988 Sweden split its state railways into two state agencies – Banverket to maintain the infrastructure and Swedish State Railways (SJ) to provide operating services. This was successful, with SJ increasing its efficiency and financial performance. Banverket were able to undertake deferred track maintenance. The biggest problem has been coordinating the two companies. SJ wants to determine when track work should be carried out, however Banverket follow politically determined funding orders.

Thompson concludes that infrastructure separation is never straight forward. In Europe, great challenges occur within capacity management. This occurs when deciding which services should get priority across different operators. Operators across borders may have different dispatching priorities and amounts of information, therefore making it impossible for the railway operator to plan and manage integrated services across several systems. Thompson provides a clear conceptual solution: operators must be able to approach infrastructure providers as a seamless system for time slot availability, and real-time information on train locations. This means strong communication among infrastructure agencies, adequate funding, and compatible technologies.

Another issue is infrastructure pricing, particularly across borders in a transparent and non-discriminatory manner. This would involve developing and implementing all infrastructure tariffs publicly, and making the results of access price negotiations held in private available to other operators.

### [Gaming Simulations for Railways: Lessons Learned from Modelling Six Games for the Dutch Infrastructure Management \(Meijer, 2012\)](#)

ProRail, the Dutch Railway infrastructure manager, has an aim to increase capacity by 50% before 2020. However, this cannot be achieved by the traditional method of increased physical infrastructure. Instead, this demand must be met by managing capacity and traffic in an interconnected manner. Additionally, in 1995 the rail infrastructure management (ProRail) was de-bundled from the train services (predominately NS), creating an operational process in which many lines and operations need to synchronize. To enable this increased capacity, ProRail have invested in innovative gaming solution research, in an attempt to improve their innovation process relating to this requirement.

Six gaming projects were undertaken to help ProRail innovate its core processes. This has led to a four-year partnership between academics and the operation to make gaming suited for ProRail. After this project is finished, ProRail will have at its disposal a gaming suite that connects real life traffic simulators. It will be possible to configure a game simulation session to select timetables, locations, duration and measurement variables. One key feature will be to create 'what-if' scenarios on the network.

### [Rail Baltica Influence Area: State of Operating Environment \(Himola, 2011\)](#)

The aim of this paper was to explore the current state of transportation logistic flows within the Rail Baltica countries.

A statistical review was undertaken, and it was concluded that railways have not been an integrating element of the Rail Baltica countries during their period of economic growth, with each country developing their railways in isolation. This could be one explanation as to why road transport has grown so much within the countries, as rail has been left to serve sea ports. Additionally, freight concentration on the current railways, has meant that international passenger transport services hardly exist. However, there is demand for international travel, seen by increases in air travel between the Baltic states.

The study has also shown that new international corridors for passenger travel, must be accompanied by similar trade flows. This could be accomplished by all the Rail Baltica countries increasing their trade with Poland, which is currently in deficit.

### [Future of PRIME as the European Network of Rail Infrastructure managers](#)

The meeting was held prior to the update of Directive 2012/34/EU of which 'Article 7f' was to be added. Article 7f European Network of infrastructure Managers states seven items of which the main infrastructure manager of the country should adhere to ensure efficient and effective railway services:

- Develop the Union rail infrastructure
- Support timely and efficient implementation of the Single European Railway Area
- Exchange best practices
- Monitor and benchmark performance
- Contribute to the market monitoring activities referred to in Article 15
- Tackle cross-border bottlenecks
- Discuss the application of Articles 37 (Cooperation in relation to charging systems on more than one network) and 40 (cooperation in the allocation of infrastructure capacity on more than one network).

## Logistics of North-West Russia and Rail Baltica: Standpoints of Private Sector

Comments related to cross border operations are discussed with the main summary points being the following:

- The biggest challenge for implementing and operating the RBGC Russia is at border crossing points and its infrastructure
- It is stated the crossing points of borders Between Russia and Finland exceeds carrying capacity of that between Russia and the Baltic States significantly
- Rules need to be clear in terms of the Russian documents for freight transportation in wagons to ensure delays are not caused
- Russian related custom procedures are often associated with delays
- An electronic system for documents is needed
- The change of gauge is one challenge, of which there should be an organisation who provides such services

In summary three main themes emerge from such research including: railway gauge difference in width, poor border crossing infrastructure and complexities in relation to Russian customs legislation. Moreover, it is noted that the combination of both high-speed passenger traffic and freight traffic can be problematic at border crossings with regards to the operation and interaction between the two.

## Rail Infrastructure Charges in Europe

This paper presents a survey of rail infrastructure charges across 23 countries in Europe.

Issues in designing rail infrastructure charging regime identify that a single charge per train kilometre cannot provide the correct incentives for optimal use of the existing infrastructure and the right signals for future development.

Despite a lot of research, there is no general agreement of how to measure and calculate rail infrastructure marginal costs.

## Freight Operator Views On Effective System Operation

The Office of Road and Rail in the United Kingdom held a public consultation in October 2015, 'System Operation: A Consultation On Making Better Use Of The Railway Network'. While this is in the context of devolution of railway operations in the United Kingdom, the relevance comes from their perception of the need on integrated functions; The DB Schenker response to this provides insight as to freight user requirements for an optimised network solution. Key points that are raised include:-

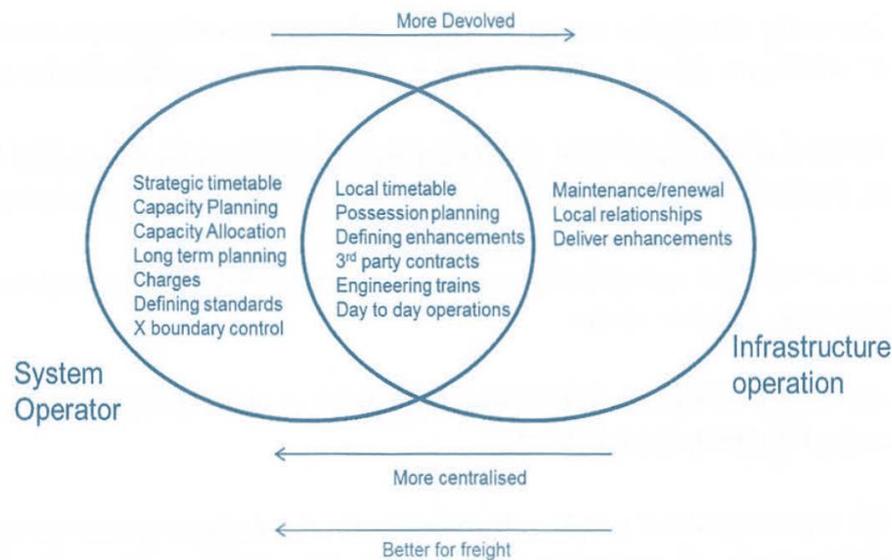
- *"DB Schenker believes that models which place more functions within a system operator role are likely to lead to better outcomes for its customers."<sup>60</sup>*
- *"For a national operator, possession planning is a central and fundamental part of system operation, critical to ensuring that, in particular, overnight freight can continue to operate and that key routes and their diversions are planned in synchronisation. However, an increasingly empowered NR Route might assert that in order to deliver cost efficiencies, it needs autonomy of how and when disruptive engineering access is taken."*
- *"DB Schenker considers timetabling to be a system operator function, yet regional transport authorities such as Transport for the North might reasonably expect their local devolved routes to take charge of timetabling for their local service specification."*

DB also provide an overview as to their view on how different elements of the Infrastructure Manager can be discharged and how these are better for freight, as shown in the Venn Diagram below.

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<sup>60</sup> DB Schenker. *System Operation: A consultation on making better use of the railway network*. p4.

Figure 1-17 - DB overview of their views of discharging infrastructure manager elements



### 1.1.12. Summary Of Literature Review

The literature review has drawn upon a number of previous journals, articles and presentations that provide information on the role of the Infrastructure Manager, differences across nations in terms of the operations of their railways, as well as how to operate when the railway line is cross-border.

The key themes brought forward from the literature reviews are detailed below:

- **Benchmarking:** Benchmarking plays a pivotal role in establishing the best practices ensuring performances measures and metrics will be met. Not only is this important for Infrastructure Management Companies but it enables easier explanation to stakeholders, with a better understanding of costs and revenues which enable justification of any financial commitments.
- **Regulation:** Regulation and regulators will play a vital role in the success of Rail Baltica. Literature notes the varied influence regulators have, which is likely to be visible in the three Baltic states, which will be researched during stakeholder engagement. The least advanced and influential will focus on non-discriminatory access to the network, whilst the most advanced regulators will be focusing on economic efficiency and pricing.

Moreover, there is ample opportunities for Rail Freight Corridors (RFC), and many freight trains runs successfully along these corridors currently, even when there are different rules for sections. Therefore, it is important that harmonisation is achieved, especially in relation to Rail Baltica. There does not necessarily need to be law, nor one RFC organisation but the sector needs to ensure coordination and non-conflicting operations, in Rail Baltica’s case, between Latvia, Lithuania and Estonia. Literature also notes that the Infrastructure Managers of which the RFC will affect, should be closely consulted.

- **Cooperation:** Rail Baltica needs excellent cooperation between the three Baltica states which is highlighted in current literature, where cross border networks have been established. Policy can enable cooperation, the ‘Delors II package’ was created in the 1990s for transnational infrastructure to address the fears of regional divergence. Additional EU directives are in place to aid harmonisation and cooperation ensuring key performance metrics are met, including: safety, reliability, environmental protection and technical compatibility.

It must be understood that no one Baltic nation can have more focus than another. Previous literature shows that Lithuania have often had a lot of item focussing on them to overcome their issues, which may be because of Lithuania shown to be spending more euros per kilometre of railway track. However, for successful cooperation all nations must be given the same level of focus.

- **Creativity and Innovation:** Ernst and Young’s Cost-Benefit Analysis shows a positive operating profit will be achieved by the Infrastructure Manager from 2031. Despite such predictions it is

important for the chosen IM to be creative and innovative in the way they operate to use their budgets, whilst ensuring successful maintenance and development of their network.

- **Life Cycle Cost Modelling:** In the development of a railway network, life cycle cost modelling is an important feature. It brings together multiple factors affecting the costs and performance of the railway line. The literature notes key stakeholders should be involved with the life cycle cost modelling, and for Rail Baltica this would be the current IM's operating in Latvia, Lithuania and Estonia.
- **Economic and Social Development:** Although not directly linked to the Infrastructure Manager, the Rail Baltica line will bring both economic and social development and benefits with the high-speed railway connecting the Baltic states. There will be creation of jobs in areas of stations such as Vilnius and Kaunas. These benefits should be noted in this infrastructure management study and ensure any chosen model will achieve these.

Perhaps the most important item to note with regards to the context of the inception report is the fact that under the existing framework of European Law and with particular reference to the guiding principles of bodies such as EIM and PRIME, there are no impediments in principle to direct cooperation between the existing infrastructure management companies in each market and that from the principle of creating a suitable, functional structure, all these items already exist – the key area therefore relates to the ability to create a high performing arrangement that will deliver the business case.

### 1.1.13. Critical to Quality: Performance and Service Levels

To date, Atkins has interviewed 11 parties and received written feedback from 1 other. While discussions were extensive and remain to be analysed in full, we have already managed to identify a number of themes from our discussions that relate to differing national approaches to the project.

#### Stakeholder Challenges

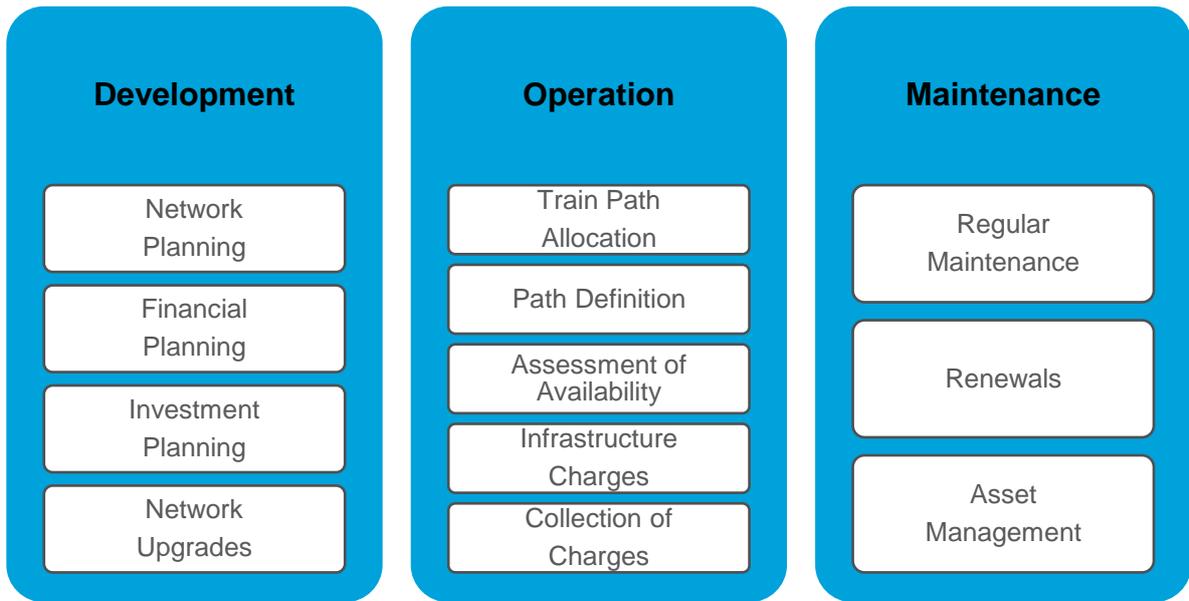
In our meetings with stakeholders it rapidly emerged that there was no single, cohesive view as to the roles and obligations of an infrastructure manager and therefore a lack of clarity about what each party is actually looking to the infrastructure manager for. While we will feature on the 'essential functions' of Infrastructure management in our final report, discussions typically fell into the following areas:-

- *Infrastructure development.* This includes responsibilities for the ultimate network planning, financial and investment planning and building on the basis of market analysis, business plans, fund raising from public authorities and financial markets. *Simplistically, this means building new tracks, depots and stations to increase the size of the rail network (enhancements)..*
- *Track access charging.* This includes the determination and collection of charges but also more generally infrastructure marketing – i.e. relations with customers (railway undertakings and other categories of applicants for infrastructure capacity), public authorities and regulators. *In practice, this means that the Infrastructure Manager sells access to the network.*
- *Infrastructure operations, including path allocation and traffic management.* This includes the provision of services necessary for infrastructure access on a long or short term basis through assessment of availability and allocation of individual train paths, timetabling, traffic management, control command and signalling as well as facilitating traffic information services. *In short, this means that the Infrastructure Manager is responsible for the organisation of the traffic on its network, including in case of traffic perturbation.*
- *Infrastructure maintenance.* This includes infrastructure upgrade and renewal and is linked to asset management activities. *The Infrastructure Manager is responsible for organising and conducting the maintenance of the railway assets.*

Under current legislation, the functions of the IM may be allocated to different bodies. By way of example, the two "essential functions" of IM - path allocation and track access charging - may be assigned to an allocation body and charging body.

Atkins believes that it is appropriate to group these and that there are 3 core pillars of responsibility for an infrastructure manager, these being development, operation and maintenance. These may be discharged in many ways, for instance, maintenance may be delivered under an insourced or outsourced arrangement.

**Figure 1-18 - Core Pillars of Infrastructure Maintenance Organisations**



In order to understand what will be important to the Infrastructure Management of Rail Baltica, it is important to recognise that what is critical to one railway may be of little importance to another.

These core pillars, containing the essential functions are what will frame the successful operation of Rail Baltica and the inclusion or exclusion of these points within any infrastructure operator will be key to the ultimate delivery of the business case.

The local, specific nature of the railway, its flows of passengers and freight, must be reflected in the organisation that serves it, because at its simplest level, the Infrastructure Management organisation only exists to maximise the number of train paths needed at the lowest sustainable price point.

## Stakeholder Themes

In our original tender proposition, we had anticipated developing a common Target Operating Model based around common expectations and a shared vision. The extent of challenge in developing a single Target Operating Model for the infrastructure manager was emphasised by the fact that;

- No stakeholder mentioned that they were seeking an outcome that represented the best value for money for the European Union.
- No stakeholder referenced the European Union or any of its bodies as a party that should be consulted.
- Stakeholders from country 'A' generally supported the creation of an infrastructure management model which represented the best outcome for the project, regardless of any adverse national impact.
- Stakeholders from country 'B' generally supported the principle that the best solution should be found for the Rail Baltica project, save for where the outcome would result in a loss of jobs for country 'B'.
- Stakeholders for Country 'C' were explicit in their desire for the infrastructure management company for Rail Baltica to be (at least in part) formed from its own existing infrastructure management company.

Following stakeholder consultation, we therefore elected to strengthen the multi-criteria analysis with the addition of a significant number of further evaluation criteria.

## The Challenge For The European Union

In its 2010 Communication concerning the development of a Single European Railway Area<sup>61</sup>, the Commission explained that "*competition between railway undertakings is still limited by various factors stemming from the protectionist behaviours of historical incumbent operators and the collusive management of rail infrastructure, which, being a natural monopoly, should be accessible to all applicants in a fair and non-discriminatory manner. Insufficient transparency of market conditions and ineffective functioning of the institutional framework in most Member States continue to make the provision of competitive rail services difficult.*

*Operators entering a new market continue to face discrimination in obtaining access to the infrastructure and rail-related services, which are often owned and operated by the incumbent rail undertaking. Member States' regulatory bodies encounter difficulties in carrying out their supervision duties over IMs, in particular to ensure non-discriminatory treatment of new entrants and to check whether charging principles and accounting separation are properly applied.*"<sup>62</sup>

The concerns that this raises, are not those that can readily be mapped through desktop research and they tend to be subtle and very much matters of perception and judgement. In areas such as this, direct questioning as to concerns on market openness and the behaviours of existing infrastructure managers is also difficult due to the risk of creating leading questions.

However, given the potential impact of these concerns on the efficacy of any final model, Atkins will review the stakeholder feedback to identify any potential risks in this area and will include these in the multi-criteria analysis.

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<sup>61</sup> COM (2010) 474 final.

<sup>62</sup> European Commission. *Commission Staff Working Document Impact Assessment.*

## 1.2. WP2 Methodology

**A comprehensive methodology conducive to a transparent and independent analysis and well substantiated recommendation, including: -**

**WP2.1: a proposed methodology of option analysis based on multi- criteria analysis (MCA) with varying criteria weights allocated according to relative importance or a similar comprehensive methodological framework the use of SWOT analysis or similar tools is recommended as a supplement.**

### Context

*“As far as Infrastructure Manager (‘IM’) efficiency is concerned, statistical benchmarking remains problematic and inconclusive as efficiency very much depends on the national cost structures, characteristics of the network, management practices or commodities transported but also on the level of public support and business climate.”<sup>63</sup>*

To try to mitigate the effects of these risks, Atkins has now conducted a series of in depth interviews with stakeholders, both face to face and over Skype. This engagement was incremental to our originally planned engagement strategy which anticipated a series of collegiate workshops amongst the stakeholders.

The design of the Multi Criteria Analysis remains key to Rail Baltica’s success as it will shape what the InfraCo must do, reflecting those areas where its stakeholders believe it should operate, but this cannot be done in a vacuum – aspirations cannot be taken purely as the formation for the Infrastructure Manager. The ultimate design must be as efficient as possible in order to maximise the profitability of the line. This requires balancing the needs, capabilities and aspirations of Rail Baltica’s funders as much as local political stakeholders and Rail Baltica itself.

As such, development of the MCA is a highly complex task that defines the client’s delivery approach, we recognise the objectives of which will include: -

- To help shape the development of the Rail Baltica’ vision for the infrastructure manager. This will be done through an interview process with RB Rail AS and its stakeholders which we will help up understand the differing visions.
- Stakeholder interviews will be used to help define their view.
- To create the organisational blueprint for the infrastructure manager.
- To help define the capabilities required for delivery, including establishing those that must be internal to the client organisation, as opposed to the supply chain.

This requires a careful balancing of potential benefits with the structural overheads that are likely to be created, and an appraisal of the risks of realising the same.

As such, the logic of the **MCA** creates the fundamental building blocks of the life cycle cost analyses to be delivered, answering the question *‘What does and InfraCo need to deliver and how is it best delivered?’*

### Process

#### Stage One: Capturing The Voice Of The Customer

Identification of what is Critical to the Quality of InfraCo performance will be developed through 1x1 reviews with Rail Baltica’s key stakeholders. A formal interview process will be conducted and a qualitative assessment developed against which Atkins will define what elements are key to the performance of the IM. An example of the template which will be used can be seen as Appendix ‘A’.

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<sup>63</sup> European Commission. *Commission Staff Working Document Impact Assessment.*

These qualitative drivers appear key as “The...type of concerns [that] exist regarding evidence on discrimination in terms of access to infrastructure [lead us to recognise] a low number of complaints can be, on the one hand, an indication of a well- functioning open market where conflicts are prevented by structural measures. On the other hand, there might be no complaints in a closed market where new entrants have no trust on regulatory interventions.”<sup>64</sup>

One other area that will prove important to understand, but which is difficult to assess will be how the structure of the existing IMs in the region could impact the success of otherwise for Rail Baltica – a route with significant opportunity for growth based upon train path availability. “The progressive reduction in the number of bidders in competitive tenders observed since 1997 in Germany... can be explained by various factors such as a consolidation of the sector, the increased competitiveness of the incumbent but also by the deterrent effect of discriminatory practices which German public transport authorities complained about.”<sup>65</sup> The risks to Rail Baltica may not even be as the result of deliberate, conscious actions, but as the result of inherent structural issues.

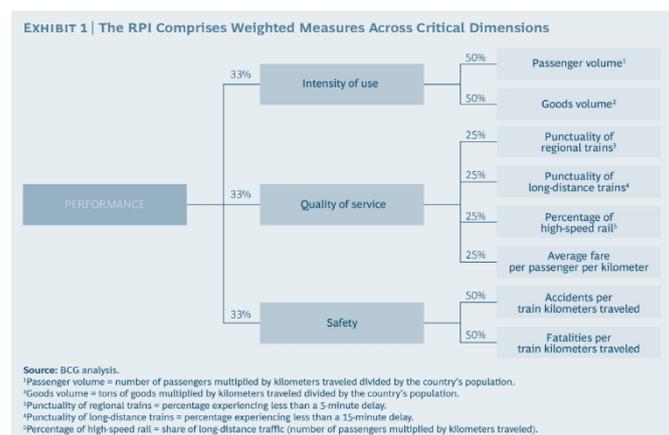
### Stage Two: Target Operating Model

Our intent at tender stage was to try and define a single, common target operating model which all stakeholders would buy into. Initial stakeholder interviews have indicated that this approach will not be a practical way forward due to polarised views amongst the stakeholders regarding the desired end state for Rail Baltica.

Further to this, stakeholder concerns have not been around the areas of our original proposed lenses, these being Asset Management, Commercial Management, External Engagement, Financial Management, Policy, Strategy, Sustainability), but rather around the ownership of core elements within Development, Operation and Maintenance.

Taking this in light of the need for the Rail Baltica route to successfully develop freight traffic, Atkins will design a nominal Target Operating Model for the Infrastructure Manager based with a focus on effectiveness, not just on costs in order to maximise the opportunity to deliver the revenues needed for successful operation.

**Figure 1-19 - The RPI Comprises Weighted Measures Across Critical Dimensions**



In order to develop this initial TOM in terms of performance, we will build on the methodology previously developed by Boston Consulting Group, but adjusting this to enable the UIC datasets to reflect the nature of Rail Baltica and its heavy reliance upon freight revenues.

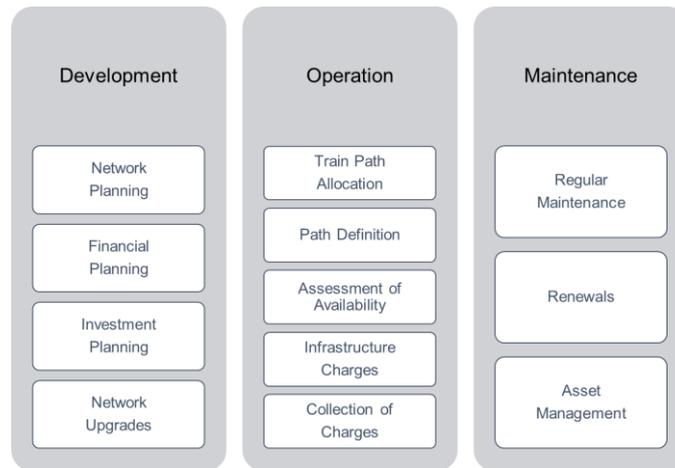
<sup>64</sup> European Commission. *Commission Staff Working Document Impact Assessment.*

<sup>65</sup> European Commission. *Commission Staff Working Document Impact Assessment.*

While this Target Operating Model itself will not reflect the challenges of cross-border operations, it will however provide a reference comparator for operation which it would not be unreasonable to assume reflects the equivalent of ‘frictionless’ border operations and should provide a reference point for further analysis and debate.

Our target operating model will cover the essential functions performed by an infrastructure manager (as defined under EU legislation) as well as those functions which the majority of stakeholders reference (below).

**Figure 1-20 - Functions performed by an Infrastructure Manager**



At this initial stage, we believe that the initial Target Operating Model will not satisfy all parties, both because of initial stakeholder discussions and information arising from our research; The EU has previously looked at how to improve cross border infrastructure management, based around two key options<sup>66</sup>:-

- (a) Establishment of a EU network of IMs. This option consists in the institutionalisation of a network of national IMs to exchange best practices, in particular on operational and infrastructure development issues.
- (b) Creation of an EU structure integrating IMs. This option foresees the establishment of a structure, such as a European Economic Interest Grouping (EEIG) integrating the existing national Infrastructure Managers into a single European Infrastructure Manager.

There was no stakeholder support for option (a) and as a consequence, option (b) is not being progressed. This result epitomises the position on Rail Baltica, in that there are likely to be issues with regards to the efficient operation of the line unless some form of structure or further agreement is put into place to ensure effective cooperation between existing IMs, yet there is not yet a common appetite to do this. For clarity, the implication of this was not that IMs were not resistant to more effective working together, but were resistant to integration.

In this context, Atkins will assess the relative benefits and capability of each of the scenarios to effectively deliver the identified functions, using this to help develop the long list of options

<sup>66</sup> European Commission. *Commission Staff Working Document Impact Assessment.*

## Customer Satisfaction & The Impact On Methodology

Through our review of the 'Rail Baltica Global Cost Benefit Analysis Final Report' prepared by EY, we have come to appreciate the reliance upon freight for the success of the Rail Baltica project. As a result of this, the ability to provide best in class customer satisfaction must be considered a key metric for Rail Baltica.

*"Freight trains run at low speeds (18 km/h) on many international routes. This results from time-consuming operations at borders for railway undertakings. Operations at borders have not yet been streamlined to exploit the advantages of the internal market and the Schengen rules. As a result, rail fails to capture certain commodity groups who prefer the higher speeds of road transport."*<sup>67</sup> Performance issues do exist – and these need to be addressed for Rail Baltica. To do this, we are continuing to try to identify freight customer satisfaction metrics for our benchmarking targets, but we have also identified other data sources which any end Infrastructure Manager will also be required to support.

Article 19 (3) of Regulation (EU) 913/2010 covers the European rail network for competitive freight. This regulation requires the Management Boards of the Rail Freight Corridors ('RFCs') to conduct a yearly satisfaction survey among users of the RFCs and to publish the survey's results once a year on their website.

On their behalf, Rail Net Europe produces a European harmonised survey, based upon independent market research – this will enable us to understand how well customers believe the existing European arrangements are operating. We will incorporate this into our MCA.

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<sup>67</sup> European Commission. *Commission Staff Working Document Impact Assessment.*

## Baseline Performance – Existing Regional Infrastructure Managers

From our early stakeholder consultations, we have identified that some parties would prefer a solution based around existing infrastructure managers absorbing or taking responsibility for the Rail Baltica route (i.e. no new independent IM to exist).

For an assessment to be made of this will look at the Rail Market Monitoring Scheme (RMMS) established by the European Commission pursuant to Article 15 (4) of Directive 2012/34/EU. This includes a number of key metrics which will help us assess to what degree the existing IMs are able to deliver best in class operations as required by our remit.

These metrics are:-

- Operating costs per train-km by Member State (EUR per train-km, 2012).
- The proportion of electrified networks (2014) and relative change since 2009 (%)
- Length of dedicated high speed lines (km, 2015).
- Track access charges for different categories of trains (EUR per train-km, applicable 2016).
- Punctuality of regional and local passenger services, percentage of services on time.
- Punctuality of long distance passenger services, percentage of services on time.
- Reliability of long-distance passenger services, percentage of services cancelled.
- Proportion of high and good satisfaction scores for railway stations and rail services (RAIL)
- Proportion of high and good satisfaction scores for railway stations and rail services (Railway Services)
- Legal liberalisation and entry of the first competitor in the freight market.
- Legal liberalisation and entry of the first competitor in the passenger market.

In addition to this, we will use a variety of sources of data to understand the safety performance of the existing Infrastructure Managers. These have been initially identified as:-

- Serious accidents that are independently investigated by a dedicated National Investigation Body (NIB) as required under the Rail Safety Directive.
- Information from the European Transport Safety Council, which has flagged issues such as the referral to the European Court of Justice over rail safety failings.<sup>68</sup>
- Management of safety at level crossings<sup>69</sup>
- Rail fatalities per track km.
- Overall safety performance in the EU<sup>70</sup>
- Safety culture.

For this element of our report, we will look to align these outputs with the Safety Culture Framework from NERA (Safety in Railways, 2000). \*Evans, 2016 which will enable us to align with at least a subset of the infrastructure managers selected for benchmarking and hence to include this information into the MCA assessment.

<sup>68</sup> European Transport Safety Council. *Lithuania referred to European Court of Justice over rail safety failings.* (Article)

<sup>69</sup> European Railway Agency. *Level crossing safety in the European Union.*

<sup>70</sup> European Railway Agency. *Railway Safety Performance in the European Union.*

**WP2.2: an institutional life-cycle cost model for comparison of different infrastructure management options in terms of associated costs.**

## WP2.2 Process & Methodology - Life Cycle Cost Model Development

Our original proposals looked to understand the costs which would be incurred by the infrastructure manager, for the shortlisted options from the MCA. This will relate primarily to the organisation structures required to operate as an InfraCo, with a focus on the essential functions as defined under European legislation.

Our benchmarking has confirmed that no two InfraCo's will ever be identical as they will all reflect different legacy asset baselines, interpretations of operational standards and unionised work practices – we will therefore be using a top down approach to developing the life cycle cost model based upon our experience, a first principles approach and available data.

### **IMPORTANT: Methodology Risks**

*Discussions with stakeholders have however clearly indicated that they believe that there are a number of items which they can deliver on a marginal cost basis, for example, such as through job-sharing relating to incremental responsibilities or by shared facilities.*

*As a result, we now believe that it will be exceptionally difficult to develop a robust cost analysis across different IM models as we will not be in a position to validate or challenge third party assumptions in this area.*

*We will ask for cost data from each of the existing national infrastructure managers in order to price the same, but there is a major risk to the accuracy of the life cycle model and hence the risk of distortion to the MCA and will reserve our professional judgement to descope in this area as required. With this caveat, Atkins proposes to perform the following, as shown in Figure 1-21 - Process for Pricing IM Options*

### **Stage One: InfraCo Roles & Responsibilities**

Through the upfront benchmarking, Atkins will be able to refine our knowledge of the typical mix of roles which are required by an InfraCo and then calculate the anticipated headcount requirement for the InfraCo based upon the model that is required. This will establish a distribution range of organisational headcount norms.

### **Stage Two: Mapping Headcount Mix**

Atkins will map the headcount mix requirements onto each of the functional areas covered by the headline functions of 'Development', 'Operation' and 'Maintenance'.

### **Stage Three: Organisational Structures**

Atkins will create the structures of roles within each function, in order to create a range of individual roles to be priced according to the local market.

These will reflect structures and best practice for organisational design with regards to items such as 'Span of Control'. This will result in a virtual 'organisation chart' for Infrastructure Manager scenario being produced.

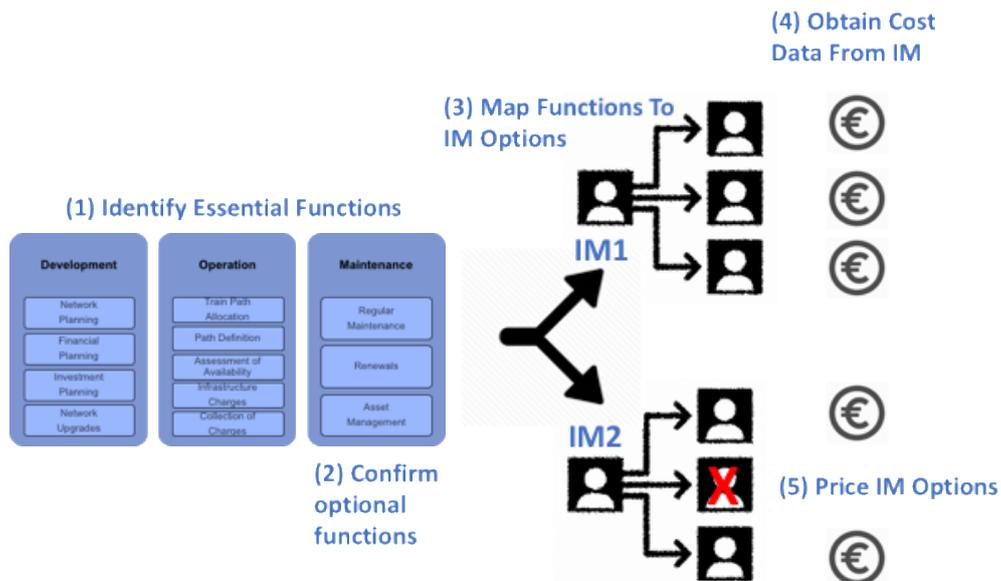
### **Stage 4: Role Pricing & Costing**

Using costs for roles provided by the existing Infrastructure Managers in each of the countries, Atkins will price the identified roles for each of the structure. In the event that pricing information is not obtained from the IMs, Atkins assumes that this will be provided by Rail Baltica.<sup>71</sup>

**Stage 5: Route Normalisation**

Atkins will scale the teams based upon norms established during the benchmarking process. This may be done in a range of different ways, such as adjusting the reference InfraCo data based on track mileage with adjustments for the number of interfaces (e.g. national stakeholders).

**Figure 1-21 - Process for Pricing IM Options**



The model will then reflect the obligations that are to be discharged in each of the Infrastructure Management models from a headcount perspective – it may be possible to make some assessment with regards to the associated facilities costs that would be required for each of the same.

Atkins will develop the Life Cycle Costing Tool so that scenarios can be developed and amended with the tool going forward.

**Stage 6: Methodology Review**

Rail Baltica will agree with Atkins the methodology whereby the Life Cycle Model calculates the organisational design associated with both the Target Operating Model and the associated InfraCo models.

**Stage 7: Commercialisation Opportunities**

Atkins will work out what opportunities for commercialisation are afforded by each of the InfraCo options, by doing a relative qualitative analysis of the same. This will cover the principles of:-

- Residential Land & Property
- Commercial Land & Property
- Railway Assets

**Stage 9: Error Checking**

<sup>71</sup> Not budgeted for in this tender – if market research / role pricing data is not available from Rail Baltica, this will need to be obtained at Rail Baltica cost.

Peer review and error checking. Functionality of the cost model will be checked and peer reviewed prior to submission to Rail Baltica.

*We will be able to design a high performing infrastructure manager based upon our knowledge, experience and benchmarking information, but the comparison against an existing infrastructure manager at any level of detail would likely result in challenge regarding the detail, rather than the themes of effective infrastructure management.*

One of the challenges which will be presented with regards to modelling a high performing infrastructure manager is that it is difficult to identify how a blank sheet model will compare to the evolution of an existing infrastructure manager.

## WP3: Identification of Options

### **WP3.1 Identification of a long-list of options from the institutional, function, geographical, level of centralisation perspectives.**

The tender seeks to identify a pool of all feasible options for InfraCo's relating to Rail Baltica. There are a finite number of combinations for InfraCo's along the Rail Baltica route from the perspectives of institutional, geographical and centralisation perspectives, each of which can be modelled and described relatively discretely, predominantly because of the legal framework that must be applied.

#### **Stage One: Initial Development**

A long list of options will be developed based upon the legal constraints within current European Union (but not national) legislation. These are as follows:-

### Identified Legislation

#### Directive 2012/34/EU Of The European Parliament – Single European Railway Area<sup>72</sup>

Directive 2012/34/EU of the European Parliament and of the Council of 21 November 2012 establishing a single European railway area Text with EEA relevance is currently in force. As the recast of the first railway package, it is the primary source of information regarding the roles and responsibilities of the infrastructure manager. We will also consider the 2nd railway package with regards to the obligations of infrastructure managers.

Directive (EU) 2016/2370 of the European Parliament and of the Council of 14 December 2016 amending Directive 2012/34/EU as regards the opening of the market for domestic passenger transport services by rail and the governance of the railway infrastructure (Text with EEA relevance)<sup>73</sup>

Directive 2004/49/EC of 29 April 2004 on safety on the Community's railways and amending Council Directive 95/18/CE on the licensing of railway undertakings and Directive 2001/14/CE on the allocation of railway infrastructure capacity and the levying of charges for the use of railway infrastructure and safety certification considered the 4th railway package of 2016 in order to inform the inception report and to better inform the methodology of the project:-

The 4th Railway Package is a set of 6 legislative texts designed to complete the single market for Rail services (Single European Railway Area). Its overarching goal is to revitalise the rail sector and make it more competitive vis-à-vis other modes of transport. It comprises two 'pillars' which have been negotiated largely in parallel:

The 'technical pillar', adopted by the European Parliament and the Council in April 2016, includes:

<sup>72</sup> Official Journal of the European Union. *Directive 2012/34/EU of the European Parliament and of the Council of 21 November 2012 establishing a single European railway area.*

<sup>73</sup> Official Journal of the European Union. *Directive (EU) 2016/2370 of the European Parliament and of the Council.*

- Regulation (EU) 2016/796 on the European Union Agency for Railways and repealing Regulation (EC) n° 881/2004<sup>74</sup>
- Directive (EU) 2016/797 on the interoperability of the rail system within the European Union (Recast of Directive 2008/57/EC)<sup>75</sup>
- Directive (EU) 2016/798 on railway safety (Recast of Directive 2004/49/EC)<sup>76</sup>

The 'market pillar', adopted in December 2016, includes:

- Regulation (EU) 2016/2338 amending Regulation (EU) 1370/2007, which deals with the award of public service contracts for domestic passenger transport services by rail ('PSO Regulation')<sup>77</sup>
- Directive 2016/2370/EU amending Directive 2012/34/EU, which deals with the opening of the market of domestic passenger transport services by rail and the governance of the railway infrastructure ('Governance Directive')<sup>78</sup>
- Regulation (EU) 2016/2337 repealing Regulation (EEC) 1192/69 on the normalisation of the accounts of railway undertakings<sup>79</sup>

This will be the fixed baseline against from which Atkins will start to identify the long list of options; for clarity, Atkins shall discount any potential infrastructure management options (such as total vertical integration) of infrastructure owner and train operator) precluded under EU legislation.

## Stage Two: Long List

This work package seeks definition from the perspective of institutional, function, geographical, level of centralisation perspectives. Atkins will therefore generate the long list based upon the range of options which are identified by the stakeholders through the consultation process.

We will create this from the institutional level, these being

- Institutional - infrastructure managers, regulators
- Function – The activities which need to be delivered by an infrastructure manager.
- Geographical – based upon the three sovereign territories of Estonia, Latvia and Lithuania.
- Centralisation – functions where benefits may arise from a single entity discharging the responsibility.

In doing so, we shall ensure that the essential functions of the Infrastructure Manager are appropriately discharged, where "[the] *“essential functions” of infrastructure management means decision-making concerning train path allocation, including both the definition and the assessment of availability and the allocation of individual train paths, and decision-making concerning infrastructure charging, including determination and collection of charges, in accordance with the charging framework and the capacity allocation framework*”<sup>80</sup>

<sup>74</sup> Official Journal of the European Union. *Regulation (EU) 2016/796 of the European Parliament and the Council on the European Union Agency for Railways and repealing Regulation (EC) No 881/2004.*

<sup>75</sup> Official Journal of the European Union. *Regulation (EU) 2016/796 of the European Parliament and the Council on the interoperability of the rail system with the European Union.*

<sup>76</sup> Official Journal of the European Union. *Directive 2016/798 of the European Parliament and the Council on railway safety.*

<sup>77</sup> Official Journal of the European Union. *Regulation (EU) 2016/2338 of the European Parliament and the Council.*

<sup>78</sup> Official Journal of the European Union. *Directive 2016/2370 of the European Parliament and the Council.*

<sup>79</sup> Official Journal of the European Union. *Regulation (EU) 2016/2337 of the European Parliament and the Council.*

<sup>80</sup> Official Journal of the European Union. *Directive 2016/2370 of the European Parliament and the Council.*

This will require professional assessment by Atkins, with justification provided as to the options selected – we do not anticipate having sufficient normalized data from the research to run this from a purely mathematical basis, but will look to understand the following key questions:-

- Whether the entity should have freedom to set track access price for passenger services and a market rate for passenger services?
- Whether the entity has the freedom to set track access prices at a market rate for freight services (as opposed to a pre-agreed formula)
- Whether the track access fee should be set in advance and whether or not the governments hold the change risk.
- Whether the entity should manage day to day operations (traffic management) across the entire route.
- Whether the entity should be a single point of sales and billing for the entire route.
- Whether the entity should allocate and plan capacity for the whole route.
- Whether the entity should contract maintenance within each country (or whether this should be delegated to other national bodies).
- Whether the entity might contract maintenance across all routes (as opposed into each nation).
- Whether the entity should hold the vision for route and be the engaging body with other countries.
- Whether the entity should be responsible for the terminals / stations and facilities on the route.
- Whether the route will need its own operating procedures.

In practice, this means that a **Long List** will be propagated based upon those options that have been identified through benchmarking and research as well as by the inclusion of options suggested for review by the stakeholders, this including the minimum options defined in the tender, giving an extensive, but manageable set of options to refine in WP 3.2.

***WP3.2 Identification of at least five relevant infrastructure management options (and sub-options) – including but not limited to – a) single cross border infrastructure manager and b) multiple infrastructure managers; the selection of options to be put forward in the interim report shall be reviewed and agreed with the contracting authority.***

### **Stage One: Alignment**

Atkins will align the **Target Operating Model** onto the **Long List** to identify what alternative options exist and reduce this to meet the requirements of WP3.2. This will be done by a documented, qualitative assessment. For example, if Perturbation Management is mapped, it would be anticipated that this would score more highly where a Common Route InfraCo was adopted based on the presence of a single Network Operating Centre rather than scenarios with multiple national Network Operating Centres.

This means that the options which most closely match the initial stakeholder aspirations will be taken forward in addition to those required by the tender. Dependent on the outcome at this stage, Atkins may elect to recommend a separate scenario, providing written justification for the same.

### **Stage Two: Documentation**

Atkins will document, score and justify the alignment of the long list of options against the essential criteria and those criteria proposed by the stakeholders.

This, in conjunction with the research and benchmarking that has been done under WP1 will enable result in a matrix of at least five options for relevant infrastructure management, scored and aligned to the **Target Operating Model** agreed by the Stakeholders.

## WP4: Multi Criteria Analysis (Stage 1 Evaluation)

**WP4.1 A comparative multi-criteria analysis of the options identified in WP3.2 based on a comprehensive assessment matrix, including but not limited to the following key criteria.**

With reference to our initial Target Operating Model which will reflect both target efficiencies and performance using the previously referenced datasets (UIC / RMMS), we will assess and score each of the models proposed in WP3.2.

### Stage One : Base Correlation

Using our **Target Operating Model** as a reference, we will create a ranking table for each of the **key criteria** required plus any further items we have identified as being critical to quality. This will mean that our **Target Operating Model** will present a theoretical 'best' model against which we will be able to assess the other options.

The **key criteria** for the **Institutional, Technical / Operational and Commercial** matrix linked to WP4.1 are currently proposed to be assessed as follows:-

Category	Key Parameters	Anticipated Source
<i>Institutional</i>	International benchmarking and case studies	Original Research
<i>Institutional</i>	Administrative efficiency (economies of scale)	Advisory from existing Infrastructure Managers /
<i>Institutional</i>	Legal framework	Reference to cited regulations.
<i>Institutional</i>	Shareholding structures	Nominal only with regards to dividends, risks and liabilities.
<i>Institutional</i>	Transition from infrastructure delivery to infrastructure management	Atkins experience of effective management of the same (as applicable to each IM scenario).
<i>Institutional</i>	Asset management	Based upon Atkins experience of BIC asset management solutions, covering
<i>Institutional</i>	Procurement	Atkins will identify for each IM option who should hold responsibility for procurement and the implications for MEAT.
<i>Institutional</i>	Funding allocation (national, EU, market sources)	Atkins will identify for each IM option where we anticipate the sources of funding will arise.
<i>Institutional</i>	Transparency and management of conflicts of interest	For each IM Option, Atkins will identify potential conflicts of interest based upon the models.
<i>Institutional</i>	Efficient functioning of the single European railway area (promotion of competition; removal of barriers of entry; avoidance of protectionism)	Stakeholder interviews and benchmarking information.
<i>Institutional</i>	Management of freight and passenger terminals and related railway infrastructure (national vs joint; complementary vs competitive; land-lord vs operator)	RNE Research and Stakeholder Interviews.
<i>Institutional</i>	Interface and cooperation with European Union Agency for Railways, National Safety	Legal review and stakeholder interviews.

<i>Institutional</i>	Authorities as well as National Regulatory bodies.	Stakeholder interviews
<i>Institutional</i>	Operational language	
<i>Institutional</i>	Expandability of the model to relevant infrastructure in other countries (e.g. Finland (fixed link) and Poland (Rail Baltica section))	Desktop analysis and research.
<i>Technical/operational</i>	Operations and Traffic Management	Atkins in house technical analysis – limited stakeholder consultation.
<i>Technical/operational</i>	Operational efficiency and sustainability	Atkins view on best practice.
<i>Technical/operational</i>	Infrastructure maintenance / upgrade / renewal	Stakeholder interview / Atkins assessment
<i>Technical/operational</i>	ERTMS-compatible operational rules	Regulation Review.
<i>Technical/operational</i>	TTC (train traffic control) efficiency	Atkins in house technical analysis – limited stakeholder consultation.
<i>Technical/operational</i>	Digital Infrastructure Management	Atkins in house review using SMEs.
<i>Technical/operational</i>	Emergency Management System / rescue services / safety culture safety culture	Regulator discussions, stakeholder analysis and evidence base.
<i>Technical/operational</i>	Security (including Critical Infrastructure Protection)	EU literature review
<i>Technical/operational</i>	Driver licencing	TBD
<i>Technical/operational</i>	Interfaces with the 1520mm railway system and existing legacy infrastructure managers	Stakeholder review
<i>Technical/operational</i>	Cross-border operations, including vis-à-vis Poland;	Stakeholder review
<i>Technical/operational</i>	Capacity allocation and management	Atkins assessment / stakeholder feedback
<i>Technical/operational</i>	ERTMS management Interoperability, technical compatibility and cross acceptance	Atkins in house technical analysis
<i>Technical/operational</i>	Access to and/or management of service facilities	Legal / Regulatory Review
<i>Technical/operational</i>	Health & accessibility (including PRM)	Atkins best practice knowledge
<i>Technical/operational</i>	Quality of services	Stated datasets
<i>Technical/operational</i>	Promotion of reliability & punctuality	Stated datasets / Best practice
<i>Commercial</i>	Track Access Charges (TAC) determination and management	Rail Baltica bespoke assessment based on stakeholder feedback
<i>Commercial</i>	Scheduling/invoicing	Rail Baltica bespoke assessment based on stakeholder feedback
<i>Commercial</i>	Financial model	Atkins assessment based on stakeholder feedback
<i>Commercial</i>	Promotion and organization of cross-border services	Evidence based assessment from EU documentation and stakeholder consultation.
<i>Commercial</i>	User/operator (incl. railway undertakings) engagement model	Interview, assessment of options in conjunction with RU.
<i>Commercial</i>	Customer orientation	TBC
<i>Commercial</i>	Rail Baltica business development and commercialization (freight and passenger)	Atkins assessment based upon prior experience

Commercial	Engagement in Rail Freight Corridor 8 (RFC8) and other relevant joint initiatives for freight promotion	TBC
Commercial	Engagement in/with industry NGOs (including but not limited to EIM, CER, EFRA, UIC)	Assessment of current EU legislation and direction of travel for industry
Commercial	Sustainability and environmental protection	Best practice assessment
Commercial	Deployment of innovations and digitalization	Atkins in house technical analysis – limited stakeholder consultation.
Commercial	Research & development (e.g. Shift2Rail etc)	TBC
Commercial	Development of value added services	Atkins in house technical analysis – limited stakeholder consultation.
Commercial	Promotion of intermodality/multimodality (e.g. 'Mobility as a service' for passenger services and supply chain management for freight)	Stakeholder consultation
Commercial	Network synergies	Stakeholder consultation
Commercial	Management of other utilities/services in the Rail Baltica right-of-way corridor	Stakeholder consultation

In addition to these criteria, laid down in the tender, Atkins will make an assessment of the ability of each model to implement or deliver appropriate strategies with regards to the following areas of interest.

These are typically not essential criteria with regards to the development of an Infrastructure Manager and assessment will be qualitative, rather than quantitative, but their application is typically associated with high performing infrastructure management.

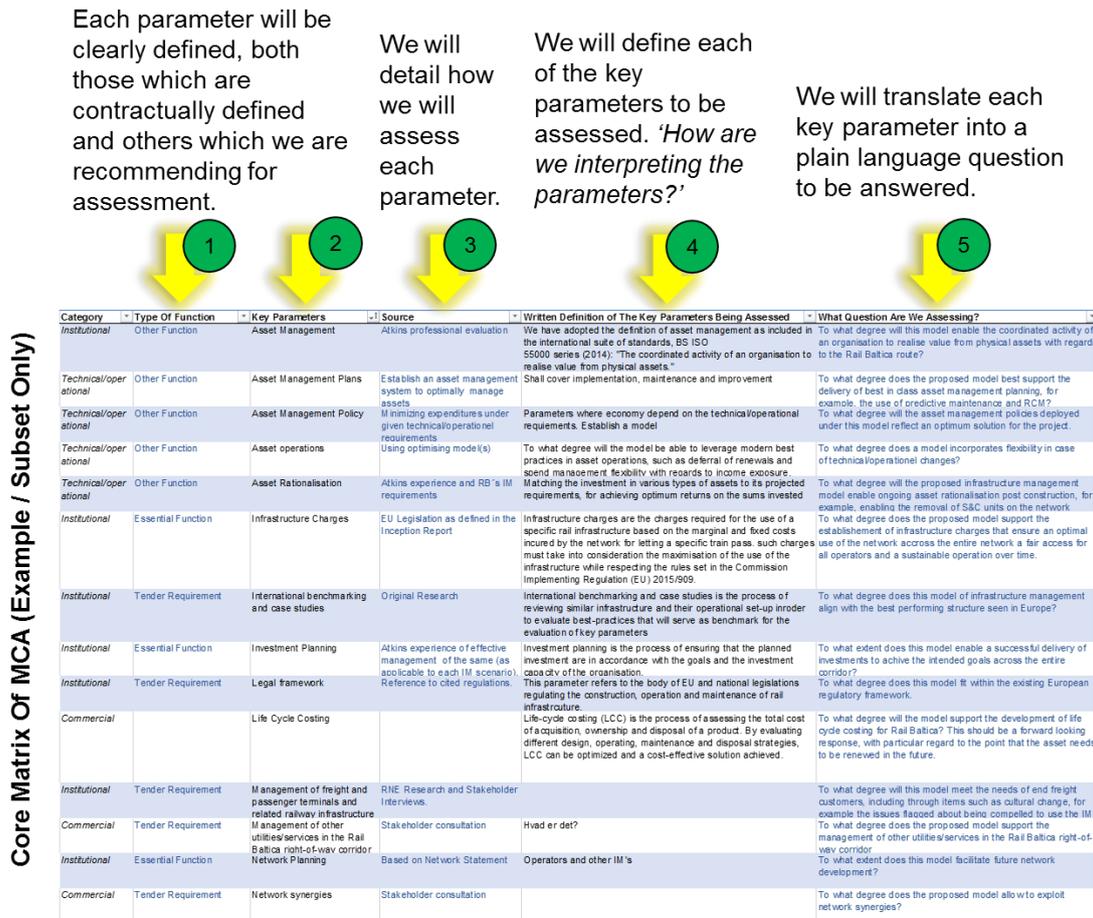
Accounting Practices	Asset Management Strategy	Contingency Planning	Health & Safety Policy	Procurement Category Strategies	Sub Threshold Delay
Assessment of Availability (Capacity Allocation)	Asset Operations	Customer Relations	Infrastructure Charges	Public Perception	Supplier Account Management
Asset Acquisition & Commissioning	Asset Rationalisation	Day to Day Operations and Timetable	Investment Planning	Relationship Management	Sustainable Development
Asset Data and Knowledge	Audit and Assurance	Defining Standards	Life Cycle Costing	Reliability Engineering (Prevent. Maint)	Systems Engineering
Asset Disposal Strategy	Behaviours	Demand Analysis	Network Planning	Resource Management	Technical Standards & Interoperability
Asset Information Systems	Boundary / Border Control	Effective Economic Regulation	Network Upgrades (Enhancements) - Definition	Resources (Generalist)	Trade Union Relations
Asset Knowledge Standards	Collection of Charges	Employment Strategy	Network Upgrades (Enhancements) - Delivery	Resources (Specialist)	Train Path Allocation (Strategic Timetable)
Asset Management	Commercial Revenues From Assets	Engineering Train Management	Path Definition	Risk Analysis	Transparency
Asset Management Plans	Competence	Environmental Policy	Perturbation Strategy	Risk Management	Extreme Climate Impact
Asset Management Policy	Configuration Management	Financial Planning	Possession Planning and Coordination	Stakeholder Relations	

## Stage Two: Logic Tests

Atkins will develop these parameters into the multi criteria analysis and score the relative benefits of each.

### Process

Against the testing parameters, Atkins will build the MCA using 5 steps prior to assessment, as shown in the example below (taken from the MCA under development):-



Against each parameter, for each scenario, we will document the benefits and risks that each infrastructure model may have and then quantify this based upon a clear scoring matrix, broken down by the nature of the data source, these being qualitative assessment, quantitative assessment and stakeholder opinion, ranking these as shown below.

Scoring Matrix					
Qualitative, Major, Positive	2	Quantitative, Major, Positive	2	Stakeholder, Positive, Evidenced	2
Qualitative, Minor, Positive	1	Quantitative, Minor, Positive	1	Stakeholder, Positive, No Evidence	1
Qualitative, Neutral	0	Quantitative, Neutral	0	Stakeholder, Neutral or Not Raised	0
Qualitative, Minor, Negative	-1	Quantitative, Minor, Negative	-1	Stakeholder, Minor, Negative	-1
Qualitative, Major, Negative	-2	Quantitative, Major, Negative	-2	Stakeholder, Major, Negative	-2

**WP4.2 Identification of at least three but not more than four highest-scoring options, according to multi-criteria analysis, including a) highest-scoring single cross border infrastructure manager (sub) option and (b) highest-scoring multiple infrastructure managers option (sub option).**

### Process

Atkins will extract the three highest scoring options identified based on the data and scoring in the weighted research table, where the highest score best aligns with the **Target Operating Model**. We will also include the model most strongly supported by the stakeholders

## WP5: Life Cycle Cost Analysis (Stage 2 Evaluation)

**WP5.1 An institutional whole network life cycle cost-model for comparison of the infrastructure management options identified in WP4.2 in terms of associated costs.**

### Stage Four: Cost Model Run

Atkins will then run a **Life Cycle Cost Model** for each of the three Infrastructure Manager options being studied, producing details of the two most cost efficient options, a **Root Cause Analysis** being produced with regard to the same which will identify the differences in the models.

Detailed life cycle cost modelling is centred around understanding the total cost of ownership of railway infrastructure, associated machinery and equipment, including its cost of acquisition, operation, maintenance and end of life management. At its simplest level, a lifecycle cost model should take all of these in order to give a total picture of the cost of the railway against the determined asset life or operating cycle. This can be covered by the following 5 steps.



Atkins does not propose creating a model which takes into detailed account the initial design and build phases of Rail Baltica – we will look only at the operate, maintain and renew elements.

**IMPORTANT:** *During our consultation process, multiple stakeholders have advised us that the difference from a cost comparison between the infrastructure management models would likely have to be qualitative and any differentials arising potentially small. One example cited was with regards to whether or not a single national control centre would be more efficient than multiple control centres – at first sight a relatively simple assessment in terms of costs. However, the view of stakeholders was that such requirements could be provided at a marginal cost (little more than incremental desk space and nominal IT costs). These items will prove difficult to evaluate and risk skewing the assessment. As such, we shall reserve our professional judgement as to any areas we believe we need to be descoped, but will evidence and justify the logic of our approach in each area. This approach will also apply to future deliverables regarding the development of comparative life cycle cost models under this tender.*

For operate, maintain and renew, we will request the headcount and costs which each IM would anticipate for their own geographical territories using a common breakdown and then look for any risks or synergies which would apply under the different scenarios under test. We will look to understand their existing position on asset management at that time.

We are likely to be able to make a qualitative assessment on the benefits of moving to modern asset management models, but are unlikely to be able to produce a defensible analysis at a detailed asset group level; we believe that this will not be required, provided that the stakeholders themselves concur with this approach.

We will produce an uncertainty analysis against these outputs to indicate our confidence in the end model and also indicate any potential benefits associated with innovative commercialisation onto the InfraCo models – for example, addressing the potential to sell fibre optic capacity under a single entity.

We will then update the detailed contract execution plan, produce the final report draft outline and issue the interim report.

***An institutional whole network life cycle cost-model for comparison of the infrastructure management options identified in WP4.2 in terms of associated costs.***

***WP5.2 Identification of two most cost-efficient options for final analysis.***

To deliver WP5.2, Atkins will conduct a final cost model run, error check the output, and create a ranking of the most efficient InfraCo options from a cost perspective. We will also overlay the commercial efficiency opportunities that each may present, both with confidence interval overlays, prior to review and discussion with Rail Baltica.

## WP6: Final in-depth analysis (Stage 3 Evaluation)

***WP6.1 An in depth comparative analysis of the two final options, providing a comprehensive assessment of the key factors underlying the choice and future implementation of either of these two (i.e. describe and compare both) models of infrastructure management for Rail Baltica, covering – but not limited to a) institutional factors b) technical and operational factors c) commercial factors.***

### Process

#### Stage One: Structure

Having identified and agreed the strongest potential candidates for the Rail Baltica InfraCo(s), Atkins will proceed to conduct a detailed assessment of each option, covering the strategic, economic, commercial, financial, and management benefits in order to understand how each of the options meets Rail Baltica's objectives of:

- Supporting national and regional economic growth;
- Achieving operational and economic efficiency; and
- Improving alignment between the InfraCo(s) and the different types of customers (and other stakeholders) they serve, including TOCs, FOCs, and regional and national government.
- Ensuring that Rail Baltica boosts the regions competitiveness
- Ensuring that Rail Baltica improves access to and from other parts of the single market
- Ensuring that Rail Baltica contribute to growth not only in the Baltic region, but in the EU
- Ensuring that Rail Baltica will promote growth in jobs in the entire Rail Baltica area through positive impact on industrial development, freight logistics, the quality of public service and reliable passenger- and freight transport
- Ensuring that Rail Baltica will attract investment by creating a better integrated area
- Ensuring that Rail Baltica bottlenecks are removed and seamless connections are created both for long distance and regional transport
- Ensuring that Rail Baltica improves regional integration

Each option will be assessed on a standalone basis, with an assessment of the initial Target Operating Model to provide a 'constant' for the comparison of options.

At this point we anticipate the criteria to include:

- Execution risk – What challenges will the models present?
- Ease/complexity of implementation: timescales; implementation costs; barriers;

- Transition risk – level of business interruption, establishing a new structure;
- Political risk, e.g. does an option conflict with specific Government policies.
- Legal risk e.g. State Aid considerations;
- Interface risk, e.g. how will Rail Baltica interface with TOCs and FOCs;
- Budgetary impact, e.g. how funds flow around any proposed structure
- Operational efficiency;
- Governance
- Alignment of incentives; and
- Allocation and transfer of risk between Government(s) and the Infrastructure Manager(s).

## Stage Two: Effectiveness, Efficiency and Economy

Atkins will identify how each option is likely to deliver on the ‘three E’s’ of effectiveness, efficiency and economy, over the longer term, at an industry-wide level. This will be based on the evidence amassed earlier in the project, with transparent reporting and a narrative about how these efficiencies could be delivered under the options.

### Key factors will include:

- the internal impact on Rail Baltica of the options to facilitate more effective and efficient operation and the potential for each option to promote or hinder the development of on rail competition and/or improvements in service quality to passengers
- How each potential solution facilitates or hinders macro level efficiencies, such as Category Management for procurement of raw materials in procurement.
- How each solution could impact the types of jobs created and the skills needed.
- What else is likely to be needed by the InfraCo to operate effectively in a world that is likely to be increasingly changed by the rise in autonomous vehicles, both from the perspective of autonomous cars plus trucks and boats for the purpose of freight.

## Stage Three: Commercialisation

It will be key to the assessment of each option to understand how any changes in structure will affect the flow of funds around the structure and who will retain overall responsibility for expenditure. This is likely to be a key driver of effectiveness, efficiency and economy, together with supporting changes in other parts of the industry (such as changes in franchise agreements). Our work will also encompass the likelihood of benefits and costs being delivered by each option.

The form of government control arrangements for spending will need to be discussed for each option, as will the allocation of risk in a number of circumstances (ranging from force majeure to individual items such as traffic).

**WP6.2 In addition to 6.1 – consider, propose and include in the final analysis any other critical factors to be taken into account when determining and taking political decisions on the Rail Baltica Management Model.**

Our identification of critical factors will be generated from our stakeholder engagement under the Target Operating model. During this time, we will draw out their aspirations for the project and ensure our engagement clearly communicates how we are trying to address those concerned.

On occasion, not all political aspirations can be satisfied – some may be mutually contradictory and as a result our focus will be to try and identify a high performing solution that all parties can support.

Critical factors are likely to include:-

- Stopping patterns
- Speed between different locations
- Employment benefits in each country associated with the InfraCo.
- Training opportunities associated with the InfraCo.
- Regional Benefit accruals relating to commercialisation of the service.

Atkins will show where political aspirations differ, where they align, permitting amendments to the final model in order to produce a workable, effective solution that ensures ongoing stakeholder support and will be happy to support this process both for the duration of the contract and subject to acceptable terms, on an ongoing basis.

As such, our final recommendations will be pragmatic, optimised for the political landscape as much as the geographic one that is Rail Baltica.

## WP7: Identification & Detailed Description Of The Optimum Model

***WP7.1 Based on the comparative in-depth analysis in WP6, identify and propose the optimum model of infrastructure management for Rail Baltica.***

We will conduct a detailed PESTLE analysis (Political, Economic, Social, Technological, Legal and Environmental). The key objective of this process will be to identify the optimum model that will be supported in its implementation, not just from a theoretical 'best operating model' view and from this basis make a single recommendation for the Infrastructure Management solution for Rail Baltica. During this period, we anticipate following the following process:-

### Process

#### **Stage One:** Political Support Evaluation

If there is unilateral political support for one solution, Atkins would propose moving direct to stage 7.2, documenting the PESTLE output in that phase.

#### **Stage Two:** Stakeholder Communication

If there are concerns raised by a minority of stakeholders for a specific model, Atkins will consult with them to address their concerns to reflect in the final evaluation.

#### **Stage 3:** PESTLE Development

Following an internal review, Atkins will develop their proposals for the optimum model following a detailed PESTLE analysis, documenting the outputs for Rail Baltica in an evaluation matrix.

#### **Stage 4:** Stakeholder Communication

Atkins will share their findings and final recommendation with the stakeholders, giving them an opportunity to comment on the same. Delay or rejection of the final recommendation for WP7.2 may result in a required extension of time and is a risk that will need to be defined in advance if it appears that this is materialising in advance.

Through the development of the Rail Baltica Infrastructure Management study, the methodology of the Multi-Criteria Analysis (MCA) had minor alterations versus the methodology proposed in the inception report. Such changes were made in light of the relatively limited quantitative data which we were able to obtain through benchmarking, leading to a more qualitative assessment. The changes made ensured the MCA retained a holistic evaluation of the Infrastructure Manager options by assessing possible options against criteria in the broad categories of:

- Asset Management;
- Commercial Management;

- Financial Management;
- External Management;
- Policy;
- Strategy; and
- Sustainability.

Each of the above categories are broad and were broken down further into smaller questions which capture individual aspects, each scored from 0 to 4. There were 92 questions proposed in total, maintaining the general distribution of the initial tender requirements. A number of scores were amended to further improve robustness and enhance the MCA, with written justification for this being provided, including:

- Whether there was a low level of commercial risk associated, due to the restricted commercial freedom of this option. This would enable effective commercialisation of the assets.
- Based on our professional experience, whether or not there would be strong resistance from rail regulators with regards to this complexity of commercialisation, but there would be strong precedent for this level of commercial activity (marked by asset retention).
- Whether or not this was complex from the perspective of regulation (telecoms, power etc), state aid. In particular, the ability to offer non-railway services means that evidencing asset cost control would be difficult.
- The degree to which complexity of branding could become a potential issue.
- Aspects relating to the transactional nature of products and services being provided.
- The risks associated with a highly complex model with the broadest possible scope for asset commercialisation and resulting in some asset disposals under lease back type agreements.
- Whether or not the option would involve 3rd parties working on the railway, with potential impact and risk to operational services.
- Whether the options were complex from the perspective of regulation and state aid.

### 1.3. WP3 & WP4 Option Identification and Multi-Criteria Analysis

Please see previously issued report for detail. This report considers Options 57 and 63 as the primary options for an Infrastructure Manager to be taken forward for detailed assessment, with Options 5 and 85 used as reference cases as appropriate.

To develop different options Atkins has sought to understand those activities that might be used to differentiate between options. These include both the core activities of an Infrastructure Manager and other activities which Rail Baltica IM might undertake with a wider role and purpose. The “core” and the “wider” activities are defined terms in this paper below. These activities are defined as “differentiators”.

It is important to note that where the term Rail Baltica IM is used in this paper, that refers to the Rail Baltica entity that may (or may not) operate the infrastructure manager role on the Rail Baltica route. Other parts of the current RB Rail AS structure may undertake other roles subject to the agreement and the mandate of the shareholders but where that is the case that is noted specially in this paper.

The activities undertaken by an organisation effectively define that organisation and the way that it needs to be structured.

This can be seen in the way that some EU directives help define what is an Infrastructure Manager. Directive (EU) 2016/2370 of the European Parliament and of the Council of 14 December 2016 amending Directive 2012/34/EU as regards the opening of the market for domestic passenger

transport services by rail and the governance of the railway infrastructure, it states that “Member States should, as a rule, ensure that the infrastructure manager is responsible for the operation, maintenance and renewal on a network and is entrusted with the development of the railway infrastructure on that network”. Therefore, the IM ideally operates maintenance and renewal.

Moreover, in Directive 2001/14/EC of the European Parliament and of the Council of 26 February 2001 on the allocation of railway infrastructure capacity and the levying of charges for the use of railway infrastructure and safety certification it states ‘Applicants may request infrastructure capacity crossing more than one network by applying to one infrastructure manager. That infrastructure manager shall then be permitted to act on behalf of the applicant to seek capacity with the other relevant infrastructure managers’. This would mean a Single Point of Contact (SPOC).

Variances in the “core” and “wider” activities not mentioned above that might be undertaken by an infrastructure company on the Rail Baltica route help, therefore, distinguish the difference between the options for the shape of Rail Baltica IM. In this paper they are referred to as “differentiators”

In the Appendices Atkins sets out the issues relating to where two nations might reach an agreement but there is no common arrangement for all three along the Rail Baltica route.

The core activities section below defines the “core” activities of an IM used in this paper.

### 1.3.1. Core Activities

#### 1.3.1.1. Core Activities Introduction

The ‘Directive 2012/34/EU of the European Parliament and of the Council of 21 November 2012 establishing a single European railway area (recast)’ and the ‘Agreement between the Government of the Republic of Latvia, the Government of the Republic of Estonia and the Government of the Republic of Lithuania on the development of the Rail Baltic/Rail Baltica Railway Connection, done at Tallinn on 31 January 2017’ between the nations defines the functions of an IM as:

- Responsibility for Maintenance and renewal of network (to enable warranty of train paths);
- Network Planning (Operational of the infrastructure) including:
  - Train path allocation;
  - Train path definition;
  - Assessment of availability; and
  - Calculating and collection of infrastructure charges.
- Financial Planning (of the IM) – taken to mean day to day operation;
- Investment Planning (of IM enhancements) – that may be proposed and developed initially by others; and
- Asset Management – day to day management required to deliver safe and operationally effective railway.

According to Directive 2012/34/EU of the European Parliament and of the Council of 21 November 2012 establishing a single European railway area (recast) – SERA Article 3 (18), allocation means ‘the allocation of railway infrastructure capacity by an infrastructure manager’.

During the stakeholder interviews, the stakeholders (to date) volunteered the following core functions:

- Safe operation of the network in accordance with international and national safety regulation;
- Provision of track access for operators in accordance with any track access agreement (although such track access itself may be a product of availability-based contracts with contractors);
- Quotation of track access charges to train operators (in accordance with arrangements over sighted by regulators and other bodies subject to the options);

- Invoicing for track access;
- Hold liability for payment of contractors (including construction, renewal, maintenance and operational contracts) – although national governments may discharge this liability within their nations through arrangements with other entities including existing national railway IMs);
- Allocation of track capacity (on transparent and impartial basis but subject to potential guidance);
- Responsibility for “day to day” traffic management (although day to day operation in accordance with defined guidelines might be delegated);
- Provision of data for reporting for national and international bodies; and
- Procurement of network performance and development plan (on periodic basis to be agreed).

No other core functions have yet been volunteered.

Some of the above functions are unlikely to be a differentiator unless most circumstances. For example, in all options the IM will be responsible for some of their own financial planning, have a role as asset operator in the planning of infrastructure enhancements and be responsible for managing most of the asset base of Rail Baltica.

In all options the IM will be responsible for the provision of track access in their area (i.e. within a single nation if Rail Baltica is divided on national lines), network performance and provision or data requirements. These factors are not, therefore, differentiators. Note that the financial planning as part of more devolved arrangements in which Rail Baltica IM takes more responsibility commercially and takes on commercial risk is a differentiator (see below). Similarly, where the IM actively plans potential changes in infrastructure and it manages the associated business case and vision for Rail Baltica is also a differentiator (see below).

It is important to note that EU requires, if requested, that all IMs on a given route must be able to quote for track access and be able to invoice for the entire route of the proposed traffic. Providing such a SPOC (or not) is therefore not a differentiator.

The options for the IM may create the potential for profit and the requirement for financial warranties, subject to the performance of the entity. In all options, the governments could elect to discharge the financial obligations (and benefits) through existing organisations – but the discharge of financial responsibilities would remain separate from the responsibility for the functions of the IM. In other words, Lithuanian Railways, if required by the Lithuanian government, should not be prevented from paying for financial obligations incurred by the Lithuanian government associated with RB IM without having any direct managerial control. Such a mechanism could avoid the need of the Lithuanian Department for Transport seeking separate budgetary authority for both the Lithuanian obligations under RB IM and existing railway undertakings.

We have also excluded the following roles from the IM:

- Operation of freight services – other than engineering trains – as contrary to general provisions of EU law; and
- Operation of passenger services – as contrary to the general provisions of EU law.

It is important to note that it is legally permissible to secure an exemption from EU law that will allow an Infrastructure Manager to be owned by the same legal entity that also owns train operators. This arrangement is contrary to the direction of travel of the EU packages and was not constructed for new multi-national railways (rather for very much smaller entities). Where such arrangements are permitted that there is still a legal requirement that all operators are treated equally and that treatment can be shown to be transparent with equality of track access allocation and pricing, and this will require some degree of formal independence between the Infrastructure Manager and the owning entity, sufficient to enable the Infrastructure Manager resist informal instructions from the owning entity

to act partially. To meet the legal requirements of the EU this formal independence will require the Infrastructure Manager to use transparent process. If an Infrastructure Manager is required to be sufficiently, formally and transparently independent from any owning group – and therefore will act separately in accordance with EU law - it is reasonable for this paper to treat such an entity as wholly separate and therefore exclude options that take into account owning groups. Most importantly the EU has permitted such arrangements (where an owning group owns both an Infrastructure Manager and train operating groups) because they are historic and assurances have been given that all operators will be treated impartially, but the EU is far less likely to permit any such new arrangements. In addition, given that the EU may fund between 75 and 80% of Rail Baltica it seems unlikely that even they will permit any structure that is contrary to the spirit of recent railway legislation.

This resulted in the following “core” activities being considered as differentiators in this paper:

1. **Freedom to set all track access (PASSENGER and freight) at market prices across route** – that is at the maximum the market will bear (above the variable incremental cost of operating a given service). Note that the next differentiator is freedom to set market prices for freight only – so the only distinct element of this differentiator is the market pricing of passenger services.

Market pricing increases the possibility of higher share dividends to the three shareholders because charging “market prices” should maximise revenue. But this means that governments and the economies of the Baltic states are less likely to benefit economically from Rail Baltica because passenger rail access (and freight rail access) will be more expensive, and that will impact on passengers and freight users. There is also a significant danger that any IM will overprice traffic in a negotiation and may therefore not maximise traffic levels. Market pricing for passenger traffic is both politically and commercially complex. One of the biggest issues with the market pricing of passenger services is that it can create political difficulties particularly when a (perceived) “aggressive” approach by an IM might force a passenger service into needing subsidy. That creates the possibility of cross-subsidy between nations where for example one government has to subsidise a passenger service in their country because the track access price is set much higher than the incremental cost.

Having taken soundings during the consultation process, this option – to allow the Infrastructure Manager to market price passenger services - has now been rejected for the initial requirement for passenger services, due to the political and commercial risks associated.

2. **Freedom to set the track access rates for FREIGHT ONLY flows at market price** – that is at the maximum the market will bear providing that is above the variable incremental cost. This increases the possibility of somewhat higher share dividends to the three shareholders. However, this means that governments and the economies of the Baltic states are somewhat less likely to benefit economically from Rail Baltica because freight rail access will be more expensive, and that will impact on freight users. It is important to note that the opportunity to charge for track access at market rates offers more chance for partial behaviour – infrastructure managers might be persuaded to charge operators they have an existing relationship with less than new operators. Because of the different ways that the same traffic can be handled – in containers, in large/small batches, on different routes using different terminals – it will be difficult for an Infrastructure Manager to be certain that they are pricing the same flow equally.

One of the biggest benefits of the Infrastructure Manager having the freedom to market price track access is that it should maximise revenue. This does not mean that that any regulated arrangement need also to miss out on the opportunity. The regulated freight charging regimes that generate the highest levels of revenue allow many differential factors to be considered including not only tonnes and distance, but may consider traffic type, wagon type, axle wear, traffic routes, credit history, train size, average speed, train speed as proportion of line speed and other factors.

The market pricing of traffic gets particularly difficult if there is more than Infrastructure Manager – each Infrastructure Manager has a requirement to act as a single pricing window for the whole route of the train. However inevitably different infrastructure companies will take different commercial approaches to market pricing. This is exacerbated by the fact that operators will be free to “shop around” to secure best rates. In addition, it is less clear how the track access income will be divided between multiple Infrastructure Managers. If each Infrastructure manager on the route seeks a market price for traffic crossing it route then the commercial arrangements will become complicated. In the opinion of Atkins – for a single multi-national line like Rail Baltica – the option of multiple infrastructure managers all seeking to market price traffic is not a viable option.

One significant advantage of regulated pricing is that operators will be able to calculate their track charges themselves. This makes the process transparent and avoids operators “shopping around”. The risk is that operators may have been able to pay more than the regulated rate and that this surplus will not be owned by the Infrastructure Manager but by the train operator.

3. **Single authority across the route for day to day operations (traffic management)**

Atkins feels that Rail Baltica IM cannot be reasonably responsible for Traffic Management (3) unless it is responsible for timetabling and capacity allocation (4). This is because traffic management should be delivery to a timetable and if the three national IMs cannot delegate timetabling on a separate route to a whole route body they will not be able to agree to delegate operational delivery to an agreed whole route timetable also.

In summary, whilst it is possible to delegate traffic management to a common entity and not capacity allocation, this would not be optimal as there would be no common plan and means by which Rail Baltica IM could be held accountable for operational performance.

4. **Single authority across route for planning capacity and allocation (timetabling).**

Rail Baltica IM may, however, be responsible for timetabling without having traffic management responsibility in the same way that neighbouring national railways might agree an international timetable across their border but be responsible for traffic management within their own timetable. It is worth noting though that in the case of Rail Baltica the railway will be new and there will be a common rail train control system to meet current EU standards, and this will be separate from the existing – legacy - train control systems in the three Baltic nations by default – even if they are housed in the same buildings. Because of this and the difficulty of separating contractual responsibility for train performance along a route, it will be complicated to separate timetabling and traffic control so this has been restricted to only options where Rail Baltica IM is also not responsible infrastructure maintenance as has only a strategic role.

5. **Single entity responsible for procuring inspection only across the whole route across all three nations.**

This differentiator has been conflated with differentiator 6 below because the difference in terms of final options is small and were adding significant complexity to this analysis. It is therefore not shown in the tables below.

6. **Single entity for responsible for procuring inspection and maintenance across the whole route across all three nations.**

With this differentiator Rail Baltica IM is responsible for inspection and maintenance across the whole route, but this is expected to be contracted out either on a whole route basis or separately across each Baltic state. In the discussion with Stakeholders, the willingness for maintenance to be contracted out was tested. There was universal support for the principles of transparency and competition that underlie the expectation that maintenance that maintenance will contracted out, even as accountability remains with the contracting entity. It is important to note that, where RB IM is responsible for maintenance, it is very likely that the other parties will therefore require civils maintenance

to be contracted out rather than managed in house, in order for them to be certain that the most efficient contractor was selected in a transparent fashion. One impact of this will be that the size of any RB IM undertaking this function will be relatively small, and therefore, excepting where additional functions are undertaken, the whole organisation of RB IM will be consequentially small. Civils maintenance should be relatively simple to contract out, because the infrastructure is new and may be part of a DB&M contract. Inspection may or may not be contracted out. Civils infrastructure maintenance lends itself to division by geography excepting for the share of mobile plant (that may be acquired by RB IM). Systems infrastructure usually cannot be geographically divided, because of the need to deliver useful outputs across the end-to-end route.

We have derived the following “wider” activities from (1) Atkins’ extensive experience in understanding the full spectrum of IM functions (2) extra activities identified by comprehensive benchmarking (3) consultation with stakeholders where they have proposed such activities are undertaken by Rail Baltica IM, and/or (4) consultation with stakeholders where such activities are already undertaken by the broad gauge national IMs in Estonia, Latvia or Lithuania.

#### 1.3.1.2. Wider Activity Differentiators:

7. **Vision Author:** With this differentiator the Rail Baltica Infrastructure Manager will own publish a (probably regular) vision setting out the strategy and the associated business case for the Rail Baltica in terms of services and infrastructure. This different to a regular Network statement which is effectively a stewardship and asset condition report and is considered a normal function of infrastructure management, is required by EU regulations, and is expected to be produced in all options. Any such “vision” document is smaller in scope where the role of Rail Baltica IM covers fewer functions;
8. **International Rail Relations Lead:** With this differentiator the RB infrastructure manager shall act as collective body for negotiations for commercial relations with other countries (e.g. Poland, Finland) – i.e. more than day to day to operations engagement. This role is considered dependent on RB IM at very least undertaking capacity allocation – without this RB IM will have authority in its role with other railways;
9. **Passenger Concession Letting agency:** With this differentiator the RB infrastructure manager shall act as a collective body (on behalf of the governments of Estonia, Latvia and Lithuania) to manage the passenger concession letting process (and potentially supervise the concession delivery to the Concession Agreement by the winning bidder also on behalf of the governments of Estonia, Latvia and Lithuania). This is not the same as operating a passenger service. In fact, by being the procuring body for passenger services, Rail Baltica IM would be excluded from operating any passenger services.

During the stakeholder consultation process some stakeholders expressed surprise that a passenger concession agreement might be required and their expectation that “open access” operators would run sufficient passenger services. Whilst it is possible to rely on “open access” operators only such an approach will generate significant political and commercial risk to the governments of Estonia, Latvia and Lithuania, and the EU, because (1) passenger services may be unbalanced between nations (frequent in one and infrequent in others), (2) be withdrawn with little notice after having been announced politically and leaving a financial “black hole” at Rail Baltica IM, and (3) be financially weak as the premium routes may attract competition which will erode profitability and less premium routes be expensive to operate. The biggest issue though is that the Rail Baltica support from the EU is based on a business case that includes social, economic and environmental benefits that derive from the operation of a minimum quantity passenger rail service that cannot be operated by “open access” operators. The business cases may also rely on defined quality and fare levels also.

Given the lack of expertise and procurement vehicles (and the need for the concession specification to be international) Rail Baltica IM may be the most appropriate vehicle for

running a passenger concession competition and managing the subsequent operation. In this case Rail Baltica IM will act as an agent for the governments of Estonia, Latvia and Lithuania. Other contracting entities also exist. Note that if RB IM acts as the passenger concession letting agency it cannot also “market” price track access but that all passenger access costs will need to be independently determined and regulated;

The next five differentiators relate to the degree of freedom that Rail Baltica IM may enjoy:

10. **No (significant enhancement in) commercial freedom:** With this differentiator the RB infrastructure manager shall have the ability to offer no “wayleave” services or ancillary services across three nations to third parties. Rail Baltica IM’s freedom will be constrained to providing track access only. Even though this differentiator minimises the commercial activity that Rail Baltica IM can undertake in addition to track access provision it is important to note that Rail Baltica IM will still face some commercial risk where such track access income is lower than the cost of maintaining and renewing the route, and therefore an agreement required how this will be managed by shareholders (and potential profits and losses managed);
11. **Commercial Services Freedom (minimal):** With this differentiator the RB IM shall have the ability to offer RAILWAY commercial services across three nations to third parties and wayleave services without acquiring extra land, e.g. maintaining a private siding and common terminal operations (lifting only) where on land already identified for railway use or at third party premises, wagon leasing. Some commercial risk will be involved and therefore an agreement required how this will be managed by shareholders (and potential profits and losses managed);
12. **Commercial Services Freedom (partial – no extra land):** With this differentiator the RB IM shall have the ability to offer Railway and NON-RAILWAY commercial services across three nations to third parties without acquiring extra land, e.g. offering telecoms capacity, terminal operation other (e.g. storage, ancillary services);
13. **Commercial Service Freedom (partial – extra land for railway associated services only):** With this differentiator the RB IM shall have the ability to offer NON- RAILWAY commercial services across three nations to third parties on defined land e.g. offering telecoms capacity AND the ability to offer Railway associated services on extra land e.g. a terminal for railway operation but not acquiring land for housing;
14. **Commercial Service Freedom (full):** With this differentiator the RB IM shall have the ability to offer Railway and NON-Railway commercial services on own and acquired land, without any restriction beyond governance.

The next four differentiators relate to different governance arrangements:

15. **RB IM share structure duplicate to RB Rail AS.**  
In this instance it is assumed that the governance arrangements for RB IM will be broadly the same as the existing RB Rail AS, although a different body. The key issue being that a simple majority of the representatives of the three governments will have a controlling majority of the entity (through the share structure and/or governance).
16. **RB IM share structure minimally modified from (duplicate of) RB Rail AS - with slightly greater management freedom (minimal relaxation):** With this differentiator the RB IM share structure will be modified from that of RB Rail AS – or governance arrangements put in place that will have a similar effect such as shares being put in trust or government shareholders agreeing to restrict their voting rights - so that each nation owns/ no more than 17% of equity (and remaining 49% is managed by RB Rail AS or privately or is in some other way the voting powers of the three existing shareholders are restricted) – so it requires consensus of all three Baltic nations at a minimum to change management direction and decisions;

17. **RB IM share structure moderately modified from (duplicate of) RB Rail AS (some relaxation):** With this differentiator the RB IM share structure will be changed from that of RB Rail AS so that RB IM shares are sold over time or placed into a defined trust with government holding “golden shares” only or limiting its right to intervene. “Golden share” arrangements typically give defined right of oversight e.g. over a potential sale but restrict interference over commercial matters.
18. **Fully ‘modified’ RB IM share structure (creation of private entity):** With this differentiator the RB IM share structure will be changed so that shares are ALL sold over time with no government holding any shareholder interest OR governments agreeing to not intervene in the management of the company. One of several ways this could be achieved is by an IPO on the European exchange.
19. **(Back-stop) haulage offer capability:** With this differentiator the RB IM shall have the ability to offer (limited) haulage rates (with services sub-contracted) to encourage early and transparent operator market. It is likely that such a service will be very time limited. The expectation is not that Rail Baltica IM will be a freight operator but may contract with users to haul freight and sub-contract this out to freight operators. This may be required for the intermodal traffic to allow Rail Baltica IM to aggregate services which may be small and dispersed initially, and to ensure that a minimum service level (frequency of trains) between (defined) locations. Rail Baltica IM has the freedom to price such traffic above the cost of contracted haulage and will have the freedom to decide how the freight is operated. It is important to note that whilst such an approach might help stimulate market demand that it may leave Rail Baltica exposed commercially. Explicit shareholder support would be required for such a service to be offered.

It is not suggested here that Rail Baltica IM will be an operator of services. Such arrangements are possible. Eurotunnel operate shuttle services across the English Channel in addition to being the track access provider of longer distance services. But as discussed above, such an arrangement is contrary to the spirit and direction of recent EU railway directives. Such arrangements can be permitted (particularly for historically vertically integrated railways) but they are permitted by exception and there are no unique circumstances that suggest that such arrangements are appropriate for a new entity. Such an arrangement would risk signal to “open access” operators that they may be treated partially and would almost certainly make it significantly harder (if not impossible) to secure EU funding.

Looking at these items above and existing agreements, Atkins has proposed that the following items are common across all options and the structure of the IM will not impact on this.

#### 1.3.1.3. Core Activity differentiators:

- Safety Delivery is a matter for the national regulators in each country with the application of a Common Safety Method across all three nations for the route;
- Regulated access to common facilities such as intermodal yards where required. Note that Article 8 of the Rail Baltica Agreement states that: “the parties agree that land and infrastructure (which should include yards and terminals) shall be made available for use by nominated infrastructure manager(s).”;
- Where track access rates are regulated they are regulated according to a common formula across all nations – although governments have the right to reduce this where they compensate the IM for lost revenue;

- In all instances the contracting entity for new CIVIL construction will be the RB entity in each country (which may or may not be the existing national IM). Atkins' professional opinion is that it will prove inefficient if the installation of the systems and train control for Rail Baltica is split nationally as it will automatically create extra interfaces so it is, therefore, possible that systems and train control will be contracted by Rail Baltica IM, as for the whole route. If this is not the case it will be harder for Rail Baltica IM to be responsible for the performance outcomes should they be the Traffic Manager and allocate capacity because they were not responsible for the train control systems they are using and because of the extra interfaces (technical and operational);
- In all examples, the financial liabilities for contracts for construction, renewal and maintenance incurred by any RB national entity may be discharged by the existing national Infrastructure Manager or any other competent entity so defined by the respective National Government – however, that does not mean that they will be the contracting entity. This means that where national governments wish to net off any losses/costs at Rail Baltica IM by using profits/surpluses from national railways they control that they should be allowed to do, and vice versa;
- All civil construction and renewals will be competitively tendered (except where “in house”) and the work will be to the design standard specified by RB Rail AS and selection will be based on the most economically advantageous to Rail Baltica without consideration of the impact on other rail operations in that country; and
- The “day one” structures will seek to eliminate cross subsidies between countries.

### 1.3.2. Options

#### 1.3.2.1. Explanation of the methodology behind selection of the Long-List

Because the number of options is a factor of the number of differentiators the theoretical number of options is, therefore, very high (around 20,480). However, even though most of the differentiators above are theoretically independent from each other in nearly all circumstances, many of the differentiators are in fact linked. For example, whilst it may be possible to institute a commercially free entity in all other regards with the existing share/governance structure (remaining the same as current) such an organisational and commercial structure would be burdensome. It would be difficult to recruit appropriately skilled management as they would be worried that only two shareholders will need to ally to disrupt their plans. Similarly, it is theoretically possible to have an option where a fully commercial entity might not also be responsible for inspection and maintenance of the route infrastructure for Rail Baltica (whether or not contracted out), but such a scenario is highly unlikely given that the commercial Rail Baltica IM entity could undertake infrastructure inspection and maintenance for other parties. Therefore, Atkins has shown a limited range of options below only, and used professional judgement to reduce the number to something workable, and exclude options that whilst being theoretically possible are, in its professional judgment, impractical. Additionally, some options have been excluded where there is only a very small difference between them.

Atkins has sought in this process to try to reflect the range of stakeholder views but also select credible options that are internally consistent. The Long List therefore reflects both a wide range of what may be possible commercially but also a range of options. The Long List includes more options that envisage greater commercial freedom to a single entity than see a more restricted role. This is because the combination of differentiators has an incremental effect. However, that is not the case for the Short-List.

It is important to note that in order for there to be a consistent and coherent process, the options all consider the role of any Rail Baltica IM. Where the Rail Baltica IM entity does not undertake a role or function (such as traffic management) that this role may still need to be performed. The default assumption is that where that is the case such a role will be performed by the existing national infrastructure managers or the national government(s). In case of traffic management, therefore, it is assumed that the national governments will either ask the existing infrastructure manager to

undertake that role in each nation or contract with another body to so (which is highly unlikely in this instance).

### Options 1 – 24:

Options 1 – 24 are based on Rail Baltica IM having the highest levels of commercial freedom. As such these options assume that Rail Baltica IM will have the commercial freedom to buy land and offer extra services including both rail associated and non-rail services. Key variables include:

- Freedom to set the track access rates for freight traffic at market rates or whether regulated rates should be applied;
- Whether Rail Baltica IM may act as the passenger concession letting authority;
- Whether Rail Baltica IM could offer back-stop haulage; and
- The ownership structure (and by default how much freedom the three governments allow the management) between a minimally modified share/governance structure, a moderately modified share/governance structure (with gold share), and a fully modified share/governance structure leading to the creation of privately run entity. It is considered that it would be impractical for Rail Baltica IM to enjoy high levels of commercial freedom whilst retaining the governance structure of RB Rail AS, so there are no options where Rail Baltica IM has the highest level of commercial freedom with share structure remaining the same as the current RB Rail AS.

Any commercially free entity can be expected also to undertake (3) traffic management, (4) capacity allocation, (6) procurement of inspection and maintenance across the whole Rail Baltica route, (7) hold the “vision” for Rail Baltica and (8) be the international rail relations lead. These are, therefore, not variables for these options. Due to this level of commercial freedom, it is highly likely that Rail Baltica IM will be responsible for inspection and maintenance of the whole Rail Baltica route even if this is contracted out.

### Options 25 – 48:

Options 25 – 48 are the same as options 1 – 24 except that Rail Baltica IM will be given partial commercial freedom (albeit with the right to acquire land for railway associated services). As such these options assume that Rail Baltica IM will have the commercial freedom to buy land for rail associated services and offer extra services including non-rail services. The variable differentiators are the same:

- Freedom to set track access rates for freight traffic or whether regulated;
- Whether Rail Baltica IM can act as the passenger concession letting agency for the governments of the Baltic states or not;
- Whether Rail Baltica IM could offer back-stop haulage; and
- The ownership structure (and by default how much freedom the three governments allow the management) between share/governance structure remaining the same as those of RB Rail AS, a minimally modified share/governance structure, a moderately modified share/governance structure (with golden share), and a fully modified share/governance structure. It is considered that it would be impractical for Rail Baltica IM to enjoy high levels of commercial freedom without some change in share/governance structure, so there are all options have some (even if minimal) change to the existing share structure of RB Rail AS.

Because of this level of commercial freedom, it is highly likely that Rail Baltica IM will also therefore be responsible for inspection and maintenance of the whole Rail Baltica route even if this is contracted out.

### Options 49 – 60:

Options 49 – 60 are the same as options 1 -24 and 25 – 48 except that Rail Baltica will be given partial commercial freedom without a specific mandate to acquire new land where required for any non-core services. However, even this limited scale of freedom is considered to be incompatible with the existing share/governance structure of RB Rail AS (differentiator 17). However, because of the

reduced commercial freedom is considered unlikely that Rail Baltica IM would be able to offer market pricing for freight traffic and therefore the options exclude this as a differentiator.

The variable differentiators are:

- Whether Rail Baltica IM can act as the passenger concession letting agency for the governments of the Baltic states or not; and
- Whether Rail Baltica IM could offer back-stop haulage.

Again though, any commercially free entity, even with only partial commercial freedom can be expected also to undertake (3) traffic management, (4) capacity allocation, (6) procurement of inspection and maintenance across the whole Rail Baltica route, (7) hold the “vision” for Rail Baltica, and the international rail relations lead (8).

Because of this level of commercial freedom, it is highly likely that Rail Baltica IM will also therefore be responsible for inspection and maintenance of the whole Rail Baltica route even if this is contracted out.

### **Options 61 + 62 + 63:**

In this case Rail Baltica IM will have only minimal commercial freedom to offer other services or wayleave rights (differentiator 13). However, even offering these services will be strained by the existing share/governance structure (differentiator 17, and 18 and 19). That said such a commercial remit is probably also incompatible with a fully free share/governance structure also (differentiator 20). It is considered that if Rail Baltica enjoys only partial commercial freedom it will be harder for them to exercise that freedom if the share structure remains the same as RB Rail AS, as it will take takes only two shareholders had the power to oversee any commercial arrangement. For example, Rail Baltica IM might choose to make a decision that might disproportionately benefit one nation more than the others for a commercial return and find itself being second guessed by the shareholders of the other two nations. However, because of the likely reluctance of shareholders to relinquish control and the ambition of Rail Baltica IM to have some (even if minimal freedom), Option 63 was constructed where there was no change in governance structure but some commercial freedom.

It is likely that even a partially commercially constrained Rail Baltica IM entity will still own some kind of vision document (even if less ambitious in scope) and network development.

Given the commercial constraints they will not be able to offer a back-stop rail haulage offer or have the spare management capacity to act as the concession letting agent for the Baltic states or as the lead with other national railways. It is also highly unlikely that any such entity would offer anything other than regulated track access rates for freight traffic (and passenger traffic).

If the commercial freedom that Rail Baltica IM enjoys allows them to offer services to other parties, such as track maintenance, it is likely that they will be responsible for inspection and maintenance (even if this is contracted out), and for timetabling (4).

Traffic management (3) is also not a variable differentiator because the performance of any other party responsible for traffic management but not responsible track maintenance and the timetable could not be assessed and would therefore risk Rail Baltica performance.

### **Options 79 – 84**

In these options Rail Baltica IM will have no more commercial freedom than today other than to offer the core functions (differentiator 12). No change in the existing share/governance structure is therefore required (differentiator 17).

One variable is whether Rail Baltica IM will still own some kind of vision document (differentiator 7) even if less ambitious in scope than might have been the case in other options. But the vision could also be led by the national governments (or their elected delegated authorities). However, given the centrality of the timetable process Atkins does not believe that it is possible for Rail Baltica IM to own the vision document (7) unless they are also responsible for capacity allocation (differentiator 4).

Given the commercial constraints, Rail Baltica IM will not be able to offer a back-stop rail haulage offer or have the spare management capacity to act as the concession letting agent for the Baltic states or as the lead in negotiations with other national railways. It is also highly unlikely that any such entity would offer anything other than regulated track access rates for freight traffic (and passenger traffic).

Rail Baltica IM may or may not be responsible for timetabling - the allocation of capacity across the whole route. This is one of the key variables. However, only if Rail Baltica IM is responsible for allocating capacity (timetabling) is practical for them to also be responsible for traffic management across the whole route. Therefore, whilst Rail Baltica IM undertaking both traffic management and timetabling or just timetabling or neither role are three variable differentiators, there is no option based on Rail Baltica IM undertaking traffic management across the route but without timetabling. Where Rail Baltica IM is responsible for timetabling only it is not considered a valid option that it will be able to be responsible for infrastructure maintenance. This is because the entity that will be undertaking the traffic management needs to be responsible for asset management or timetabling also or it will be impractical to contract their operational performance. This ensures control and synchronisation.

In some options, Rail Baltica IM may be responsible for maintaining and inspecting the route. Alternatively, this might be the responsibility of national IMs. However, there is no option where Rail Baltica IM undertakes neither timetabling nor responsibility for track inspection and maintenance, as they will have no core or wider activity function whatsoever.

Therefore, the absolute minimum that Rail Baltica IM can perform is to be responsible for inspecting and maintaining the whole route (Option 84) or to be responsible for timetabling the whole route.

### **Options 85**

This is “do nothing” option in which all the functions underpinning the differentiators are carried out by other bodies.

It is important to note that this does not mean that there is less work in establishing this option. In fact, if there is no RB IM (and even where there is an RB IM entity but it does not have responsibility for the core functions of infrastructure management), then separate legal agreement(s) would need to be reached between the governments that will contract the execution of the core functions and the outputs of that execution so that the benefits of the business case can be realised. These agreements will necessarily be complex. They will need to cover, for example, how any potential cross-subsidy will be avoided and what will happen when the required operational outputs are not delivered. It will be particularly hard to draft such contracts because they should ideally offer some flexibility to allow for the fact that the costs and revenues may be greater or less than forecast, and strategic priorities may change.

It was suggested to Atkins during the stakeholder consultation process that option 85 could involve both the existing railway infrastructure managers undertaking the core IM functions on the Rail Baltica route and also new entities undertaking the core IM functions on a national basis. It is difficult to see how a new IM for each of the Baltic states could undertake infrastructure management more cost effectively and efficiently than a single IM across the whole routes (particularly with regard to systems) which would undermine the (small) cost benefit of those options where the RB IM has a reduced (or no) role. It is also unclear how effectively such national entities would be separated from the existing railway IMs in practice, being established and owned by the national governments, the same owner of the existing IMs, and will working to a similar set of priorities. It is therefore assumed in this paper that where core functions are not undertaken by an RB IM entity that they will be undertaken by the existing national railway IMs.

Please note though that where wider functions are not undertaken by an RB IM that they are not expected to be undertaken by the existing national railway IMs but by the governments (individually or collectively). For example, if the governments decide they need to let a passenger concession and elect not to use the RB IM to undertake this function, they will do so themselves by contract (collectively or individually).

The following table sets out some of the differentiators that will be performed by the IM for each option.

## Option 1

**Full commercial freedom with freight market pricing for single entity which can act as passenger concession letting agency, has moderately modified share ownership/governance but will not offer aggregator “back-stop” rail haulage:**

### Pros

- Economies of scale related to the many services in-house
- Single point of contact for all bodies able to act coherently across all functions
- High innovation capacity linked to degree of commercial services freedom

### Cons

- Golden share model not attractive for private investors and could be a violation of the Treaty
- Creates significant risk for shareholders
- Potential for ancillary functions (Passenger concession authority) to cause RB IM to lose management focus
- Requires moderate change in share/governance arrangements

1. Freedom to set all track access (passenger and freight)	2. Freedom to set FREIGHT ONLY flows	3. Traffic Management	4. Capacity allocation	6. Inspection and maintenance across all route
No	Yes	Yes	Yes	Yes

7. Vision Author	8. International Rail Relations Lead	9. Passenger Concession Letting agency	10. No significant commercial freedom/capability	11: Commercial Services Freedom (minimal):	12. Commercial Services Freedom (partial – no extra land):
Yes	Yes	Yes	No	No	No

13. Commercial Service Freedom (partial – extra land for rail associated services only)	14. Commercial Service Freedom (full):	15. Duplicates existing RB Rail AS governance	16. Minimally modified governance from duplicate RB Rail AS (minimal relaxation)	17. Moderately modified governance from duplicate RB Rail AS (some relaxation + golden share)	18. Fully modified governance structure	19. Rail Haulage offer
No	Yes	No	No	Yes	No	No

## Option 2

**Full commercial freedom with freight market pricing for single entity which can act as passenger concession letting agency, with fully modified share ownership/governance and but with no back-stop rail haulage offer:**

### Pros

- Economies of scale related to the many services in-house
- Single point of contact for all bodies able to act coherently across all functions
- High innovation capacity linked to degree of commercial services freedom
- Attractive for private investors

### Cons

- Creates significant risk for shareholders
- Potential for ancillary functions (Passenger concession authority) to cause RB to lose focus
- Requires significant change in share/governance arrangements

1. Freedom to set all track access (passenger and freight)	2. Freedom to set FREIGHT ONLY flows	3. Traffic Management	4. Capacity allocation	6. Inspection and maintenance across all route
No	Yes	Yes	Yes	Yes

7. Vision Author	8. International Rail Relations Lead	9. Passenger Concession Letting agency	10. No significant commercial freedom/capability	11: Commercial Services Freedom (minimal):	12. Commercial Services Freedom (partial – no extra land):
Yes	Yes	Yes	No	No	No

13. Commercial Service Freedom (partial – extra land for rail associated services only)	14. Commercial Service Freedom (full):	15. Duplicates existing RB Rail AS governance	16. Minimally modified governance from duplicate RB Rail AS (minimal relaxation)	17. Moderately modified governance from duplicate RB Rail AS (some relaxation + golden share)	18. Fully modified governance structure	19. Rail Haulage offer
No	Yes	No	No	No	Yes	No

### Option 3

**Full commercial freedom with freight market pricing for single entity which can act as passenger concession letting agency, with minimally modified share ownership/governance and no back-stop rail haulage:**

#### Pros

- Economies of scale related to the many services in-house
- Single point of contact for all bodies able to act coherently across all functions
- High innovation capacity linked to degree of commercial services freedom
- Minimal change in share/governance arrangements

#### Cons

- Creates significant risk for shareholders
- Potential for ancillary functions (Passenger concession authority) to cause RB to lose focus

1. Freedom to set all track access (passenger and freight)	2. Freedom to set FREIGHT ONLY flows	3. Traffic Management	4. Capacity allocation	6. Inspection and maintenance across all route
No	Yes	Yes	Yes	Yes

7. Vision Author	8. International Rail Relations Lead	9. Passenger Concession Letting agency	10. No significant commercial freedom/capability	11: Commercial Services Freedom (minimal):	12. Commercial Services Freedom (partial – no extra land):
Yes	Yes	Yes	No	No	No

13. Commercial Service Freedom (partial – extra land for rail associated services only)	14. Commercial Service Freedom (full):	15. Duplicates existing RB Rail AS governance	16. Minimally modified governance from duplicate RB Rail AS (minimal relaxation)	17. Moderately modified governance from duplicate RB Rail AS (some relaxation + golden share)	18. Fully modified governance structure	19. Rail Haulage offer
No	Yes	No	Yes	No	No	No

### Option 4

Full commercial freedom with freight market pricing for single entity which can act as passenger concession letting agency, with moderately modified share ownership/governance and offer back-stop rail haulage:

#### Pros

- Economies of scale related to the many services in-house
- Single point of contact for all bodies able to act coherently across all functions
- High innovation capacity linked to degree of commercial services freedom

#### Cons

- Golden share model not attractive for private investors and could be a violation of the Treaty
- Requires moderate change in share/governance arrangements
- Creates significant risk for shareholders
- Potential for ancillary functions (Passenger concession authority) will cause RB to lose focus

1. Freedom to set all track access (passenger and freight)	2. Freedom to set FREIGHT ONLY flows	3. Traffic Management	4. Capacity allocation	6. Inspection and maintenance across all route
No	Yes	Yes	Yes	Yes

7. Vision Author	8. International Rail Relations Lead	9. Passenger Concession Letting agency	10. No significant commercial freedom/capability	11: Commercial Services Freedom (minimal):	12. Commercial Services Freedom (partial – no extra land):
Yes	Yes	Yes	No	No	No

13. Commercial Service Freedom (partial – extra land for rail associated services only)	14. Commercial Service Freedom (full):	15. Duplicates existing RB Rail AS governance	16. Minimally modified governance from duplicate RB Rail AS (minimal relaxation)	17. Moderately modified governance from duplicate RB Rail AS (some relaxation + golden share)	18. Fully modified governance structure	19. Rail Haulage offer
No	Yes	No	No	Yes	No	Yes

### Option 5

**Full commercial freedom with freight market pricing for single entity which can act as passenger concession letting agency, with fully modified share ownership/governance and offer back-stop rail haulage:**

#### Pros

- Economies of scale related to the many services in-house
- Single point of contact for all bodies able to act coherently across all functions
- High innovation capacity linked to degree of commercial services freedom

#### Cons

- Creates greatest risk for shareholders
- Risk from significant change to existing governance/share structure
- Potential for ancillary functions (e.g. passenger concession authority) to cause RB to lose management focus

1. Freedom to set all track access (passenger and freight)	2. Freedom to set FREIGHT ONLY flows	3. Traffic Management	4. Capacity allocation	6. Inspection and maintenance across all route
No	Yes	Yes	Yes	Yes

7. Vision Author	8. International Rail Relations Lead	9. Passenger Concession Letting agency	10. No significant commercial freedom/capability	11: Commercial Services Freedom (minimal):	12. Commercial Services Freedom (partial – no extra land):
Yes	Yes	Yes	No	No	No

13. Commercial Service Freedom (partial – extra land for rail associated services only)	14. Commercial Service Freedom (full):	15. Duplicates existing RB Rail AS governance	16. Minimally modified governance from duplicate RB Rail AS (minimal relaxation)	17. Moderately modified governance from duplicate RB Rail AS (some relaxation + golden share)	18. Fully modified governance structure	19. Rail Haulage offer
No	Yes	No	No	No	Yes	Yes

## Option 6

**Full commercial freedom with freight market pricing for single entity which can act as passenger concession letting agency, with minimally modified share ownership/governance and offer back-stop rail haulage**

### Pros

- Economies of scale related to the many services in-house
- Single point of contact for all bodies able to act coherently across all functions
- High innovation capacity linked to degree of commercial services freedom
- Minimal change to share/governance structure

### Cons

- Creates significant risk for shareholders
- Creates tension between governance arrangements and commercial freedom of entity
- Potential for ancillary functions (Passenger concession authority) will cause RB to lose focus

1. Freedom to set all track access (passenger and freight)	2. Freedom to set FREIGHT ONLY flows	3. Traffic Management	4. Capacity allocation	6. Inspection and maintenance across all route
No	Yes	Yes	Yes	Yes

7. Vision Author	8. International Rail Relations Lead	9. Passenger Concession Letting agency	10. No significant commercial freedom/capability	11: Commercial Services Freedom (minimal):	12. Commercial Services Freedom (partial – no extra land):
Yes	Yes	Yes	No	No	No

13. Commercial Service Freedom (partial – extra land for rail associated services only)	14. Commercial Service Freedom (full):	15. Duplicates existing RB Rail AS governance	16. Minimally modified governance from duplicate RB Rail AS (minimal relaxation)	17. Moderately modified governance from duplicate RB Rail AS (some relaxation + golden share)	18. Fully modified governance structure	19. Rail Haulage offer
No	Yes	No	Yes	No	No	Yes

### Option 7

**Full commercial freedom with freight market pricing for single entity which cannot act as passenger concession letting agency, with moderately modified share ownership/governance and no back-stop rail haulage:**

#### Pros

- Economies of scale related to the many services in-house
- Single point of contact for all bodies able to act coherently across all functions
- High innovation capacity linked to degree of commercial services freedom

#### Cons

- Creates significant risk for shareholders
- Risk from moderate change to existing governance/share structure
- Potential for ancillary functions (Passenger concession authority) will cause RB to lose focus
- Golden share model not attractive for private investors and could be a violation of the Treaty

1. Freedom to set all track access (passenger and freight)	2. Freedom to set FREIGHT ONLY flows	3. Traffic Management	4. Capacity allocation	6. Inspection and maintenance across all route
No	Yes	Yes	Yes	Yes

7. Vision Author	8. International Rail Relations Lead	9. Passenger Concession Letting agency	10. No significant commercial freedom/capability	11: Commercial Services Freedom (minimal):	12. Commercial Services Freedom (partial – no extra land):
Yes	Yes	No	No	No	No

13. Commercial Service Freedom (partial – extra land for rail associated services only)	14. Commercial Service Freedom (full):	15. Duplicates existing RB Rail AS governance	16. Minimally modified governance from duplicate RB Rail AS (minimal relaxation)	17. Moderately modified governance from duplicate RB Rail AS (some relaxation + golden share)	18. Fully modified governance structure	19. Rail Haulage offer
No	Yes	No	No	Yes	No	No

### Option 8

**Full commercial freedom with freight market pricing for single entity which cannot act as passenger concession letting agency, with fully modified share ownership/governance and no back-stop rail haulage:**

#### Pros

- Economies of scale related to the many services in-house
- Single point of contact for all bodies able to act coherently across all functions
- High innovation capacity linked to degree of commercial services freedom

#### Cons

- Creates significant risk for shareholders
- Risk of significant change to existing governance/share structure

1. Freedom to set all track access (passenger and freight)	2. Freedom to set FREIGHT ONLY flows	3. Traffic Management	4. Capacity allocation	6. Inspection and maintenance across all route
No	Yes	Yes	Yes	Yes

7. Vision Author	8. International Rail Relations Lead	9. Passenger Concession Letting agency	10. No significant commercial freedom/capability	11: Commercial Services Freedom (minimal):	12. Commercial Services Freedom (partial – no extra land):
Yes	Yes	No	No	No	No

13. Commercial Service Freedom (partial – extra land for rail associated services only)	14. Commercial Service Freedom (full):	15. Duplicates existing RB Rail AS governance	16. Minimally modified governance from duplicate RB Rail AS (minimal relaxation)	17. Moderately modified governance from duplicate RB Rail AS (some relaxation + golden share)	18. Fully modified governance structure	19. Rail Haulage offer
No	Yes	No	No	No	Yes	No

### Option 9

**Full commercial freedom with freight market pricing for single entity which cannot act as passenger concession letting agency, with minimally modified share ownership and no back stop rail haulage:**

#### Pros

- Economies of scale related to the many services in-house
- Single point of contact for all bodies able to act coherently across all functions
- High innovation capacity linked to degree of commercial services freedom
- Minimal change to governance/share structure

#### Cons

- Risk for shareholders
- Tension between full commercial freedom and minimal modification of ownership/governance

1. Freedom to set all track access (passenger and freight)	2. Freedom to set FREIGHT ONLY flows	3. Traffic Management	4. Capacity allocation	6. Inspection and maintenance across all route
No	Yes	Yes	Yes	Yes

7. Vision Author	8. International Rail Relations Lead	9. Passenger Concession Letting agency	10. No significant commercial freedom/capability	11: Commercial Services Freedom (minimal):	12. Commercial Services Freedom (partial – no extra land):
Yes	Yes	No	No	No	No

13. Commercial Service Freedom (partial – extra land for rail associated services only)	14. Commercial Service Freedom (full):	15. Duplicates existing RB Rail AS governance	16. Minimally modified governance from duplicate RB Rail AS (minimal relaxation)	17. Moderately modified governance from duplicate RB Rail AS (some relaxation + golden share)	18. Fully modified governance structure	19. Rail Haulage offer
No	Yes	No	Yes	No	No	No

### Option 10

**Full commercial freedom with freight market pricing for single entity which cannot act as passenger concession letting agency, with moderately modified share ownership, but can offer back-stop rail haulage:**

#### Pros

- Economies of scale related to the many services in-house
- Single point of contact for all bodies able to act coherently across all functions
- High innovation capacity linked to degree of commercial services freedom

#### Cons

- Golden share model not attractive for private investors and could be a violation of the Treaty
- Risk for shareholders
- Tension between full commercial freedom and minimal modification of ownership/governance
- Risk of moderate change to existing governance/share structure

1. Freedom to set all track access (passenger and freight)	2. Freedom to set FREIGHT ONLY flows	3. Traffic Management	4. Capacity allocation	6. Inspection and maintenance across all route
No	Yes	Yes	Yes	Yes

7. Vision Author	8. International Rail Relations Lead	9. Passenger Concession Letting agency	10. No significant commercial freedom/capability	11: Commercial Services Freedom (minimal):	12. Commercial Services Freedom (partial – no extra land):
Yes	Yes	No	No	No	No

13. Commercial Service Freedom (partial – extra land for rail associated services only)	14. Commercial Service Freedom (full):	15. Duplicates existing RB Rail AS governance	16. Minimally modified governance from duplicate RB Rail AS (minimal relaxation)	17. Moderately modified governance from duplicate RB Rail AS (some relaxation + golden share)	18. Fully modified governance structure	19. Rail Haulage offer
No	Yes	No	No	Yes	No	Yes

### Option 11

**Full commercial freedom with freight market pricing for single entity which cannot act as passenger concession letting agency, with fully modified share ownership/governance, but can offer back-stop rail haulage:**

#### Pros

- Economies of scale related to the many services in-house
- Single point of contact for all bodies able to act coherently across all functions
- High innovation capacity linked to degree of commercial services freedom

#### Cons

- Risk for shareholders
- Potential for ancillary functions (Back stop rail haulage) will cause RB to lose focus
- Risk from significant change to existing governance/share structure

1. Freedom to set all track access (passenger and freight)	2. Freedom to set FREIGHT ONLY flows	3. Traffic Management	4. Capacity allocation	6. Inspection and maintenance across all route
No	Yes	Yes	Yes	Yes

7. Vision Author	8. International Rail Relations Lead	9. Passenger Concession Letting agency	10. No significant commercial freedom/capability	11: Commercial Services Freedom (minimal):	12. Commercial Services Freedom (partial – no extra land):
Yes	Yes	No	No	No	No

13. Commercial Service Freedom (partial – extra land for rail associated services only)	14. Commercial Service Freedom (full):	15. Duplicates existing RB Rail AS governance	16. Minimally modified governance from duplicate RB Rail AS (minimal relaxation)	17. Moderately modified governance from duplicate RB Rail AS (some relaxation + golden share)	18. Fully modified governance structure	19. Rail Haulage offer
No	Yes	No	No	No	Yes	Yes

## Option 12

**Full commercial freedom with freight market pricing for single entity which cannot act as passenger concession letting agency, with moderately modified share ownership, but can offer back-stop rail haulage:**

### Pros

- Economies of scale related to the many services in-house
- Single point of contact for all bodies able to act coherently across all functions
- High innovation capacity linked to degree of commercial services freedom

### Cons

- Risk for shareholders
- Potential for ancillary functions (Back stop rail haulage) will cause RB to lose focus
- Tension between commercial freedom and moderate modification of ownership/governance
- Risk from moderate change to existing governance/share structure

1. Freedom to set all track access (passenger and freight)	2. Freedom to set FREIGHT ONLY flows	3. Traffic Management	4. Capacity allocation	6. Inspection and maintenance across all route
No	Yes	Yes	Yes	Yes

7. Vision Author	8. International Rail Relations Lead	9. Passenger Concession Letting agency	10. No significant commercial freedom/capability	11: Commercial Services Freedom (minimal):	12. Commercial Services Freedom (partial – no extra land):
Yes	Yes	No	No	No	No

13. Commercial Service Freedom (partial – extra land for rail associated services only)	14. Commercial Service Freedom (full):	15. Duplicates existing RB Rail AS governance	16. Minimally modified governance from duplicate RB Rail AS (minimal relaxation)	17. Moderately modified governance from duplicate RB Rail AS (some relaxation + golden share)	18. Fully modified governance structure	19. Rail Haulage offer
No	Yes	No	Yes	No	No	Yes

### Option 13

Full commercial freedom with freight REGULATED pricing for single entity which can act as passenger concession letting agency, has moderately modified share ownership/governance but will not offer aggregator “back-stop” rail haulage:

#### Pros

- Economies of scale related to the many services in-house
- Single point of contact for all bodies able to act coherently across all functions
- High innovation capacity linked to degree of commercial services freedom

#### Cons

- Golden share model not attractive for private investors and could be a violation of the Treaty
- Risk for shareholders
- Potential for ancillary functions (Passenger concession) will cause RB to lose focus
- Tension between commercial freedom and moderate modification of ownership/governance
- Risk from moderate change to existing governance/share structure

1. Freedom to set all track access (passenger and freight)	2. Freedom to set FREIGHT ONLY flows	3. Traffic Management	4. Capacity allocation	6. Inspection and maintenance across all route
No	No	Yes	Yes	Yes

7. Vision Author	8. International Rail Relations Lead	9. Passenger Concession Letting agency	10. No significant commercial freedom/capability	11: Commercial Services Freedom (minimal):	12. Commercial Services Freedom (partial – no extra land):
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Yes	Yes	Yes	No	No	No
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13. Commercial Service Freedom (partial – extra land for rail associated services only)	14. Commercial Service Freedom (full):	15. Duplicates existing RB Rail AS governance	16. Minimally modified governance from duplicate RB Rail AS (minimal relaxation)	17. Moderately modified governance from duplicate RB Rail AS (some relaxation + golden share)	18. Fully modified governance structure	19. Rail Haulage offer
No	Yes	No	No	Yes	No	No

### Option 14

**Full commercial freedom with freight REGULATED pricing for single entity which can act as passenger concession letting agency, with fully modified share ownership/governance and no back-stop rail haulage:**

#### Pros

- Economies of scale related to the many services in-house
- Single point of contact for all bodies able to act coherently across all functions
- High innovation capacity linked to degree of commercial services freedom

#### Cons

- Significant commercial risk for shareholders
- Potential for ancillary functions (passenger concession) will cause RB to lose focus
- Risk from significant change to governance/share structure

1. Freedom to set all track access (passenger and freight)	2. Freedom to set FREIGHT ONLY flows	3. Traffic Management	4. Capacity allocation	6. Inspection and maintenance across all route
No	No	Yes	Yes	Yes

7. Vision Author	8. International Rail Relations Lead	9. Passenger Concession Letting agency	10. No significant commercial freedom/capability	11: Commercial Services Freedom (minimal):	12. Commercial Services Freedom (partial – no extra land):
Yes	Yes	Yes	No	No	No

13. Commercial Service Freedom (partial – extra land for rail associated services only)	14. Commercial Service Freedom (full):	15. Duplicates existing RB Rail AS governance	16. Minimally modified governance from duplicate RB Rail AS (minimal relaxation)	17. Moderately modified governance from duplicate RB Rail AS (some relaxation + golden share)	18. Fully modified governance structure	19. Rail Haulage offer
No	Yes	No	No	No	Yes	No

### Option 15

**Full commercial freedom with freight REGULATED pricing for single entity which can act as passenger concession letting agency, with minimally modified share ownership/governance and no back-stop rail haulage:**

#### Pros

- Economies of scale related to the many services in-house
- Single point of contact for all bodies able to act coherently across all functions
- High innovation capacity linked to degree of commercial services freedom
- Minimal change to share/governance structure

#### Cons

- Commercial risk for shareholders
- Potential for ancillary functions (passenger concession) will cause RB to lose focus
- Tension between commercial freedom and minimal modification of ownership/governance

1. Freedom to set all track access (passenger and freight)	2. Freedom to set FREIGHT ONLY flows	3. Traffic Management	4. Capacity allocation	6. Inspection and maintenance across all route
No	No	Yes	Yes	Yes

7. Vision Author	8. International Rail Relations Lead	9. Passenger Concession Letting agency	10. No significant commercial freedom/capability	11: Commercial Services Freedom (minimal):	12. Commercial Services Freedom (partial – no extra land):
Yes	Yes	Yes	No	No	No

13. Commercial Service Freedom (partial – extra land for rail associated services only)	14. Commercial Service Freedom (full):	15. Duplicates existing RB Rail AS governance	16. Minimally modified governance from duplicate RB Rail AS (minimal relaxation)	17. Moderately modified governance from duplicate RB Rail AS (some relaxation + golden share)	18. Fully modified governance structure	19. Rail Haulage offer
No	Yes	No	Yes	No	No	No

### Option 16

**Full commercial freedom with freight REGULATED pricing for single entity which can act as passenger concession letting agency, with moderately modified share ownership/governance and offer back-stop rail haulage:**

#### Pros

- Economies of scale related to the many services in-house
- Single point of contact for all bodies able to act coherently across all functions
- High innovation capacity linked to degree of commercial services freedom

#### Cons

- Golden share model not attractive for private investors and could be a violation of the Treaty
- Commercial risk for shareholders
- Potential for ancillary functions (passenger concession) will cause RB to lose focus
- Tension between commercial freedom and moderate modification of ownership/governance
- Risk from moderate change to share/governance structure

1. Freedom to set all track access (passenger and freight)	2. Freedom to set FREIGHT ONLY flows	3. Traffic Management	4. Capacity allocation	6. Inspection and maintenance across all route
No	No	Yes	Yes	Yes

7. Vision Author	8. International Rail Relations Lead	9. Passenger Concession Letting agency	10. No significant commercial freedom/capability	11: Commercial Services Freedom (minimal):	12. Commercial Services Freedom (partial – no extra land):
Yes	Yes	Yes	No	No	No

13. Commercial Service Freedom (partial – extra land for rail associated services only)	14. Commercial Service Freedom (full):	15. Duplicates existing RB Rail AS governance	16. Minimally modified governance from duplicate RB Rail AS (minimal relaxation)	17. Moderately modified governance from duplicate RB Rail AS (some relaxation + golden share)	18. Fully modified governance structure	19. Rail Haulage offer
No	Yes	No	No	Yes	No	Yes

## Option 17

**Full commercial freedom with freight REGULATED pricing for single entity which can act as passenger concession letting agency, with fully modified share ownership/governance and offer back-stop rail haulage:**

### Pros

- Economies of scale related to the many services in-house
- Single point of contact for all bodies able to act coherently across all functions
- High innovation capacity linked to degree of commercial services freedom

### Cons

- Significant commercial risk for shareholders
- Potential for ancillary functions (passenger concession) will cause RB to lose focus
- Risk from significant change to share/governance structure

1. Freedom to set all track access (passenger and freight)	2. Freedom to set FREIGHT ONLY flows	3. Traffic Management	4. Capacity allocation	6. Inspection and maintenance across all route
No	No	Yes	Yes	Yes

7. Vision Author	8. International Rail Relations Lead	9. Passenger Concession Letting agency	10. No significant commercial freedom/capability	11: Commercial Services Freedom (minimal):	12. Commercial Services Freedom (partial – no extra land):
Yes	Yes	Yes	No	No	No

13. Commercial Service Freedom (partial – extra land for rail associated services only)	14. Commercial Service Freedom (full):	15. Duplicates existing RB Rail AS governance	16. Minimally modified governance from duplicate RB Rail AS (minimal relaxation)	17. Moderately modified governance from duplicate RB Rail AS (some relaxation + golden share)	18. Fully modified governance structure	19. Rail Haulage offer
No	Yes	No	No	No	Yes	Yes

### Option 18

**Full commercial freedom with freight REGULATED pricing for single entity which can act as passenger concession letting agency, with minimally modified share ownership/governance and can offer back-stop rail haulage**

#### Pros

- Economies of scale related to the many services in-house
- Single point of contact for all bodies able to act coherently across all functions
- High innovation capacity linked to degree of commercial services freedom
- Minimal change required to share/governance structure

#### Cons

- Commercial risk for shareholders
- Potential for ancillary functions (passenger concession) will cause RB to lose focus
- Tension between commercial freedom and minimal modification of ownership/governance

1. Freedom to set all track access (passenger and freight)	2. Freedom to set FREIGHT ONLY flows	3. Traffic Management	4. Capacity allocation	6. Inspection and maintenance across all route
No	No	Yes	Yes	Yes

7. Vision Author	8. International Rail Relations Lead	9. Passenger Concession Letting agency	10. No significant commercial freedom/capability	11: Commercial Services Freedom (minimal):	12. Commercial Services Freedom (partial – no extra land):
Yes	Yes	Yes	No	No	No

13. Commercial Service Freedom (partial – extra land for rail associated services only)	14. Commercial Service Freedom (full):	15. Duplicates existing RB Rail AS governance	16. Minimally modified governance from duplicate RB Rail AS (minimal relaxation)	17. Moderately modified governance from duplicate RB Rail AS (some relaxation + golden share)	18. Fully modified governance structure	19. Rail Haulage offer
No	Yes	No	Yes	No	No	Yes

### Option 19

**Full commercial freedom with freight REGULATED pricing for single entity which cannot act as passenger concession letting agency, with moderately modified share ownership/governance and no rail haulage:**

#### Pros

- Economies of scale related to the many services in-house
- Single point of contact for all bodies able to act coherently across all functions
- High innovation capacity linked to degree of commercial services freedom
- Less potential for ancillary functions (passenger concession) will cause RB to lose focus

#### Cons

- Commercial risk for shareholders
- Tension between commercial freedom and moderate modification of ownership/governance
- Risk from moderate change to share/governance structure
- Golden share model not attractive for private investors and could be a violation of the Treaty

1. Freedom to set all track access (passenger and freight)	2. Freedom to set FREIGHT ONLY flows	3. Traffic Management	4. Capacity allocation	6. Inspection and maintenance across all route
No	No	Yes	Yes	Yes

7. Vision Author	8. International Rail Relations Lead	9. Passenger Concession Letting agency	10. No significant commercial freedom/capability	11: Commercial Services Freedom (minimal):	12. Commercial Services Freedom (partial – no extra land):
Yes	Yes	No	No	No	No

13. Commercial Service Freedom (partial – extra land for rail associated services only)	14. Commercial Service Freedom (full):	15. Duplicates existing RB Rail AS governance	16. Minimally modified governance from duplicate RB Rail AS (minimal relaxation)	17. Moderately modified governance from duplicate RB Rail AS (some relaxation + golden share)	18. Fully modified governance structure	19. Rail Haulage offer
No	Yes	No	No	Yes	No	No

## Option 20

**Full commercial freedom with REGULATED market pricing for single entity which cannot act as passenger concession letting agency, with fully modified share ownership/governance and no rail haulage:**

### Pros

- Economies of scale related to the many services in-house
- Single point of contact for all bodies able to act coherently across all functions
- High innovation capacity linked to degree of commercial services freedom
- Less potential for ancillary functions (passenger concession) will cause RB to lose focus

### Cons

- Significant commercial risk for shareholders
- Risk from significant change to share/governance structure

1. Freedom to set all track access (passenger and freight)	2. Freedom to set FREIGHT ONLY flows	3. Traffic Management	4. Capacity allocation	6. Inspection and maintenance across all route
No	No	Yes	Yes	Yes

7. Vision Author	8. International Rail Relations Lead	9. Passenger Concession Letting agency	10. No significant commercial freedom/capability	11: Commercial Services Freedom (minimal):	12. Commercial Services Freedom (partial – no extra land):
Yes	Yes	No	No	No	No

13. Commercial Service Freedom (partial – extra land for rail associated services only)	14. Commercial Service Freedom (full):	15. Duplicates existing RB Rail AS governance	16. Minimally modified governance from duplicate RB Rail AS (minimal relaxation)	17. Moderately modified governance from duplicate RB Rail AS (some relaxation + golden share)	18. Fully modified governance structure	19. Rail Haulage offer
No	Yes	No	No	No	Yes	No

## Option 21

**Full commercial freedom with freight REGULATED pricing for single entity which cannot act as passenger concession letting agency, with minimally modified share ownership/governance and no back stop rail haulage:**

### Pros

- Economies of scale related to the many services in-house
- Single point of contact for all bodies able to act coherently across all functions
- High innovation capacity linked to degree of commercial services freedom
- Less potential for ancillary functions (passenger concession) will cause RB to lose focus
- Minimal need to change governance/share structure

### Cons

- Commercial risk for shareholders
- Tension between commercial freedom and minimal modification of ownership/governance

1. Freedom to set all track access (passenger and freight)	2. Freedom to set FREIGHT ONLY flows	3. Traffic Management	4. Capacity allocation	6. Inspection and maintenance across all route
No	No	Yes	Yes	Yes

7. Vision Author	8. International Rail Relations Lead	9. Passenger Concession Letting agency	10. No significant commercial freedom/capability	11: Commercial Services Freedom (minimal):	12. Commercial Services Freedom (partial – no extra land):
Yes	Yes	No	No	No	No

13. Commercial Service Freedom (partial – extra land for rail associated services only)	14. Commercial Service Freedom (full):	15. Duplicates existing RB Rail AS governance	16. Minimally modified governance from duplicate RB Rail AS (minimal relaxation)	17. Moderately modified governance from duplicate RB Rail AS (some relaxation + golden share)	18. Fully modified governance structure	19. Rail Haulage offer
No	Yes	No	Yes	No	No	No

## Option 22

**Full commercial freedom with freight REGULATED pricing for single entity which cannot act as passenger concession letting agency, with moderately modified share ownership/governance, but can offer back-stop rail haulage:**

### Pros

- Economies of scale related to the many services in-house
- Single point of contact for all bodies able to act coherently across all functions
- High innovation capacity linked to degree of commercial services freedom

### Cons

- Commercial risk for shareholders
- Tension between commercial freedom and moderate modification of ownership/governance
- Golden share model not attractive for private investors and could be a violation of the Treaty
- Potential for ancillary functions (back stop rail haulage) will cause RB to lose focus
- Risk for moderate changes required to share/governance structure

1. Freedom to set all track access (passenger and freight)	2. Freedom to set FREIGHT ONLY flows	3. Traffic Management	4. Capacity allocation	6. Inspection and maintenance across all route
No	No	Yes	Yes	Yes

7. Vision Author	8. International Rail Relations Lead	9. Passenger Concession Letting agency	10. No significant commercial freedom/capability	11: Commercial Services Freedom (minimal):	12. Commercial Services Freedom (partial – no extra land):
Yes	Yes	No	No	No	No

13. Commercial Service Freedom (partial – extra land for rail associated services only)	14. Commercial Service Freedom (full):	15. Duplicates existing RB Rail AS governance	16. Minimally modified governance from duplicate RB Rail AS (minimal relaxation)	17. Moderately modified governance from duplicate RB Rail AS (some relaxation + golden share)	18. Fully modified governance structure	19. Rail Haulage offer
No	Yes	No	No	Yes	No	Yes

## Option 23

**Full commercial freedom with freight REGULATED pricing for single entity which cannot act as passenger concession letting agency, with fully modified share ownership/governance, but can offer back-stop rail haulage:**

### Pros

- Economies of scale related to the many services in-house
- Single point of contact for all bodies able to act coherently across all functions
- High innovation capacity linked to degree of commercial services freedom

### Cons

- High commercial risk for shareholders
- Potential for ancillary functions (back-stop haulage) will cause RB to lose focus
- Tension between commercial freedom and moderate modification of ownership/governance
- Significant from change required to share/governance arrangements

1. Freedom to set all track access (passenger and freight)	2. Freedom to set FREIGHT ONLY flows	3. Traffic Management	4. Capacity allocation	6. Inspection and maintenance across all route
No	No	Yes	Yes	Yes

7. Vision Author	8. International Rail Relations Lead	9. Passenger Concession Letting agency	10. No significant commercial freedom/capability	11: Commercial Services Freedom (minimal):	12. Commercial Services Freedom (partial – no extra land):
Yes	Yes	No	No	No	No

13. Commercial Service Freedom (partial – extra land for rail associated services only)	14. Commercial Service Freedom (full):	15. Duplicates existing RB Rail AS governance	16. Minimally modified governance from duplicate RB Rail AS (minimal relaxation)	17. Moderately modified governance from duplicate RB Rail AS (some relaxation + golden share)	18. Fully modified governance structure	19. Rail Haulage offer
No	Yes	No	No	No	Yes	Yes

## Option 24

**Full commercial freedom with freight REGULATED pricing for single entity which cannot act as passenger concession letting agency, with minimally modified share ownership/governance, but can offer back-stop rail haulage:**

### Pros

- Economies of scale related to the many services in-house
- Single point of contact for all bodies able to act coherently across all functions
- High innovation capacity linked to degree of commercial services freedom
- Minimal change to governance/share arrangements

### Cons

- Commercial risk for shareholders
- Tension between commercial freedom and minimal modification of ownership/governance
- Potential for ancillary functions (back stop rail haulage) will cause RB to lose focus

1. Freedom to set all track access (passenger and freight)	2. Freedom to set FREIGHT ONLY flows	3. Traffic Management	4. Capacity allocation	6. Inspection and maintenance across all route
No	No	Yes	Yes	Yes

7. Vision Author	8. International Rail Relations Lead	9. Passenger Concession Letting agency	10. No significant commercial freedom/capability	11: Commercial Services Freedom (minimal):	12. Commercial Services Freedom (partial – no extra land):
Yes	Yes	No	No	No	No

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13. Commercial Service Freedom (partial – extra land for rail associated services only)	14. Commercial Service Freedom (full):	15. Duplicates existing RB Rail AS governance	16. Minimally modified governance from duplicate RB Rail AS (minimal relaxation)	17. Moderately modified governance from duplicate RB Rail AS (some relaxation + golden share)	18. Fully modified governance structure	19. Rail Haulage offer
No	Yes	No	Yes	No	No	Yes

## Option 25

**Partial commercial freedom with the right to seek to acquire land for railway associated services, with freight market pricing for single entity which can act as passenger concession letting agency, has moderately modified share ownership/governance but will not offer aggregator “back-stop” rail haulage:**

### Pros

- Some economies of scale related to the many services in-house
- Single point of contact for all bodies able to act coherently across all functions
- Some innovation capacity linked to degree of commercial services freedom
- Balance between commercial freedom and moderate modification of ownership/governance

### Cons

- Golden share model not attractive for private investors and could be a violation of the Treaty
- Commercial risk for shareholders
- Potential for ancillary functions (passenger concession) will cause RB to lose focus
- Risk from moderate change to share/governance arrangements

1. Freedom to set all track access (passenger and freight)	2. Freedom to set FREIGHT ONLY flows	3. Traffic Management	4. Capacity allocation	6. Inspection and maintenance across all route
No	Yes	Yes	Yes	Yes

7. Vision Author	8. International Rail Relations Lead	9. Passenger Concession Letting agency	10. No significant commercial freedom/capability	11: Commercial Services Freedom (minimal):	12. Commercial Services Freedom (partial – no extra land):
Yes	Yes	Yes	No	No	No

13. Commercial Service Freedom (partial – extra land for rail associated services only)	14. Commercial Service Freedom (full):	15. Duplicates existing RB Rail AS governance	16. Minimally modified governance from duplicate RB Rail AS (minimal relaxation)	17. Moderately modified governance from duplicate RB Rail AS (some relaxation + golden share)	18. Fully modified governance structure	19. Rail Haulage offer
Yes	No	No	No	Yes	No	No

## Option 26

**Partial commercial freedom with the right to seek to acquire land for railway associated services, with freight market pricing for single entity which can act as passenger concession letting agency, with fully modified share ownership/governance and no rail haulage:**

### Pros

- Some economies of scale related to the many services in-house
- Single point of contact for all bodies able to act coherently across all functions
- Some innovation capacity linked to degree of commercial services freedom

### Cons

- Commercial risk for shareholders
- Potential for ancillary functions (passenger concession) will cause RB to lose focus
- Tension between commercial freedom and full modification of ownership/governance
- Risk from significant change to governance/share arrangements

1. Freedom to set all track access (passenger and freight)	2. Freedom to set FREIGHT ONLY flows	3. Traffic Management	4. Capacity allocation	6. Inspection and maintenance across all route
No	Yes	Yes	Yes	Yes

7. Vision Author	8. International Rail Relations Lead	9. Passenger Concession Letting agency	10. No significant commercial freedom/capability	11: Commercial Services Freedom (minimal):	12. Commercial Services Freedom (partial – no extra land):
Yes	Yes	Yes	No	No	No

13. Commercial Service Freedom (partial – extra land for rail associated services only)	14. Commercial Service Freedom (full):	15. Duplicates existing RB Rail AS governance	16. Minimally modified governance from duplicate RB Rail AS (minimal relaxation)	17. Moderately modified governance from duplicate RB Rail AS (some relaxation + golden share)	18. Fully modified governance structure	19. Rail Haulage offer
Yes	No	No	No	No	Yes	No

## Option 27

**Partial commercial freedom with the right to seek to acquire land for railway associated services, with freight market pricing for single entity which can act as passenger concession letting agency, with minimally modified share ownership/governance and no back-stop rail haulage:**

### Pros

- Some economies of scale related to the many services in-house
- Single point of contact for all bodies able to act coherently across all functions
- Some innovation capacity linked to degree of commercial services freedom
- Balance between commercial freedom and minimal modification of ownership/governance
- Minimal change needed to share/governance structure

### Cons

- Commercial risk for shareholders
- Potential for ancillary functions (passenger concession) will cause RB to lose focus

1. Freedom to set all track access (passenger and freight)	2. Freedom to set FREIGHT ONLY flows	3. Traffic Management	4. Capacity allocation	6. Inspection and maintenance across all route
No	Yes	Yes	Yes	Yes

7. Vision Author	8. International Rail Relations Lead	9. Passenger Concession Letting agency	10. No significant commercial freedom/capability	11: Commercial Services Freedom (minimal):	12. Commercial Services Freedom (partial – no extra land):
Yes	Yes	Yes	No	No	No

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13. Commercial Service Freedom (partial – extra land for rail associated services only)	14. Commercial Service Freedom (full):	15. Duplicates existing RB Rail AS governance	16. Minimally modified governance from duplicate RB Rail AS (minimal relaxation)	17. Moderately modified governance from duplicate RB Rail AS (some relaxation + golden share)	18. Fully modified governance structure	19. Rail Haulage offer
Yes	No	No	Yes	No	No	No

## Option 28

**Partial commercial freedom with the right to seek to acquire land for railway associated services, with freight market pricing for single entity which can act as passenger concession letting agency, with moderately modified share ownership/governance and offer back-stop rail haulage:**

### Pros

- Some economies of scale related to the many services in-house
- Single point of contact for all bodies able to act coherently across all functions
- Some innovation capacity linked to degree of commercial services freedom
- Balance between commercial freedom and moderate modification of ownership/governance

### Cons

- Commercial risk for shareholders
- Potential for ancillary functions (passenger concession) will cause RB to lose focus
- Golden share model not attractive for private investors and could be a violation of the Treaty
- Risk from moderate change to share/governance structure required

1. Freedom to set all track access (passenger and freight)	2. Freedom to set FREIGHT ONLY flows	3. Traffic Management	4. Capacity allocation	6. Inspection and maintenance across all route
No	Yes	Yes	Yes	Yes

7. Vision Author	8. International Rail Relations Lead	9. Passenger Concession Letting agency	10. No significant commercial freedom/capability	11: Commercial Services Freedom (minimal):	12. Commercial Services Freedom (partial – no extra land):
Yes	Yes	Yes	No	No	No

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13. Commercial Service Freedom (partial – extra land for rail associated services only)	14. Commercial Service Freedom (full):	15. Duplicates existing RB Rail AS governance	16. Minimally modified governance from duplicate RB Rail AS (minimal relaxation)	17. Moderately modified governance from duplicate RB Rail AS (some relaxation + golden share)	18. Fully modified governance structure	19. Rail Haulage offer
Yes	No	No	No	Yes	No	Yes

## Option 29

**Partial commercial freedom with the right to seek to acquire land for railway associated services, with freight market pricing for single entity which can act as passenger concession letting agency, with fully modified share ownership/governance and offer back-stop rail haulage:**

### Pros

- Some economies of scale related to the many services in-house
- Single point of contact for all bodies able to act coherently across all functions
- Some innovation capacity linked to degree of commercial services freedom

### Cons

- Commercial risk for shareholders
- Tension between commercial freedom and full modification of ownership/governance
- Potential for ancillary functions (passenger concession) will cause RB to lose focus
- Risk from significant change to share/governance structure required

1. Freedom to set all track access (passenger and freight)	2. Freedom to set FREIGHT ONLY flows	3. Traffic Management	4. Capacity allocation	6. Inspection and maintenance across all route
No	Yes	Yes	Yes	Yes

7. Vision Author	8. International Rail Relations Lead	9. Passenger Concession Letting agency	10. No significant commercial freedom/capability	11: Commercial Services Freedom (minimal):	12. Commercial Services Freedom (partial – no extra land):
Yes	Yes	Yes	No	No	No

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13. Commercial Service Freedom (partial – extra land for rail associated services only)	14. Commercial Service Freedom (full):	15. Duplicates existing RB Rail AS governance	16. Minimally modified governance from duplicate RB Rail AS (minimal relaxation)	17. Moderately modified governance from duplicate RB Rail AS (some relaxation + golden share)	18. Fully modified governance structure	19. Rail Haulage offer
Yes	No	No	No	No	Yes	Yes

## Option 30

**Partial commercial freedom with the right to seek to acquire land for railway associated services, with freight market pricing for single entity which can act as passenger concession letting agency, with minimally modified share ownership/governance and offer back-stop rail haulage**

### Pros

- Some economies of scale related to the many services in-house
- Single point of contact for all bodies able to act coherently across all functions
- Some innovation capacity linked to degree of commercial services freedom
- Balance between commercial freedom and minimal modification of ownership/governance
- Minimal change to share/governance structure required

### Cons

- Commercial risk for shareholders
- Potential for ancillary functions (passenger concession) will cause RB to lose focus

1. Freedom to set all track access (passenger and freight)	2. Freedom to set FREIGHT ONLY flows	3. Traffic Management	4. Capacity allocation	6. Inspection and maintenance across all route
No	Yes	Yes	Yes	Yes

7. Vision Author	8. International Rail Relations Lead	9. Passenger Concession Letting agency	10. No significant commercial freedom/capability	11: Commercial Services Freedom (minimal):	12. Commercial Services Freedom (partial – no extra land):
Yes	Yes	Yes	No	No	No

13. Commercial Service Freedom (partial – extra land for rail associated services only)	14. Commercial Service Freedom (full):	15. Duplicates existing RB Rail AS governance	16. Minimally modified governance from duplicate RB Rail AS (minimal relaxation)	17. Moderately modified governance from duplicate RB Rail AS (some relaxation + golden share)	18. Fully modified governance structure	19. Rail Haulage offer
Yes	No	No	Yes	No	No	Yes

## Option 31

**Partial commercial freedom with the right to seek to acquire land for railway associated services, with freight market pricing for single entity which cannot act as passenger concession letting agency, with moderately modified share ownership/governance and no rail haulage:**

### Pros

- Some economies of scale related to the many services in-house
- Single point of contact for all bodies able to act coherently across all functions
- Some innovation capacity linked to degree of commercial services freedom
- Balance between commercial freedom and moderate modification of ownership/governance

### Cons

- Commercial risk for shareholders
- Potential for ancillary functions (passenger concession) will cause RB to lose focus
- Golden share model not attractive for private investors and could be a violation of the Treaty
- Risk from required moderate change to share/governance structure

1. Freedom to set all track access (passenger and freight)	2. Freedom to set FREIGHT ONLY flows	3. Traffic Management	4. Capacity allocation	6. Inspection and maintenance across all route
No	Yes	Yes	Yes	Yes

7. Vision Author	8. International Rail Relations Lead	9. Passenger Concession Letting agency	10. No significant commercial freedom/capability	11: Commercial Services Freedom (minimal):	12. Commercial Services Freedom (partial – no extra land):
Yes	Yes	No	No	No	No

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13. Commercial Service Freedom (partial – extra land for rail associated services only)	14. Commercial Service Freedom (full):	15. Duplicates existing RB Rail AS governance	16. Minimally modified governance from duplicate RB Rail AS (minimal relaxation)	17. Moderately modified governance from duplicate RB Rail AS (some relaxation + golden share)	18. Fully modified governance structure	19. Rail Haulage offer
Yes	No	No	No	Yes	No	No

## Option 32

**Partial commercial freedom with the right to seek to acquire land for railway associated services, with freight market pricing for single entity which cannot act as passenger concession letting agency, with fully modified share ownership/governance and no rail haulage:**

### Pros

- Some economies of scale related to the many services in-house
- Single point of contact for all bodies able to act coherently across all functions
- Some innovation capacity linked to degree of commercial services freedom

### Cons

- Some commercial risk for shareholders
- Potential for ancillary functions (passenger concession) will cause RB to lose focus
- tension between commercial freedom and full modification of ownership/governance
- Risk from significant change to share/governance structure

1. Freedom to set all track access (passenger and freight)	2. Freedom to set FREIGHT ONLY flows	3. Traffic Management	4. Capacity allocation	6. Inspection and maintenance across all route
No	Yes	Yes	Yes	Yes

7. Vision Author	8. International Rail Relations Lead	9. Passenger Concession Letting agency	10. No significant commercial freedom/capability	11: Commercial Services Freedom (minimal):	12. Commercial Services Freedom (partial – no extra land):
Yes	Yes	No	No	No	No

13. Commercial Service Freedom (partial – extra land for rail associated services only)	14. Commercial Service Freedom (full):	15. Duplicates existing RB Rail AS governance	16. Minimally modified governance from duplicate RB Rail AS (minimal relaxation)	17. Moderately modified governance from duplicate RB Rail AS (some relaxation + golden share)	18. Fully modified governance structure	19. Rail Haulage offer
Yes	No	No	No	No	Yes	No

### Option 33

**Partial commercial freedom with the right to seek to acquire land for railway associated services with freight market pricing for single entity which cannot act as passenger concession letting agency, with minimally modified share ownership/governance and no rail haulage:**

#### Pros

- Some economies of scale related to the many services in-house
- Single point of contact for all bodies able to act coherently across all functions
- Some innovation capacity linked to degree of commercial services freedom
- Balance between commercial freedom and minimal modification of ownership/governance
- Less potential for ancillary functions (passenger concession) that may otherwise cause RB to lose focus
- Minimal change required to share/governance structure

#### Cons

- Some risk for shareholders from market pricing of freight and right to acquire land for railway associated services

1. Freedom to set all track access (passenger and freight)	2. Freedom to set FREIGHT ONLY flows	3. Traffic Management	4. Capacity allocation	6. Inspection and maintenance across all route
No	Yes	Yes	Yes	Yes

7. Vision Author	8. International Rail Relations Lead	9. Passenger Concession Letting agency	10. No significant commercial freedom/capability	11: Commercial Services Freedom (minimal):	12. Commercial Services Freedom (partial – no extra land):
Yes	Yes	No	No	No	No

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13. Commercial Service Freedom (partial – extra land for rail associated services only)	14. Commercial Service Freedom (full):	15. Duplicates existing RB Rail AS governance	16. Minimally modified governance from duplicate RB Rail AS (minimal relaxation)	17. Moderately modified governance from duplicate RB Rail AS (some relaxation + golden share)	18. Fully modified governance structure	19. Rail Haulage offer
Yes	No	No	Yes	No	No	No

## Option 34

**Partial commercial freedom with the right to seek to acquire land for railway associated services with freight market pricing for single entity which cannot act as passenger concession letting agency, with moderately modified share ownership/governance, but can offer back-stop rail haulage:**

### Pros

- Some economies of scale related to the many services in-house
- Single point of contact for all bodies able to act coherently across all functions
- Some innovation capacity linked to degree of commercial services freedom
- Balance between commercial freedom and moderate modification of ownership/governance

### Cons

- Some risk for shareholders from market pricing for freight and right to acquire land for railway services
- Potential for ancillary functions (back stop haulage) that may otherwise cause RB to lose focus
- Golden share model not attractive for private investors and could be a violation of the Treaty
- Risk from moderate change required to share/governance structure

1. Freedom to set all track access (passenger and freight)	2. Freedom to set FREIGHT ONLY flows	3. Traffic Management	4. Capacity allocation	6. Inspection and maintenance across all route
No	Yes	Yes	Yes	Yes

7. Vision Author	8. International Rail Relations Lead	9. Passenger Concession Letting agency	10. No significant commercial freedom/capability	11: Commercial Services Freedom (minimal):	12. Commercial Services Freedom (partial – no extra land):
Yes	Yes	No	No	No	No

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13. Commercial Service Freedom (partial – extra land for rail associated services only)	14. Commercial Service Freedom (full):	15. Duplicates existing RB Rail AS governance	16. Minimally modified governance from duplicate RB Rail AS (minimal relaxation)	17. Moderately modified governance from duplicate RB Rail AS (some relaxation + golden share)	18. Fully modified governance structure	19. Rail Haulage offer
Yes	No	No	No	Yes	No	Yes

## Option 35

**Partial commercial freedom with the right to seek to acquire land for railway associated services with freight market pricing for single entity which cannot act as passenger concession letting agency, with fully modified share ownership/governance, but can offer back-stop rail haulage:**

### Pros

- Some economies of scale related to the many services in-house
- Single point of contact for all bodies able to act coherently across all functions
- Some innovation capacity linked to degree of commercial services freedom

### Cons

- Some risk for shareholders from market pricing of freight and right to acquire land for railway services
- Tension between commercial freedom and full modification of ownership/governance
- Ancillary functions (back stop rail haulage) that may otherwise cause RB to lose focus
- Significant risk from required change to share/governance structure

1. Freedom to set all track access (passenger and freight)	2. Freedom to set FREIGHT ONLY flows	3. Traffic Management	4. Capacity allocation	6. Inspection and maintenance across all route
No	Yes	Yes	Yes	Yes

7. Vision Author	8. International Rail Relations Lead	9. Passenger Concession Letting agency	10. No significant commercial freedom/capability	11: Commercial Services Freedom (minimal):	12. Commercial Services Freedom (partial – no extra land):
Yes	Yes	No	No	No	No

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13. Commercial Service Freedom (partial – extra land for rail associated services only)	14. Commercial Service Freedom (full):	15. Duplicates existing RB Rail AS governance	16. Minimally modified governance from duplicate RB Rail AS (minimal relaxation)	17. Moderately modified governance from duplicate RB Rail AS (some relaxation + golden share)	18. Fully modified governance structure	19. Rail Haulage offer
Yes	No	No	No	No	Yes	Yes

## Option 36

**Partial commercial freedom with the right to seek to acquire land for railway associated services with freight market pricing for single entity which cannot act as passenger concession letting agency, with minimally modified share ownership/governance, but can offer back-stop rail haulage:**

### Pros

- Some economies of scale related to the many services in-house
- Single point of contact for all bodies able to act coherently across all functions
- Some innovation capacity linked to degree of commercial services freedom
- Balance between commercial freedom and minimal modification of ownership/governance
- Minimal change required to share/governance arrangements

### Cons

- Some risk for shareholders from market pricing of freight and right to acquire land for railway services
- Potential for ancillary functions (back stop rail haulage) that may otherwise cause RB to lose focus

1. Freedom to set all track access (passenger and freight)	2. Freedom to set FREIGHT ONLY flows	3. Traffic Management	4. Capacity allocation	6. Inspection and maintenance across all route
No	Yes	Yes	Yes	Yes

7. Vision Author	8. International Rail Relations Lead	9. Passenger Concession Letting agency	10. No significant commercial freedom/capability	11: Commercial Services Freedom (minimal):	12. Commercial Services Freedom (partial – no extra land):
Yes	Yes	No	No	No	No

13. Commercial Service Freedom (partial – extra land for rail associated services only)	14. Commercial Service Freedom (full):	15. Duplicates existing RB Rail AS governance	16. Minimally modified governance from duplicate RB Rail AS (minimal relaxation)	17. Moderately modified governance from duplicate RB Rail AS (some relaxation + golden share)	18. Fully modified governance structure	19. Rail Haulage offer
Yes	No	No	Yes	No	No	Yes

## Option 37

**Partial commercial freedom with the right to seek to acquire land for railway associated services with freight REGULATED pricing for single entity which can act as passenger concession letting agency, has moderately modified share ownership/governance but will not offer aggregator “back-stop” rail haulage:**

### Pros

- Some economies of scale related to the many services in-house
- Single point of contact for all bodies able to act coherently across all functions
- Some innovation capacity linked to degree of commercial services freedom
- Balance between commercial freedom and moderate modification of ownership/governance

### Cons

- Some risk for shareholders from right to acquire land for railway services
- Potential for ancillary functions (passenger concession) that may otherwise cause RB to lose focus
- Golden share model not attractive for private investors and could be a violation of the Treaty
- Moderate change required to share/governance agreements

1. Freedom to set all track access (passenger and freight)	2. Freedom to set FREIGHT ONLY flows	3. Traffic Management	4. Capacity allocation	6. Inspection and maintenance across all route
No	No	Yes	Yes	Yes

7. Vision Author	8. International Rail Relations Lead	9. Passenger Concession Letting agency	10. No significant commercial freedom/capability	11: Commercial Services Freedom (minimal):	12. Commercial Services Freedom (partial – no extra land):
Yes	Yes	Yes	No	No	No

13. Commercial Service Freedom (partial – extra land for rail associated services only)	14. Commercial Service Freedom (full):	15. Duplicates existing RB Rail AS governance	16. Minimally modified governance from duplicate RB Rail AS (minimal relaxation)	17. Moderately modified governance from duplicate RB Rail AS (some relaxation + golden share)	18. Fully modified governance structure	19. Rail Haulage offer
Yes	No	No	No	Yes	No	No

## Option 38

**Partial commercial freedom with the right to seek to acquire land for railway associated services with freight REGULATED pricing for single entity which can act as passenger concession letting agency, with fully modified share ownership/governance and no rail haulage:**

### Pros

- Some economies of scale related to the many services in-house
- Single point of contact for all bodies able to act coherently across all functions
- Some innovation capacity linked to degree of commercial services freedom

### Cons

- Some risk for shareholders from right to acquire land for railway services
- Potential for ancillary functions (passenger concession) that may otherwise cause RB to lose focus
- Tension between commercial freedom and full modification of ownership/governance
- Significant risk from change to governance/share arrangements

1. Freedom to set all track access (passenger and freight)	2. Freedom to set FREIGHT ONLY flows	3. Traffic Management	4. Capacity allocation	6. Inspection and maintenance across all route
No	No	Yes	Yes	Yes

7. Vision Author	8. International Rail Relations Lead	9. Passenger Concession Letting agency	10. No significant commercial freedom/capability	11: Commercial Services Freedom (minimal):	12. Commercial Services Freedom (partial – no extra land):
Yes	Yes	Yes	No	No	No

13. Commercial Service Freedom (partial – extra land for rail associated services only)	14. Commercial Service Freedom (full):	15. Duplicates existing RB Rail AS governance	16. Minimally modified governance from duplicate RB Rail AS (minimal relaxation)	17. Moderately modified governance from duplicate RB Rail AS (some relaxation + golden share)	18. Fully modified governance structure	19. Rail Haulage offer
Yes	No	No	No	No	Yes	No

### Option 39

**Partial commercial freedom with the right to seek to acquire land for railway associated services with freight REGULATED pricing for single entity which can act as passenger concession letting agency, with minimally modified share ownership/governance and no back-stop rail haulage:**

#### Pros

- Some economies of scale related to the many services in-house
- Single point of contact for all bodies able to act coherently across all functions
- Some innovation capacity linked to degree of commercial services freedom
- Balance between commercial freedom and minimal modification of ownership/governance
- Minimal need to share share/governance arrangements

#### Cons

- Some risk for shareholders from right to acquire land for railway services
- Potential for ancillary functions (passenger concession) that may otherwise cause RB to lose focus

1. Freedom to set all track access (passenger and freight)	2. Freedom to set FREIGHT ONLY flows	3. Traffic Management	4. Capacity allocation	6. Inspection and maintenance across all route
No	No	Yes	Yes	Yes

7. Vision Author	8. International Rail Relations Lead	9. Passenger Concession Letting agency	10. No significant commercial freedom/capability	11: Commercial Services Freedom (minimal):	12. Commercial Services Freedom (partial – no extra land):
Yes	Yes	Yes	No	No	No

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13. Commercial Service Freedom (partial – extra land for rail associated services only)	14. Commercial Service Freedom (full):	15. Duplicates existing RB Rail AS governance	16. Minimally modified governance from duplicate RB Rail AS (minimal relaxation)	17. Moderately modified governance from duplicate RB Rail AS (some relaxation + golden share)	18. Fully modified governance structure	19. Rail Haulage offer
Yes	No	No	Yes	No	No	No

## Option 40

**Partial commercial freedom with the right to seek to acquire land for railway associated services with freight REGULATED pricing for single entity which can act as passenger concession letting agency, with moderately modified share ownership and offer back-stop rail haulage:**

### Pros

- Some economies of scale related to the many services in-house
- Single point of contact for all bodies able to act coherently across all functions
- Some innovation capacity linked to degree of commercial services freedom
- Balance between commercial freedom and moderate modification of ownership/governance

### Cons

- Some risk for shareholders from right to acquire land for railway services
- Potential for ancillary functions (passenger concession) that may otherwise cause RB to lose focus
- Golden share model not attractive for private investors and could be a violation of the Treaty
- Moderate risk for required changes to governance/share structures

1. Freedom to set all track access (passenger and freight)	2. Freedom to set FREIGHT ONLY flows	3. Traffic Management	4. Capacity allocation	6. Inspection and maintenance across all route
No	No	Yes	Yes	Yes

7. Vision Author	8. International Rail Relations Lead	9. Passenger Concession Letting agency	10. No significant commercial freedom/capability	11: Commercial Services Freedom (minimal):	12. Commercial Services Freedom (partial – no extra land):
Yes	Yes	Yes	No	No	No

13. Commercial Service Freedom (partial – extra land for rail associated services only)	14. Commercial Service Freedom (full):	15. Duplicates existing RB Rail AS governance	16. Minimally modified governance from duplicate RB Rail AS (minimal relaxation)	17. Moderately modified governance from duplicate RB Rail AS (some relaxation + golden share)	18. Fully modified governance structure	19. Rail Haulage offer
Yes	No	No	No	Yes	No	Yes

## Option 41

**Partial commercial freedom with the right to seek to acquire land for railway associated services with freight REGULATED pricing for single entity which can act as passenger concession letting agency, with fully modified share ownership and ability to offer back-stop rail haulage:**

### Pros

- Some economies of scale related to the many services in-house
- Single point of contact for all bodies able to act coherently across all functions
- Some innovation capacity linked to degree of commercial services freedom

### Cons

- Some risk for shareholders from right to acquire land for railway services
- Potential for ancillary functions (back stop haulage) that may otherwise cause RB to lose focus
- Tension between partial commercial freedom and full modification of ownership/governance
- Significant risk from required changes to governance/share structures

1. Freedom to set all track access (passenger and freight)	2. Freedom to set FREIGHT ONLY flows	3. Traffic Management	4. Capacity allocation	6. Inspection and maintenance across all route
No	No	Yes	Yes	Yes

7. Vision Author	8. International Rail Relations Lead	9. Passenger Concession Letting agency	10. No significant commercial freedom/capability	11: Commercial Services Freedom (minimal):	12. Commercial Services Freedom (partial – no extra land):
Yes	Yes	Yes	No	No	No

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13. Commercial Service Freedom (partial – extra land for rail associated services only)	14. Commercial Service Freedom (full):	15. Duplicates existing RB Rail AS governance	16. Minimally modified governance from duplicate RB Rail AS (minimal relaxation)	17. Moderately modified governance from duplicate RB Rail AS (some relaxation + golden share)	18. Fully modified governance structure	19. Rail Haulage offer
Yes	No	No	No	No	Yes	Yes

## Option 42

### Partial commercial freedom with the right to seek to acquire land for railway associated services with freight REGULATED pricing for single entity which can act as passenger concession letting agency, with minimally modified share ownership/governance and offer back-stop rail haulage

#### Pros

- Some economies of scale related to the many services in-house
- Single point of contact for all bodies able to act coherently across all functions
- Some innovation capacity linked to degree of commercial services freedom
- Minimal changes to share/governance arrangements required

#### Cons

- Some risk for shareholders from right to acquire land for railway services
- Potential for ancillary functions (passenger concession) that may otherwise cause RB to lose focus
- Tension between commercial freedom and minimal modification of ownership/governance

1. Freedom to set all track access (passenger and freight)	2. Freedom to set FREIGHT ONLY flows	3. Traffic Management	4. Capacity allocation	6. Inspection and maintenance across all route
No	No	Yes	Yes	Yes

7. Vision Author	8. International Rail Relations Lead	9. Passenger Concession Letting agency	10. No significant commercial freedom/capability	11: Commercial Services Freedom (minimal):	12. Commercial Services Freedom (partial – no extra land):
Yes	Yes	Yes	No	No	No

13. Commercial Service Freedom (partial – extra land for rail associated services only)	14. Commercial Service Freedom (full):	15. Duplicates existing RB Rail AS governance	16. Minimally modified governance from duplicate RB Rail AS (minimal relaxation)	17. Moderately modified governance from duplicate RB Rail AS (some relaxation + golden share)	18. Fully modified governance structure	19. Rail Haulage offer
Yes	No	No	Yes	No	No	Yes

### Option 43

**Partial commercial freedom with the right to seek to acquire land for railway associated services with freight REGULATED pricing for single entity which cannot act as passenger concession letting agency, with moderately modified share ownership and no rail haulage:**

#### Pros

- Some economies of scale related to the many services in-house
- Single point of contact for all bodies able to act coherently across all functions
- Some innovation capacity linked to degree of commercial services freedom
- Balance between commercial freedom and moderate modification of ownership/governance
- Fewer ancillary functions that may otherwise cause RB to lose focus

#### Cons

- Some risk for shareholders from right to acquire land for railway services
- Golden share model not attractive for private investors and could be a violation of the Treaty
- Moderate risk from required changes to share/governance arrangements

1. Freedom to set all track access (passenger and freight)	2. Freedom to set FREIGHT ONLY flows	3. Traffic Management	4. Capacity allocation	6. Inspection and maintenance across all route
No	No	Yes	Yes	Yes

7. Vision Author	8. International Rail Relations Lead	9. Passenger Concession Letting agency	10. No significant commercial freedom/capability	11: Commercial Services Freedom (minimal):	12. Commercial Services Freedom (partial – no extra land):
Yes	Yes	No	No	No	No

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13. Commercial Service Freedom (partial – extra land for rail associated services only)	14. Commercial Service Freedom (full):	15. Duplicates existing RB Rail AS governance	16. Minimally modified governance from duplicate RB Rail AS (minimal relaxation)	17. Moderately modified governance from duplicate RB Rail AS (some relaxation + golden share)	18. Fully modified governance structure	19. Rail Haulage offer
Yes	No	No	No	Yes	No	No

## Option 44

**Partial commercial freedom with the right to seek to acquire land for railway associated services with REGULATED market pricing for single entity which cannot act as passenger concession letting agency, with fully modified share ownership/governance and no rail haulage:**

### Pros

- Some economies of scale related to the many services in-house
- Single point of contact for all bodies able to act coherently across all functions
- Some innovation capacity linked to degree of commercial services freedom
- Fewer ancillary functions that may otherwise cause RB to lose focus

### Cons

- Some risk for shareholders from right to acquire land for railway services
- Tension between partial commercial freedom and full modification of ownership/governance
- Significant risk from required changes to governance/share arrangements

1. Freedom to set all track access (passenger and freight)	2. Freedom to set FREIGHT ONLY flows	3. Traffic Management	4. Capacity allocation	6. Inspection and maintenance across all route
No	No	Yes	Yes	Yes

7. Vision Author	8. International Rail Relations Lead	9. Passenger Concession Letting agency	10. No significant commercial freedom/capability	11: Commercial Services Freedom (minimal):	12. Commercial Services Freedom (partial – no extra land):
Yes	Yes	No	No	No	No

13. Commercial Service Freedom (partial – extra land for rail associated services only)	14. Commercial Service Freedom (full):	15. Duplicates existing RB Rail AS governance	16. Minimally modified governance from duplicate RB Rail AS (minimal relaxation)	17. Moderately modified governance from duplicate RB Rail AS (some relaxation + golden share)	18. Fully modified governance structure	19. Rail Haulage offer
Yes	No	No	No	No	Yes	No

## Option 45

**Partial commercial freedom with the right to seek to acquire land for railway associated services with freight REGULATED pricing for single entity which cannot act as passenger concession letting agency, with minimally modified share ownership/governance and no rail haulage:**

### Pros

- Some economies of scale related to the many services in-house
- Single point of contact for all bodies able to act coherently across all functions
- Some innovation capacity linked to degree of commercial services freedom
- Balance between commercial freedom and minimal modification of ownership/governance
- Fewer ancillary functions that may otherwise cause RB to lose focus
- Minimal changes required to share/governance arrangements

### Cons

- Some risk for shareholders from right to acquire land for railway services

1. Freedom to set all track access (passenger and freight)	2. Freedom to set FREIGHT ONLY flows	3. Traffic Management	4. Capacity allocation	6. Inspection and maintenance across all route
No	No	Yes	Yes	Yes

7. Vision Author	8. International Rail Relations Lead	9. Passenger Concession Letting agency	10. No significant commercial freedom/capability	11: Commercial Services Freedom (minimal):	12. Commercial Services Freedom (partial – no extra land):
Yes	Yes	No	No	No	No

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13. Commercial Service Freedom (partial – extra land for rail associated services only)	14. Commercial Service Freedom (full):	15. Duplicates existing RB Rail AS governance	16. Minimally modified governance from duplicate RB Rail AS (minimal relaxation)	17. Moderately modified governance from duplicate RB Rail AS (some relaxation + golden share)	18. Fully modified governance structure	19. Rail Haulage offer
Yes	No	No	Yes	No	No	No

## Option 46

**Partial commercial freedom with the right to seek to acquire land for railway associated services with freight REGULATED pricing for single entity which cannot act as passenger concession letting agency, with moderately modified share ownership/governance, but can offer back-stop rail haulage:**

### Pros

- Some economies of scale related to the many services in-house
- Single point of contact for all bodies able to act coherently across all functions
- Some innovation capacity linked to degree of commercial services freedom
- Balance between commercial freedom and moderate modification of ownership/governance

### Cons

- Some risk for shareholders from right to acquire land for railway services
- Golden share model not attractive for private investors and could be a violation of the Treaty
- Potential for ancillary functions (back stop rail haulage) to cause RB to lose management focus
- Moderate risk from required changes to share/governance arrangements

1. Freedom to set all track access (passenger and freight)	2. Freedom to set FREIGHT ONLY flows	3. Traffic Management	4. Capacity allocation	6. Inspection and maintenance across all route
No	No	Yes	Yes	Yes

7. Vision Author	8. International Rail Relations Lead	9. Passenger Concession Letting agency	10. No significant commercial freedom/capability	11: Commercial Services Freedom (minimal):	12. Commercial Services Freedom (partial – no extra land):
Yes	Yes	No	No	No	No

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13. Commercial Service Freedom (partial – extra land for rail associated services only)	14. Commercial Service Freedom (full):	15. Duplicates existing RB Rail AS governance	16. Minimally modified governance from duplicate RB Rail AS (minimal relaxation)	17. Moderately modified governance from duplicate RB Rail AS (some relaxation + golden share)	18. Fully modified governance structure	19. Rail Haulage offer
Yes	No	No	No	Yes	No	Yes

## Option 47

**Partial commercial freedom with the right to seek to acquire land for railway associated services with freight REGULATED pricing for single entity which cannot act as passenger concession letting agency, with fully modified share ownership/governance, but can offer back-stop rail haulage:**

### Pros

- Some economies of scale related to the many services in-house
- Single point of contact for all bodies able to act coherently across all functions
- Some innovation capacity linked to degree of commercial services freedom

### Cons

- Some risk for shareholders from right to acquire land for railway services
- Tension between commercial freedom and full modification of ownership/governance
- Potential for ancillary functions (back stop haulage) to cause RB to lose focus
- Significant risk from required changes to share/governance arrangements

1. Freedom to set all track access (passenger and freight)	2. Freedom to set FREIGHT ONLY flows	3. Traffic Management	4. Capacity allocation	6. Inspection and maintenance across all route
No	No	Yes	Yes	Yes

7. Vision Author	8. International Rail Relations Lead	9. Passenger Concession Letting agency	10. No significant commercial freedom/capability	11: Commercial Services Freedom (minimal):	12. Commercial Services Freedom (partial – no extra land):
Yes	Yes	No	No	No	No

13. Commercial Service Freedom (partial – extra land for rail associated services only)	14. Commercial Service Freedom (full):	15. Duplicates existing RB Rail AS governance	16. Minimally modified governance from duplicate RB Rail AS (minimal relaxation)	17. Moderately modified governance from duplicate RB Rail AS (some relaxation + golden share)	18. Fully modified governance structure	19. Rail Haulage offer
Yes	No	No	No	No	Yes	Yes

## Option 48

**Partial commercial freedom with the right to seek to acquire land for railway associated services with freight REGULATED pricing for single entity which cannot act as passenger concession letting agency, with minimally modified share ownership/governance, but can offer back-stop rail haulage:**

### Pros

- Some economies of scale related to the many services in-house
- Single point of contact for all bodies able to act coherently across all functions
- Some innovation capacity linked to degree of commercial services freedom
- Balance between commercial freedom and minimal modification of ownership/governance
- Minimal changes to governance/share structures required

### Cons

- Some risk for shareholders from right to acquire land for railway services
- Potential for ancillary functions (back stop rail haulage) to cause RB to lose management focus

1. Freedom to set all track access (passenger and freight)	2. Freedom to set FREIGHT ONLY flows	3. Traffic Management	4. Capacity allocation	6. Inspection and maintenance across all route
No	No	Yes	Yes	Yes

7. Vision Author	8. International Rail Relations Lead	9. Passenger Concession Letting agency	10. No significant commercial freedom/capability	11: Commercial Services Freedom (minimal):	12. Commercial Services Freedom (partial – no extra land):
Yes	Yes	No	No	No	No

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13. Commercial Service Freedom (partial – extra land for rail associated services only)	14. Commercial Service Freedom (full):	15. Duplicates existing RB Rail AS governance	16. Minimally modified governance from duplicate RB Rail AS (minimal relaxation)	17. Moderately modified governance from duplicate RB Rail AS (some relaxation + golden share)	18. Fully modified governance structure	19. Rail Haulage offer
Yes	No	No	Yes	No	No	Yes

## Option 49

**Partial commercial freedom without the right to seek to acquire land with freight REGULATED pricing for single entity which can act as passenger concession letting agency, has moderately modified share ownership/governance but will not offer aggregator “back-stop” rail haulage:**

### Pros

- Some economies of scale related to the many services in-house
- Single point of contact for all bodies able to act coherently across all functions
- Some innovation capacity linked to degree of commercial services freedom
- Balance between commercial freedom and moderate modification of ownership/governance
- Less risk for shareholders from right to acquire land

### Cons

- Golden share model not attractive for private investors and could be a violation of the Treaty
- Potential for ancillary functions (passenger concession) to cause RB to lose management focus
- Moderate risk from required changes to share/governance structure

1. Freedom to set all track access (passenger and freight)	2. Freedom to set FREIGHT ONLY flows	3. Traffic Management	4. Capacity allocation	6. Inspection and maintenance across all route
No	No	Yes	Yes	Yes

7. Vision Author	8. International Rail Relations Lead	9. Passenger Concession Letting agency	10. No significant commercial freedom/capability	11: Commercial Services Freedom (minimal):	12. Commercial Services Freedom (partial – no extra land):
Yes	Yes	Yes	No	No	Yes

13. Commercial Service Freedom (partial – extra land for rail associated services only)	14. Commercial Service Freedom (full):	15. Duplicates existing RB Rail AS governance	16. Minimally modified governance from duplicate RB Rail AS (minimal relaxation)	17. Moderately modified governance from duplicate RB Rail AS (some relaxation + golden share)	18. Fully modified governance structure	19. Rail Haulage offer
No	No	No	No	Yes	No	No

## Option 50

**Partial commercial freedom without the right to seek to acquire land with freight REGULATED pricing for single entity which can act as passenger concession letting agency, with fully modified share ownership/governance and no rail haulage:**

### Pros

- Some economies of scale related to the many services in-house
- Single point of contact for all bodies able to act coherently across all functions
- Some innovation capacity linked to degree of commercial services freedom
- Less risk for shareholders from right to acquire land

### Cons

- Potential for ancillary functions (passenger concession) to cause RB to lose management focus
- Tension between commercial freedom and full modification of ownership/governance
- Significant risk from required changes to share/governance arrangements

1. Freedom to set all track access (passenger and freight)	2. Freedom to set FREIGHT ONLY flows	3. Traffic Management	4. Capacity allocation	6. Inspection and maintenance across all route
No	No	Yes	Yes	Yes

7. Vision Author	8. International Rail Relations Lead	9. Passenger Concession Letting agency	10. No significant commercial freedom/capability	11: Commercial Services Freedom (minimal):	12. Commercial Services Freedom (partial – no extra land):
Yes	Yes	Yes	No	No	Yes

13. Commercial Service Freedom (partial – extra land for rail associated services only)	14. Commercial Service Freedom (full):	15. Duplicates existing RB Rail AS governance	16. Minimally modified governance from duplicate RB Rail AS (minimal relaxation)	17. Moderately modified governance from duplicate RB Rail AS (some relaxation + golden share)	18. Fully modified governance structure	19. Rail Haulage offer
No	No	No	No	No	Yes	No

## Option 51

**Partial commercial freedom without the right to seek to acquire land services with freight REGULATED pricing for single entity which can act as passenger concession letting agency, with minimally modified share ownership/governance and no back-stop rail haulage:**

### Pros

- Some economies of scale related to the many services in-house
- Single point of contact for all bodies able to act coherently across all functions
- Some innovation capacity linked to degree of commercial services freedom
- Balance between commercial freedom and minimal modification of ownership/governance
- Less risk for shareholders from right to acquire land
- Minimal changes to share/governance arrangements required

### Cons

- Potential for ancillary functions (passenger concession) to cause RB to lose management focus

1. Freedom to set all track access (passenger and freight)	2. Freedom to set FREIGHT ONLY flows	3. Traffic Management	4. Capacity allocation	6. Inspection and maintenance across all route
No	No	Yes	Yes	Yes

7. Vision Author	8. International Rail Relations Lead	9. Passenger Concession Letting agency	10. No significant commercial freedom/capability	11: Commercial Services Freedom (minimal):	12. Commercial Services Freedom (partial – no extra land):
Yes	Yes	Yes	No	No	Yes

13. Commercial Service Freedom (partial – extra land for rail associated services only)	14. Commercial Service Freedom (full):	15. Duplicates existing RB Rail AS governance	16. Minimally modified governance from duplicate RB Rail AS (minimal relaxation)	17. Moderately modified governance from duplicate RB Rail AS (some relaxation + golden share)	18. Fully modified governance structure	19. Rail Haulage offer
No	No	No	Yes	No	No	No

### Option 52

Partial commercial freedom without the right to seek to acquire land with freight REGULATED pricing for single entity which can act as passenger concession letting agency, with moderately modified share ownership/governance and offer back-stop rail haulage:

#### Pros

- Some economies of scale related to the many services in-house
- Single point of contact for all bodies able to act coherently across all functions
- Some innovation capacity linked to degree of commercial services freedom
- Balance between commercial freedom and moderate modification of ownership/governance
- Less risk for shareholders from right to acquire land

#### Cons

- Potential for ancillary functions (passenger concession) to cause RB to lose management focus
- Golden share model not attractive for private investors and could be a violation of the Treaty
- Moderate risk from required changes to share/governance arrangements

1. Freedom to set all track access (passenger and freight)	2. Freedom to set FREIGHT ONLY flows	3. Traffic Management	4. Capacity allocation	6. Inspection and maintenance across all route
No	No	Yes	Yes	Yes

7. Vision Author	8. International Rail Relations Lead	9. Passenger Concession Letting agency	10. No significant commercial freedom/capability	11: Commercial Services Freedom (minimal):	12. Commercial Services Freedom (partial – no extra land):
Yes	Yes	Yes	No	No	Yes

13. Commercial Service Freedom (partial – extra land for rail associated services only)	14. Commercial Service Freedom (full):	15. Duplicates existing RB Rail AS governance	16. Minimally modified governance from duplicate RB Rail AS (minimal relaxation)	17. Moderately modified governance from duplicate RB Rail AS (some relaxation + golden share)	18. Fully modified governance structure	19. Rail Haulage offer
No	No	No	No	Yes	No	Yes

### Option 53

**Partial commercial freedom without the right to seek to acquire land with freight REGULATED pricing for single entity which can act as passenger concession letting agency, with fully modified share ownership/governance and offer back-stop rail haulage:**

#### Pros

- Some economies of scale related to the many services in-house
- Single point of contact for all bodies able to act coherently across all functions
- Some innovation capacity linked to degree of commercial services freedom
- Less risk for shareholders from right to acquire land

#### Cons

- Potential for ancillary functions (passenger concession) to cause RB to lose management focus
- Tension between partial commercial freedom and full modification of ownership/governance
- Risk from significant change to governance/share arrangements

1. Freedom to set all track access (passenger and freight)	2. Freedom to set FREIGHT ONLY flows	3. Traffic Management	4. Capacity allocation	6. Inspection and maintenance across all route
No	No	Yes	Yes	Yes

7. Vision Author	8. International Rail Relations Lead	9. Passenger Concession Letting agency	10. No significant commercial freedom/capability	11: Commercial Services Freedom (minimal):	12. Commercial Services Freedom (partial – no extra land):
Yes	Yes	Yes	No	No	Yes

13. Commercial Service Freedom (partial – extra land for rail associated services only)	14. Commercial Service Freedom (full):	15. Duplicates existing RB Rail AS governance	16. Minimally modified governance from duplicate RB Rail AS (minimal relaxation)	17. Moderately modified governance from duplicate RB Rail AS (some relaxation + golden share)	18. Fully modified governance structure	19. Rail Haulage offer
No	No	No	No	No	Yes	Yes

## Option 54

### Partial commercial freedom without the right to seek to acquire land for railway associated services with freight REGULATED pricing for single entity which can act as passenger concession letting agency, with minimally modified share ownership/governance and offer back-stop rail haulage

#### Pros

- Some economies of scale related to the many services in-house
- Single point of contact for all bodies able to act coherently across all functions
- Some innovation capacity linked to degree of commercial services freedom
- Balance between commercial freedom and minimal modification of ownership/governance
- Less risk for shareholders from right to acquire land
- Minimal change required to governance/share arrangements

#### Cons

- Potential for ancillary functions (passenger concession) to cause RB to lose management focus

1. Freedom to set all track access (passenger and freight)	2. Freedom to set FREIGHT ONLY flows	3. Traffic Management	4. Capacity allocation	6. Inspection and maintenance across all route
No	No	Yes	Yes	Yes

7. Vision Author	8. International Rail Relations Lead	9. Passenger Concession Letting agency	10. No significant commercial freedom/capability	11: Commercial Services Freedom (minimal):	12. Commercial Services Freedom (partial – no extra land):
Yes	Yes	Yes	No	No	Yes

13. Commercial Service Freedom (partial – extra land for rail associated services only)	14. Commercial Service Freedom (full):	15. Duplicates existing RB Rail AS governance	16. Minimally modified governance from duplicate RB Rail AS (minimal relaxation)	17. Moderately modified governance from duplicate RB Rail AS (some relaxation + golden share)	18. Fully modified governance structure	19. Rail Haulage offer
No	No	No	Yes	No	No	Yes

## Option 55

**Partial commercial freedom without the right to seek to acquire land with freight REGULATED pricing for single entity which cannot act as passenger concession letting agency, with moderately modified share ownership/governance and no rail haulage:**

### Pros

- Some economies of scale related to the many services in-house
- Single point of contact for all bodies able to act coherently across all functions
- Some innovation capacity linked to degree of commercial services freedom
- Balance between commercial freedom and moderate modification of ownership/governance
- Less risk for shareholders from right to acquire land
- Less potential for ancillary functions to cause RB to lose management focus

### Cons

- Golden share model not attractive for private investors and could be a violation of the Treaty
- Moderate risk from changes required to share/governance arrangements

1. Freedom to set all track access (passenger and freight)	2. Freedom to set FREIGHT ONLY flows	3. Traffic Management	4. Capacity allocation	6. Inspection and maintenance across all route
No	No	Yes	Yes	Yes

7. Vision Author	8. International Rail Relations Lead	9. Passenger Concession Letting agency	10. No significant commercial freedom/capability	11: Commercial Services Freedom (minimal):	12. Commercial Services Freedom (partial – no extra land):
Yes	Yes	No	No	No	Yes

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13. Commercial Service Freedom (partial – extra land for rail associated services only)	14. Commercial Service Freedom (full):	15. Duplicates existing RB Rail AS governance	16. Minimally modified governance from duplicate RB Rail AS (minimal relaxation)	17. Moderately modified governance from duplicate RB Rail AS (some relaxation + golden share)	18. Fully modified governance structure	19. Rail Haulage offer
No	No	No	No	Yes	No	No

## Option 56

**Partial commercial freedom without the right to seek to acquire land with REGULATED market pricing for single entity which cannot act as passenger concession letting agency, with fully modified share ownership/governance and no rail haulage:**

### Pros

- Some economies of scale related to the many services in-house
- Single point of contact for all bodies able to act coherently across all functions
- Some innovation capacity linked to degree of commercial services freedom
- Less risk for shareholders from right to acquire land
- Less potential for ancillary functions to cause RB to lose management focus

### Cons

- Tension between commercial freedom and full modification of ownership/governance
- Significant risk from required changes to share/governance arrangements

1. Freedom to set all track access (passenger and freight)	2. Freedom to set FREIGHT ONLY flows	3. Traffic Management	4. Capacity allocation	6. Inspection and maintenance across all route
No	No	Yes	Yes	Yes

7. Vision Author	8. International Rail Relations Lead	9. Passenger Concession Letting agency	10. No significant commercial freedom/capability	11: Commercial Services Freedom (minimal):	12. Commercial Services Freedom (partial – no extra land):
Yes	Yes	No	No	No	Yes

13. Commercial Service Freedom (partial – extra land for rail associated services only)	14. Commercial Service Freedom (full):	15. Duplicates existing RB Rail AS governance	16. Minimally modified governance from duplicate RB Rail AS (minimal relaxation)	17. Moderately modified governance from duplicate RB Rail AS (some relaxation + golden share)	18. Fully modified governance structure	19. Rail Haulage offer
No	No	No	No	No	Yes	No

## Option 57

**Partial commercial freedom without the right to seek to acquire land with freight REGULATED pricing for single entity which cannot act as passenger concession letting agency, with minimally modified share ownership/governance and no rail haulage:**

### Pros

- Some economies of scale related to the many services in-house
- Single point of contact for all bodies able to act coherently across all functions
- Some innovation capacity linked to degree of commercial services freedom
- Balance between commercial freedom and minimal modification of ownership/governance
- Less risk for shareholders from right to acquire land
- Less potential for ancillary functions to cause RB to lose management focus
- Minimal changes required to share/governance arrangements

### Cons

- RB constrained functionality may make it harder to recruit expertise

1. Freedom to set all track access (passenger and freight)	2. Freedom to set FREIGHT ONLY flows	3. Traffic Management	4. Capacity allocation	6. Inspection and maintenance across all route
No	No	Yes	Yes	Yes

7. Vision Author	8. International Rail Relations Lead	9. Passenger Concession Letting agency	10. No significant commercial freedom/capability	11: Commercial Services Freedom (minimal):	12. Commercial Services Freedom (partial – no extra land):
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Yes	Yes	No	No	No	Yes
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13. Commercial Service Freedom (partial – extra land for rail associated services only)	14. Commercial Service Freedom (full):	15. Duplicates existing RB Rail AS governance	16. Minimally modified governance from duplicate RB Rail AS (minimal relaxation)	17. Moderately modified governance from duplicate RB Rail AS (some relaxation + golden share)	18. Fully modified governance structure	19. Rail Haulage offer
No	No	No	Yes	No	No	No

## Option 58

**Partial commercial freedom without the right to seek to acquire land with freight REGULATED pricing for single entity which cannot act as passenger concession letting agency, with moderately modified share ownership/governance, but can offer back-stop rail haulage:**

### Pros

- Some economies of scale related to the many services in-house
- Single point of contact for all bodies able to act coherently across all functions
- Some innovation capacity linked to degree of commercial services freedom
- Balance between commercial freedom and minimal modification of ownership/governance
- Less risk for shareholders from right to acquire land

### Cons

- RB constrained functionality may make it harder to recruit expertise
- Potential for ancillary functions (back stop haulage) to cause RB to lose management focus
- Golden share model not attractive for private investors and could be a violation of the Treaty
- Moderate risk from changes to governance/share arrangements

1. Freedom to set all track access (passenger and freight)	2. Freedom to set FREIGHT ONLY flows	3. Traffic Management	4. Capacity allocation	6. Inspection and maintenance across all route
No	No	Yes	Yes	Yes

7. Vision Author	8. International Rail Relations Lead	9. Passenger Concession Letting agency	10. No significant commercial freedom/capability	11: Commercial Services Freedom (minimal):	12. Commercial Services Freedom (partial – no extra land):
Yes	Yes	No	No	No	Yes

13. Commercial Service Freedom (partial – extra land for rail associated services only)	14. Commercial Service Freedom (full):	15. Duplicates existing RB Rail AS governance	16. Minimally modified governance from duplicate RB Rail AS (minimal relaxation)	17. Moderately modified governance from duplicate RB Rail AS (some relaxation + golden share)	18. Fully modified governance structure	19. Rail Haulage offer
No	No	No	No	Yes	No	Yes

## Option 59

**Partial commercial freedom without the right to seek to acquire land with freight REGULATED pricing for single entity which cannot act as passenger concession letting agency, with fully modified share ownership/governance, but can offer back-stop rail haulage:**

### Pros

- Some economies of scale related to the many services in-house
- Single point of contact for all bodies able to act coherently across all functions
- Some innovation capacity linked to degree of commercial services freedom
- Less risk for shareholders from right to acquire land

### Cons

- RB constrained functionality may make it harder to recruit expertise
- Tension between partial commercial freedom and full modification of ownership/governance
- Potential for ancillary functions (back stop haulage) to cause RB to lose management focus
- Significant risk from required changes to share/governance arrangements

1. Freedom to set all track access (passenger and freight)	2. Freedom to set FREIGHT ONLY flows	3. Traffic Management	4. Capacity allocation	6. Inspection and maintenance across all route
No	No	Yes	Yes	Yes

7. Vision Author	8. International Rail Relations Lead	9. Passenger Concession Letting agency	10. No significant commercial freedom/capability	11: Commercial Services Freedom (minimal):	12. Commercial Services Freedom (partial – no extra land):
Yes	Yes	No	No	No	Yes

13. Commercial Service Freedom (partial – extra land for rail associated services only)	14. Commercial Service Freedom (full):	15. Duplicates existing RB Rail AS governance	16. Minimally modified governance from duplicate RB Rail AS (minimal relaxation)	17. Moderately modified governance from duplicate RB Rail AS (some relaxation + golden share)	18. Fully modified governance structure	19. Rail Haulage offer
No	No	No	No	No	Yes	Yes

## Option 60

**Partial commercial freedom without the right to seek to acquire land with freight REGULATED pricing for single entity which cannot act as passenger concession letting agency, with minimally modified share ownership/governance, but can offer back-stop rail haulage:**

### Pros

- Some economies of scale related to the many services in-house
- Single point of contact for all bodies able to act coherently across all functions
- Some innovation capacity linked to degree of commercial services freedom
- Less risk for shareholders from right to acquire land
- Balance between partial commercial freedom and minimal modification of ownership/governance
- Minimal changes required to share/governance arrangements

### Cons

- RB constrained functionality may make it harder to recruit expertise
- Potential for ancillary functions (back stop haulage) to cause RB to lose management focus

1. Freedom to set all track access (passenger and freight)	2. Freedom to set FREIGHT ONLY flows	3. Traffic Management	4. Capacity allocation	6. Inspection and maintenance across all route
No	No	Yes	Yes	Yes

7. Vision Author	8. International Rail Relations Lead	9. Passenger Concession Letting agency	10. No significant commercial freedom/capability	11: Commercial Services Freedom (minimal):	12. Commercial Services Freedom (partial – no extra land):
Yes	Yes	No	No	No	Yes

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13. Commercial Service Freedom (partial – extra land for rail associated services only)	14. Commercial Service Freedom (full):	15. Duplicates existing RB Rail AS governance	16. Minimally modified governance from duplicate RB Rail AS (minimal relaxation)	17. Moderately modified governance from duplicate RB Rail AS (some relaxation + golden share)	18. Fully modified governance structure	19. Rail Haulage offer
No	No	No	Yes	No	No	Yes

## Option 61

**Minimal commercial freedom without the right to seek to acquire land, with minimal change to the share structure/governance, with freight REGULATED pricing for single entity which cannot act as passenger concession letting agency or offer back stop rail haulage**

### Pros

- Limited economies of scale related to the many services in-house
- Single point of contact for all bodies able to act coherently across all functions
- Limited innovation capacity linked to degree of commercial services freedom
- Minimal risk for shareholders from right to acquire land
- Balance between partial commercial freedom and minimal modification of ownership/governance
- No potential for ancillary functions (back stop haulage) to cause RB to lose management focus
- Minimal changes required to share/governance arrangements

### Cons

- RB constrained functionality may make it harder to recruit expertise

1. Freedom to set all track access (passenger and freight)	2. Freedom to set FREIGHT ONLY flows	3. Traffic Management	4. Capacity allocation	6. Inspection and maintenance across all route
No	No	Yes	Yes	Yes

7. Vision Author	8. International Rail Relations Lead	9. Passenger Concession Letting agency	10. No significant commercial freedom/capability	11: Commercial Services Freedom (minimal):	12. Commercial Services Freedom (partial – no extra land):
Yes	Yes	No	No	Yes	No

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13. Commercial Service Freedom (partial – extra land for rail associated services only)	14. Commercial Service Freedom (full):	15. Duplicates existing RB Rail AS governance	16. Minimally modified governance from duplicate RB Rail AS (minimal relaxation)	17. Moderately modified governance from duplicate RB Rail AS (some relaxation + golden share)	18. Fully modified governance structure	19. Rail Haulage offer
No	No	No	Yes	No	No	No

## Option 62

**Minimal commercial freedom without the right to seek to acquire land with some modification to share structure/governance with freight REGULATED pricing for single entity which cannot act as passenger concession letting agency or offer back-stop rail haulage:**

### Pros

- Limited economies of scale related to the many services in-house
- Single point of contact for all bodies able to act coherently across all functions
- Limited innovation capacity linked to degree of commercial services freedom
- Minimal risk for shareholders from right to acquire land
- Balance between partial commercial freedom and moderate modification of ownership/governance
- No potential for ancillary functions (back stop haulage) to cause RB to lose management focus

### Cons

- RB constrained functionality may make it harder to recruit expertise
- Golden share model not attractive for private investors and could be a violation of the Treaty
- Some risk from modifications required to share/governance arrangements

1. Freedom to set all track access (passenger and freight)	2. Freedom to set FREIGHT ONLY flows	3. Traffic Management	4. Capacity allocation	6. Inspection and maintenance across all route
No	No	Yes	Yes	Yes

7. Vision Author	8. International Rail Relations Lead	9. Passenger Concession Letting agency	10. No significant commercial freedom/capability	11: Commercial Services Freedom (minimal):	12. Commercial Services Freedom (partial – no extra land):
Yes	Yes	No	No	Yes	No

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13. Commercial Service Freedom (partial – extra land for rail associated services only)	14. Commercial Service Freedom (full):	15. Duplicates existing RB Rail AS governance	16. Minimally modified governance from duplicate RB Rail AS (minimal relaxation)	17. Moderately modified governance from duplicate RB Rail AS (some relaxation + golden share)	18. Fully modified governance structure	19. Rail Haulage offer
No	No	No	No	Yes	No	No

## Option 63

**Minimal commercial freedom without the right to seek to acquire land with no modification to share structure/governance with freight REGULATED pricing for single entity which cannot act as passenger concession letting agency or offer back-stop rail haulage:**

### Pros

- Limited economies of scale related to the many services in-house
- Single point of contact for all bodies able to act coherently across all functions
- Limited innovation capacity linked to degree of commercial services freedom
- Minimal risk for shareholders from right to acquire land
- No potential for ancillary functions (back stop haulage) to cause RB to lose management focus
- No changes required to share/governance arrangements

### Cons

- RB constrained functionality may make it harder to recruit expertise
- Tension between partial commercial freedom and no modification of ownership/governance

1. Freedom to set all track access (passenger and freight)	2. Freedom to set FREIGHT ONLY flows	3. Traffic Management	4. Capacity allocation	6. Inspection and maintenance across all route
No	No	Yes	Yes	Yes

7. Vision Author	8. International Rail Relations Lead	9. Passenger Concession Letting agency	10. No significant commercial freedom/capability	11: Commercial Services Freedom (minimal):	12. Commercial Services Freedom (partial – no extra land):
Yes	Yes	No	No	Yes	No

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13. Commercial Service Freedom (partial – extra land for rail associated services only)	14. Commercial Service Freedom (full):	15. Duplicates existing RB Rail AS governance	16. Minimally modified governance from duplicate RB Rail AS (minimal relaxation)	17. Moderately modified governance from duplicate RB Rail AS (some relaxation + golden share)	18. Fully modified governance structure	19. Rail Haulage offer
No	No	Yes	No	No	No	No

## Option 79

**No significant commercial freedom or change in share/governance structure but with ability to hold Rail Baltica “vision”, undertake traffic management and be responsible for infrastructure maintenance.**

### Pros

- Minimal risk for shareholders
- Balance between no significant commercial freedom and no modification of ownership/governance
- No potential for ancillary functions (back stop haulage) to cause RB to lose management focus
- No changes required to share/governance arrangements

### Cons

- No significant economies of scale related to the many services in-house
- No innovation capacity linked to degree of commercial services freedom
- RB constrained functionality may make it harder to recruit expertise

1. Freedom to set all track access (passenger and freight)	2. Freedom to set FREIGHT ONLY flows	3. Traffic Management	4. Capacity allocation	6. Inspection and maintenance across all route
No	No	Yes	Yes	Yes

7. Vision Author	8. International Rail Relations Lead	9. Passenger Concession Letting agency	10. No significant commercial freedom/capability	11: Commercial Services Freedom (minimal):	12. Commercial Services Freedom (partial – no extra land):
Yes	No	No	Yes	No	No

13. Commercial Service Freedom (partial – extra land for rail associated services only)	14. Commercial Service Freedom (full):	15. Duplicates existing RB Rail AS governance	16. Minimally modified governance from duplicate RB Rail AS (minimal relaxation)	17. Moderately modified governance from duplicate RB Rail AS (some relaxation + golden share)	18. Fully modified governance structure	19. Rail Haulage offer
No	No	Yes	No	No	No	No

## Option 80

**No significant commercial freedom or change in share/governance structure but with ability to hold Rail Baltica “vision”, undertake traffic management - but not be responsible for infrastructure maintenance:**

### Pros

- Minimal risk for shareholders
- Balance between no significant commercial freedom and no modification of ownership/governance
- No potential for ancillary functions (back stop haulage) to cause RB to lose management focus
- No changes required to share/governance arrangements

### Cons

- No significant economies of scale related to the many services in-house
- No innovation capacity linked to degree of commercial services freedom
- RB constrained functionality may make it harder to recruit expertise
- Difficult to hold RB to account re train performance because not responsible for route maintenance
- Tension between vision role and not being responsible for maintenance cost

1. Freedom to set all track access (passenger and freight)	2. Freedom to set FREIGHT ONLY flows	3. Traffic Management	4. Capacity allocation	6. Inspection and maintenance across all route
No	No	Yes	Yes	No

7. Vision Author	8. International Rail Relations Lead	9. Passenger Concession Letting agency	10. No significant commercial freedom/capability	11: Commercial Services Freedom (minimal):	12. Commercial Services Freedom (partial – no extra land):
Yes	Yes	No	Yes	No	No

13. Commercial Service Freedom (partial – extra land for rail associated services only)	14. Commercial Service Freedom (full):	15. Duplicates existing RB Rail AS governance	16. Minimally modified governance from duplicate RB Rail AS (minimal relaxation)	17. Moderately modified governance from duplicate RB Rail AS (some relaxation + golden share)	18. Fully modified governance structure	19. Rail Haulage offer
No	No	Yes	No	No	No	No

## Option 81

**No significant commercial freedom or change in share/governance structure but with ability to hold Rail Baltica “vision”, and be responsible for capacity allocation but not maintenance undertake traffic management**

### Pros

- Minimal risk for shareholders
- Balance between no significant commercial freedom and no modification of ownership/governance
- No potential for ancillary functions (back stop haulage) to cause RB to lose management focus
- No changes required to share/governance arrangements

### Cons

- No significant economies of scale related to the many services in-house
- No innovation capacity linked to degree of commercial services freedom
- RB constrained functionality may make it harder to recruit expertise
- No accountability for train performance given split of traffic management and timetabling and for route maintenance
- Tension between vision role and not being responsible for maintenance cost

1. Freedom to set all track access (passenger and freight)	2. Freedom to set FREIGHT ONLY flows	3. Traffic Management	4. Capacity allocation	6. Inspection and maintenance across all route
No	No	No	Yes	No

7. Vision Author	8. International Rail Relations Lead	9. Passenger Concession Letting agency	10. No significant commercial freedom/capability	11: Commercial Services Freedom (minimal):	12. Commercial Services Freedom (partial – no extra land):
Yes	Yes	No	Yes	No	No

13. Commercial Service Freedom (partial – extra land for rail associated services only)	14. Commercial Service Freedom (full):	15. Duplicates existing RB Rail AS governance	16. Minimally modified governance from duplicate RB Rail AS (minimal relaxation)	17. Moderately modified governance from duplicate RB Rail AS (some relaxation + golden share)	18. Fully modified governance structure	19. Rail Haulage offer
No	No	Yes	No	No	No	No

## Option 82

### No significant commercial freedom or change in share structure but with Rail Baltica responsible for capacity allocation but not the vision, maintenance undertake traffic management:

#### Pros

- Minimal risk for shareholders
- Balance between no significant commercial freedom and no modification of ownership/governance
- No potential for ancillary functions (back stop haulage) to cause RB to lose management focus
- No owner for RB vision
- No changes required to share/governance arrangements

#### Cons

- No significant economies of scale related to the many services in-house
- No innovation capacity linked to degree of commercial services freedom
- RB constrained functionality may make it harder to recruit expertise
- No accountability for train performance given split of traffic management and timetabling and for route maintenance

1. Freedom to set all track access (passenger and freight)	2. Freedom to set FREIGHT ONLY flows	3. Traffic Management	4. Capacity allocation	6. Inspection and maintenance across all route
No	No	No	Yes	No

7. Vision Author	8. International Rail Relations Lead	9. Passenger Concession Letting agency	10. No significant commercial freedom/capability	11: Commercial Services Freedom (minimal):	12. Commercial Services Freedom (partial – no extra land):
No	No	No	Yes	No	No

13. Commercial Service Freedom (partial – extra land for rail associated services only)	14. Commercial Service Freedom (full):	15. Duplicates existing RB Rail AS governance	16. Minimally modified governance from duplicate RB Rail AS (minimal relaxation)	17. Moderately modified governance from duplicate RB Rail AS (some relaxation + golden share)	18. Fully modified governance structure	19. Rail Haulage offer
No	No	Yes	No	No	No	No

## Option 83

**No significant commercial freedom or change in share structure but with Rail Baltica responsible for capacity allocation, and traffic management, but not maintenance or the vision:**

### Pros

- Minimal risk for shareholders
- Balance between no significant commercial freedom and no modification of ownership/governance
- No potential for ancillary functions (back stop haulage) to cause RB to lose management focus
- No single owner of vision for Rail Baltica
- No changes required to share/governance arrangements

### Cons

- No significant economies of scale related to the many services in-house
- No innovation capacity linked to degree of commercial services freedom
- RB constrained functionality may make it harder to recruit expertise
- No accountability for train performance given split of traffic management and timetabling and for route maintenance

1. Freedom to set all track access (passenger and freight)	2. Freedom to set FREIGHT ONLY flows	3. Traffic Management	4. Capacity allocation	6. Inspection and maintenance across all route
No	No	Yes	Yes	No

7. Vision Author	8. International Rail Relations Lead	9. Passenger Concession Letting agency	10. No significant commercial freedom/capability	11: Commercial Services Freedom (minimal):	12. Commercial Services Freedom (partial – no extra land):
No	No	No	Yes	No	No

13. Commercial Service Freedom (partial – extra land for rail associated services only)	14. Commercial Service Freedom (full):	15. Duplicates existing RB Rail AS governance	16. Minimally modified governance from duplicate RB Rail AS (minimal relaxation)	17. Moderately modified governance from duplicate RB Rail AS (some relaxation + golden share)	18. Fully modified governance structure	19. Rail Haulage offer
No	No	Yes	No	No	No	No

## Option 84

### No commercial freedom – Infrastructure maintenance only. No “vision”, capacity allocation or traffic management:

#### Pros

- Minimal risk for shareholders
- Balance between no significant commercial freedom and no modification of ownership/governance
- No potential for ancillary functions (back stop haulage) to cause RB to lose management focus
- No changes required to share/governance arrangements

#### Cons

- No significant economies of scale related to the many services in-house
- No innovation capacity linked to degree of commercial services freedom
- RB constrained functionality may make it harder to recruit expertise
- No accountability for train performance given split of traffic management and timetabling and for route maintenance

1. Freedom to set all track access (passenger and freight)	2. Freedom to set FREIGHT ONLY flows	3. Traffic Management	4. Capacity allocation	6. Inspection and maintenance across all route
No	No	No	No	Yes

7. Vision Author	8. International Rail Relations Lead	9. Passenger Concession Letting agency	10. No significant commercial freedom/capability	11: Commercial Services Freedom (minimal):	12. Commercial Services Freedom (partial – no extra land):
No	No	No	Yes	No	No

13. Commercial Service Freedom (partial – extra land for rail associated services only)	14. Commercial Service Freedom (full):	15. Duplicates existing RB Rail AS governance	16. Minimally modified governance from duplicate RB Rail AS (minimal relaxation)	17. Moderately modified governance from duplicate RB Rail AS (some relaxation + golden share)	18. Fully modified governance structure	19. Rail Haulage offer
No	No	Yes	No	No	No	No

## Option 85

### No whole route role. All powers with other bodies (probably legacy, national IMs):

#### Pros

- Minimal risk for shareholders
- Balance between no significant commercial freedom and no modification of ownership/governance
- No changes required to share/governance arrangements

#### Cons

- No significant economies of scale related to the many services in-house
- No innovation capacity linked to degree of commercial services freedom
- No single vision for the route
- No accountability for train performance given split of traffic management and timetabling and for route maintenance
- Much greater commercial complexity for users and governments because of increased interfaces

1. Freedom to set all track access (passenger and freight)	2. Freedom to set FREIGHT ONLY flows	3. Traffic Management	4. Capacity allocation	6. Inspection and maintenance across all route
No	No	No	No	No

7. Vision Author	8. International Rail Relations Lead	9. Passenger Concession Letting agency	10. No significant commercial freedom/capability	11: Commercial Services Freedom (minimal):	12. Commercial Services Freedom (partial – no extra land):
No	No	No	Yes	No	No

13. Commercial Service Freedom (partial – extra land for rail associated services only)	14. Commercial Service Freedom (full):	15. Duplicates existing RB Rail AS governance	16. Minimally modified governance from duplicate RB Rail AS (minimal relaxation)	17. Moderately modified governance from duplicate RB Rail AS (some relaxation + golden share)	18. Fully modified governance structure	19. Rail Haulage offer
No	No	Yes	No	No	No	No

### 1.3.3. Short List

#### 1.3.3.1. Explanation of the methodology behind selection of the Short-List

Prior to the MCA it is necessary to reduce the long-list to a shorter list that can be assessed. The options taken forward to the Short-List were selected because they form a representative spread and a balanced range, and in Atkins' opinion were broadly internally coherent. It is wrong to see the short-list as two separate lists (one with RB IM and the other consisting wholly of separate national entities), as the majority of the short-listed options are, to different degrees, hybrids.

Where core functions are not undertaken by RB IM and are undertaken by national entities, such national entities could in theory be separate from the existing national railway IMs. However, it is highly likely that they would still be owned or managed by government – and that is the same shareholder that owns and manages the existing railway IMs in each of the Baltic states. Further analysis is concluded later, but for the cost modelling, we have assumed that, where functions are not entrusted to RB IM, they would typically be undertaken by a national railway IM in each nation, because this would be less expensive than a new entity.

Option 5 represents the highest level of commercial freedom with corresponding modified governance arrangements. This option is legally challenging with independent functions. In option 5 also RB IM would be able to undertake the fullest range of core and ancillary functions and, as a result, RB IM is less concentrated on the core functionality of an Infrastructure Manager.

In Option 31, Rail Baltica IM would enjoy high (but not as high a level of commercial freedom) and some change in share ownership/governance from that of RB Rail AS. It would be able to undertake all of the core functions but not all of the ancillary functions.

In Option 57, Rail Baltica IM would be prevented from acquiring land to minimise the risk to its owners. The governance arrangements would need to be modified from those of RB Rail AS, but minimally. RB IM would be able to undertake all of the core functions but not all of the ancillary functions. However, as a result of its limited commercial freedom, it would not be able to market price freight traffic.

In Option 63, the commercial freedom would be restricted even more. It would undertake the same functions as option 57 but there would be no change in share ownership/governance from that of RB Rail AS. This option was included because, even though there is no significant commercial freedom, it is probably the maximum role that RB IM could enjoy without new commercial/governance arrangements being agreed between the governments. It would exclude RB IM from being able to exploit the value of the railway from for example wayleave contracts – because such contracts imply risk and arrangements need to be put in place how to handle the risk and profit.

In option 80 RB IM is no longer responsible for maintenance. This will reduce the size of RB IM dramatically (even if maintenance is outsourced), and it will be harder to hold RB IM to account for train performance.

In option 81 RB IM is a planning body only, no longer responsible for commercial or operational matters.

And finally, an option 85 has been included in which there is no RB IM entity.

It can be seen therefore how these short-listed options cover the range of long list options. They also balance the functions proposed for RB IM with the level of commercial freedom that RB IM will enjoy and the level of changes proposed to the existing governance structures.

The options to the left of the table envisage a single strong entity. The options to the right envisage the need for multiple contracts between the government of Estonia, Latvia and Lithuania to cover the functions that would have been managed by RB IM. There are no options that do not either require the creation of an entity to manage the railway or the need for a new suite of agreements. Without clarity over the arrangements going forward there will be no certainty that the benefits of the business case can be delivered.

The table below summarises the Short-List options by the main differentiators

**Table 1-3 - Short List options by the main differentiators**

Option Number >>>	5	31	57	63	80	81	85
Freedom to set market rate for PASSENGER track access (and freight)	Red						
Freedom to set market rate for FREIGHT track access	Green	Green	Red	Red	Red	Red	Red
Traffic Management	Green	Green	Green	Green	Green	Red	Red
Capacity allocation	Green	Green	Green	Green	Green	Green	Red
Inspection and Maintenance across all route	Green	Green	Green	Green	Red	Red	Red
Vision Author	Green	Green	Green	Green	Green	Green	Red
International Rail Relations Lead	Green	Green	Green	Green	Green	Green	Red
Passenger Concession Letting agency	Green	Red	Red	Red	Red	Red	Red
Commercial Services – no new commercial freedom	Red	Red	Red	Red	Red	Green	Green
Commercial Services Freedom (minimal):	Red	Red	Red	Green	Green	Red	Red
Commercial Services Freedom (partial – no extra land):	Red	Red	Green	Red	Red	Red	Red
Commercial Service Freedom (partial – extra land for railway associated services only)	Red	Green	Red	Red	Red	Red	Red
Commercial Service Freedom (full):	Green	Red	Red	Red	Red	Red	Red
Governance structure the same as RB Rail AS	Red	Red	Red	Green	Green	Green	N/A
Governance structure minimally modified from that of RB Rail AS (minimal relaxation)	Red	Red	Green	Red	Red	Red	Red
Governance structure moderately modified from that of RB Rail AS (some relaxation + gold share)	Red	Green	Red	Red	Red	Red	Red
Governance fully modified from that of RB Rail AS	Green	Red	Red	Red	Red	Red	Red
Ability to offer rail haulage as a backstop	Green	Red	Red	Red	Red	Red	Red

## 1.3.4. Multi Criteria Analysis

### 1.3.4.1. Methodology

There are a very large number of options for the structure of the Infrastructure Manager, which were identified in WP3.2 and listed above in Section 1. Any proposed model must be consistent with the existing legal frameworks, and should encompass the essential functions of an IM. The aim is to select an Infrastructure Management model which balances cost and quality. The costs are described in Section 3. It is important to note that the cost section is weighted as less important than the MCA, because the total size of organisation of RB IM in most of the shortlisted options will be relatively small compared with the existing rail IMs, largely because maintenance will be contracted out. For example, options 57 and 63 require a headcount of around 1-2% of the current headcount of Lithuanian Railways. This has and will be done without partisan influence and reflect a neutral position that is the best for the effective long-term operation of Rail Baltica, whilst maximising the national opportunities associated with a major rail scheme.

The Multi-Criteria Analysis enables holistic evaluation of the Infrastructure Management model by assessing possible models against criteria in the broad categories of Asset Management, Commercial Management, Financial Management, External Engagement, Policy, Strategy and Sustainability, defined as follows:

- Asset Management – the monitoring and maintenance of railway assets.
- Commercial Management – the identification and development of business opportunities and the profitable management of projects and contracts.
- Financial Management – the efficient and effective management of the monetary resources of the IM.
- External Engagement – the process of engaging relevant stakeholders in order to achieve accepted outcomes.
- Policy – the legal and technical aspects of the IM’s function.
- Strategy – the working plan of the IM to achieve its vision and long-term objectives.
- Sustainability – the ability of the IM to facilitate solutions which preserve the natural environment.

Each of these categories is a broad subject, so they have been broken down into smaller questions, which capture individual aspects. There were 92 questions proposed in total.

**Table 1-4 - Questions in the MCA by category**

Category	Atkins Proposal	Tender Requirement	Total
Asset Management	14	11	25
Commercial Management	6	8	14
External Engagement	6	7	13
Financial Management	5	4	9
Policy	4	11	15
Strategy	4	4	8
Sustainability	5	3	8
<b>Grand Total</b>	<b>44</b>	<b>48</b>	<b>92</b>

It is important to note that the selection of additional questions, strengthens the depth of the analysis, but does not materially alter the distribution of categories being considered, but the number of items under consideration is important from the perspective that the sensitivity of the analysis. Each question is scored from 0 to 4; these individual scores are combined using weights for each aspect, to produce an overall Quality Score.

Seven options were selected which are a representative spread of the long list options. These are Options 5, 31, 57, 63, 80, 81 and 85. For each of the seven scenarios evaluated, the cost performance of the elements was assessed using the Life Cycle Cost Model and combined with the Quality Score to produce the final score of the scenario.

### 1.3.4.2. Outputs – MCA Scores for Options

**Table 1-5 - MCA Scores for Options**

Business Area	Option 5	Option 31	Option 57	Option 63	Option 80	Option 81	Option 85
Asset Management	60.0	61.0	61.5	60.4	47.0	44.0	44.0
Commercial Management	25.0	26.4	27.2	28.3	28.0	28.0	28.0
External Engagement	38.0	38.0	38.0	38.0	32.0	32.0	32.0
Financial Management	20.0	20.0	20.0	20.0	18.0	18.0	18.0
Policy	47.0	41.0	45.0	45.0	38.0	38.0	37.0
Strategy	14.0	18.0	18.0	18.0	16.0	16.0	16.0
Sustainability	16.0	15.0	15.0	15.0	15.0	15.0	15.0
	<b>220.0</b>	<b>219.4</b>	<b>224.7</b>	<b>224.7</b>	<b>194.0</b>	<b>191.0</b>	<b>190.0</b>

### 1.3.4.3. MCA Option Scoring Drivers

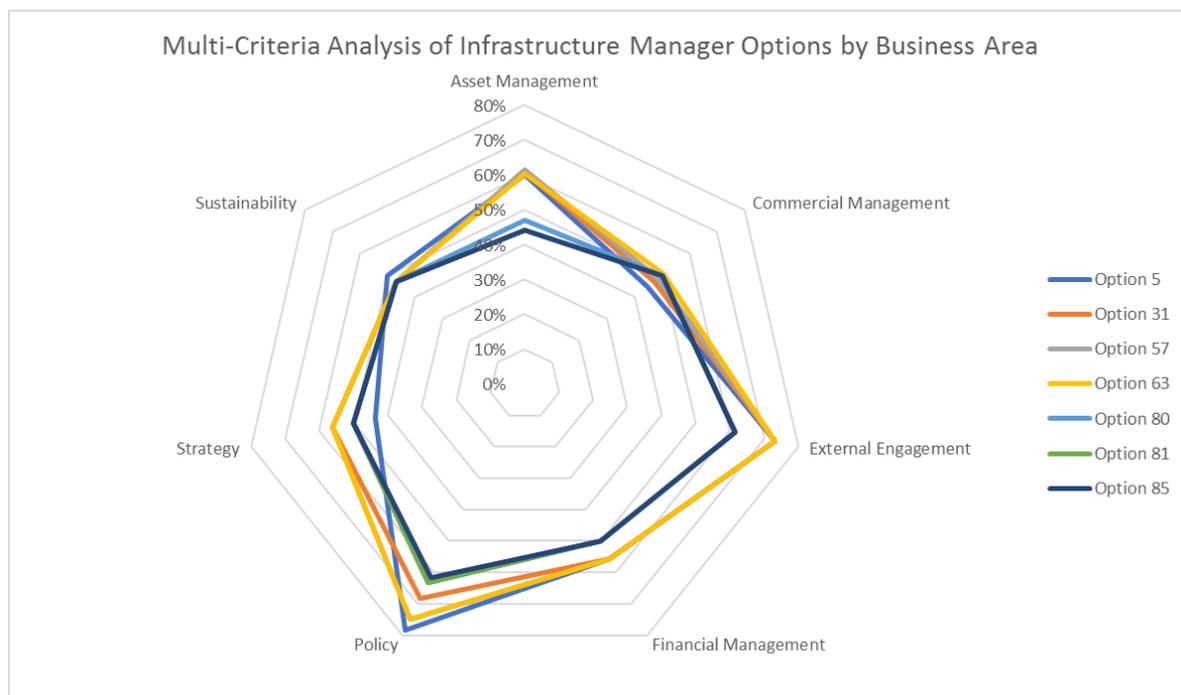
- Option 5 presents the greatest opportunity for commercialisation for the network and potentially generating high levels of income, but;
- Option 5 has a low score for commercial management because, with full commercial freedom, assets are ceded to 3<sup>rd</sup> party companies and the ability to control the cost base as a consequence is lost for direct Railway benefit.
- Option 5 has a low score for strategy, because significant elements of the asset base (telecoms and power) are assumed to be outside the direct control of the Infrastructure Manager.
- Option 5 is likely to have significant resistance from the regulators with regards to asset commercialisation with this degree of separation from the railway.
- Versus Option 5, Option 31 shows an impact in commercial management scoring due to reduced commercial risk and challenge in commercialisation, partially offset by reduced commercial freedom and shareholder structures. This reflects lower opportunity, but higher surety of delivery.
- Versus Option 5, Option 31 shows an improvement in asset management due to greater control of the assets which are assumed to be predominantly out with the control of the Infrastructure Manager in Option 5 (Telecoms and Energy at a minimum)
- Versus Option 5, Option 31 has a significant adverse impact on ‘policy’ due to the inability to act as the international rail relations lead.
- Versus Option 31, Option 57 has a continued benefit in commercial management scoring due to reduced commercial risk and challenge in commercialisation, partially offset by reduced commercial freedom and shareholder structures. This reflects lower opportunity, but higher surety of delivery.
- Versus Option 57, Option 63 shows a deterioration in the Asset Management Score because of the complexity added by having more assets to control (due to the ability to acquire extra

land for rail associated services) – in this scenario all assets traditionally associated with the IM remain direct under the IM.

- Versus Option 57, Option 63 shows an impact in commercial management scoring due to reduced commercial risk and challenge in commercialisation, partially offset by reduced commercial freedom and shareholder structures. This reflects lower opportunity, but higher surety of delivery.
- Versus Option 63, Option 80 shows a significant drop in Asset Management capability. This relates not to the capability of any individual infrastructure manager on the line of route, but predominantly due to a drop in effectiveness when identifying and managing issues over the whole route.
- Versus Option 63 (and 5, 31, 57), Option 80 shows a strong commercial management capability. The driver for this is based upon the experience of the existing national infrastructure managers to deliver railway projects and schemes for Rail Baltica going forward, in the context of having a core workbank and capability.
- Versus Option 63 (and 5, 31, 57), Option 80 shows poorer with regards to external engagement. This arises predominantly because of the challenge of taking a whole route view and optimising services for customers.
- Versus Option 63 (and 5, 31, 57), Option 80 shows a slightly weaker position with regards to financial management. This relates to the complexity of multiple Infrastructure Managers remaining aligned on reporting, activity and control.
- Versus Option 80, Option 81 shows a slightly weaker position with regards to asset management. This reflects the impact of traffic management being lost from a Single Infrastructure Management function
- Versus Option 81, Option 85 effectively reflects the baseline performance position if the Rail Baltica route was to be adopted and managed by the existing 3 national infrastructure managers today, operating within the structures and processes that exist today.

The impact of these changes can be seen in the spider-diagram below.

**Figure 1-22 - MCA of Infrastructure Manager by Business Area**



## 1.4. WP5 Life-Cycle Cost Model

### 1.4.1. Methodology

The life-cycle cost model takes data on headcount and spend from major European Infrastructure Managers, with over 500 job titles consolidated into functions and mapped into Organisational Elements. These are then divided by the total route length, to produce standardised headcounts and spends per track km. These are used to obtain headcounts and spends necessary for the Rail Baltica route, split by the routes in each of the three countries.

Please note that, in calculating the costs, Atkins has used EU typical unit rates. These rates are consistent with, but calculated separately from, EY CBA analysis. It is important to note that, if alternative unit rates were used, including cost per km/cost per train operated, and these were based on the costs of the existing local IMs in the Baltic states, the total cost would be expected to be significantly higher. Therefore, please note that, while it is clear that if RB IM were to be set up from scratch, we have assumed it would achieve levels of efficiency comparable to the benchmarked organisation, this assumption has also been carried through to new departments in the national IMs which carry out the additional work required by the IM functions for the Rail Baltica route.

It is important to note that the cost section is weighted as less important than the MCA, because the total size of organisation of RB IM in most of the shortlisted options will be relatively small compared with the existing rail IMs, largely because maintenance will be contracted out. For example, options 57 and 63 require a headcount of around 1-2% of the current headcount of Lithuanian Railways. Different weightings have been tested in Section 4.4, but have been shown not to have a material impact on the ranking of the options.

Figure 1-23 - Headcount calculations

Organisational Elements	Headcount required per track km							Headcount required (EE Route)							Headcount required (LV Route)										
	Executive	Grade 1	Grade 2	Grade 3	Grade 4	Grade 5	Grade 6	Total	Executive	Grade 1	Grade 2	Grade 3	Grade 4	Grade 5	Grade 6	Total	Executive	Grade 1	Grade 2	Grade 3	Grade 4	Grade 5	Grade 6	Total	Executive
Asset Management	0.0005	0.0026	0.0084	0.0039	0.0020	0.0011	0.0009	0.0194	0.11	0.55	1.78	0.83	0.42	0.23	0.20	4.12	0.13	0.68	2.21	1.04	0.53	0.29	0.25	5.13	0.19
Board	0.0001	0.0006	0.0012	0.0011	0.0002	0.0002	0.0002	0.0004	0.01	0.03	0.12	0.25	0.24	0.05	0.03	0.73	0.01	0.03	0.15	0.31	0.30	0.07	0.04	0.91	0.01
Business Transformation	-	-	0.0007	0.0002	-	-	0.0000	0.0009	-	-	0.14	0.05	-	-	-	0.01	0.19	-	0.17	0.06	-	-	-	0.01	0.24
Commercial Property	0.0000	0.0000	0.0011	0.0004	0.0000	0.0006	0.0002	0.0027	0.01	0.07	0.24	0.09	0.01	0.13	0.04	0.58	0.01	0.08	0.30	0.12	0.01	0.16	0.05	0.72	0.01
Communications	0.0000	0.0004	0.0006	0.0012	0.0011	0.0002	0.0002	0.0034	0.01	0.08	0.12	0.03	0.01	0.01	0.01	0.26	0.01	0.10	0.15	0.03	0.02	0.01	0.01	0.32	0.01
Finance	0.0001	0.0002	0.0013	0.0009	0.0006	0.0005	0.0001	0.0037	0.02	0.05	0.28	0.19	0.12	0.11	0.02	0.78	0.02	0.06	0.35	0.23	0.15	0.14	0.02	0.97	0.04
Human Resources	0.0001	0.0004	0.0016	0.0016	0.0012	0.0005	0.0005	0.0060	0.01	0.08	0.34	0.35	0.26	0.11	0.11	1.27	0.02	0.10	0.43	0.44	0.33	0.13	0.14	1.58	0.02
Information Technology	0.0000	0.0004	0.0006	0.0011	0.0011	0.0002	0.0002	0.0034	0.01	0.08	0.12	0.03	0.01	0.01	0.01	0.26	0.01	0.10	0.15	0.03	0.02	0.01	0.01	0.32	0.01
Legal	0.0001	0.0002	0.0005	0.0004	0.0000	0.0001	0.0001	0.0013	0.01	0.04	0.10	0.08	0.01	0.01	0.02	0.27	0.02	0.05	0.12	0.10	0.01	0.02	0.02	0.34	0.02
NOBO / DEBO	0.0001	0.0000	0.0005	0.0001	0.0002	0.0001	0.0001	0.0010	0.01	0.01	0.11	0.03	0.03	0.01	0.01	0.22	0.02	0.01	0.14	0.03	0.04	0.02	0.02	0.27	0.02
Operations	0.0004	0.0007	0.0007	0.0013	0.0016	0.0028	0.0014	0.0259	0.09	0.78	1.85	1.55	0.35	0.60	0.29	5.51	0.12	0.97	2.30	1.93	0.44	0.75	0.36	6.86	0.17
Strategy	0.0000	0.0012	0.0028	0.0021	0.0004	0.0010	0.0006	0.0080	0.01	0.25	0.56	0.45	0.09	0.22	0.13	1.71	0.01	0.31	0.70	0.56	0.12	0.27	0.16	2.13	0.01
Supply Chain	0.0000	0.0004	0.0020	0.0005	0.0001	0.0001	0.0002	0.0034	0.01	0.09	0.43	0.11	0.03	0.01	0.05	0.72	0.01	0.11	0.54	0.14	0.03	0.02	0.06	0.90	0.01
Renewals and Enhancement	0.0038	0.0253	0.0889	0.0309	0.0071	0.0059	0.0127	0.1786	0.81	5.39	18.94	6.58	1.51	2.10	2.70	38.03	1.01	6.71	23.56	8.19	1.88	2.62	3.36	47.32	1.48
Maintenance	-	-	0.9089	0.9089	-	-	0.9089	0.9089	-	-	193.59	-	-	-	-	193.59	-	-	240.85	-	-	-	-	240.85	-

Figure 1-24 - Spend calculations

Organisational Elements	Spend per track km (EUR)		Spend (EE Route)		Spend (LV Route)		Spend (LT Route)		Spend (RB)	Spend (EE)	Spend (LV)	Spend (LT)
	Single	Multiple	Single	Multiple	Single	Multiple	Single	Multiple				
Asset Management	505	505	107,548	107,548	133,803	133,803	197,928	197,928	439,279	107,548	133,803	197,928
Board	-	-	-	-	-	-	-	-	-	-	-	-
Business Transformation	-	-	-	-	-	-	-	-	-	-	-	-
Commercial Property	-	-	-	-	-	-	-	-	-	-	-	-
Communications	-	-	-	-	-	-	-	-	-	-	-	-
Finance	-	-	-	-	-	-	-	-	-	-	-	-
Human Resources	20,645	20,192	4,397,408	4,300,939	5,470,953	5,350,934	8,092,882	7,915,344	17,961,242	4,300,939	5,350,934	7,915,344
Information Technology	6,743	674	1,436,245	143,625	1,786,878	178,688	2,643,230	264,323	5,866,353	143,625	178,688	264,323
Legal	-	-	-	-	-	-	-	-	-	-	-	-
NOBO / DEBO	-	-	-	-	-	-	-	-	-	-	-	-
Operations	4,974	4,974	1,059,522	1,059,522	1,318,185	1,318,185	1,949,919	1,949,919	4,327,626	1,059,522	1,318,185	1,949,919
Strategy	13,780	13,780	2,935,038	2,935,038	3,651,573	3,651,573	5,401,572	5,401,572	11,988,182	2,935,038	3,651,573	5,401,572
Supply Chain	11,019	10,577	2,347,046	2,252,800	2,920,034	2,802,780	4,319,447	4,145,999	9,586,527	2,252,800	2,802,780	4,145,999
Renewals and Enhancement	3,479	3,479	741,001	741,001	921,903	921,903	1,363,720	1,363,720	3,026,623	741,001	921,903	1,363,720
Maintenance	5,278	5,007	1,124,115	1,086,437	1,398,547	1,326,788	2,068,794	1,962,645	4,591,456	1,086,437	1,326,788	1,962,645

Figure 1-25 - Cost calculations

Organisation	Element	Headcount Required							Rounded Headcount Required							Salary Costs (EUR)							Office	
		Executive	Grade 1	Grade 2	Grade 3	Grade 4	Grade 5	Grade 6	Executive	Grade 1	Grade 2	Grade 3	Grade 4	Grade 5	Grade 6	Executive	Grade 1	Grade 2	Grade 3	Grade 4	Grade 5	Grade 6		Total
Rail Baltica	RB Asset Management	0.43	2.24	7.77	3.41	1.73	0.95	0.81	18.84	1.00	2.00	7.00	4.00	2.00	1.00	17.00	85.154	89.547	212,206	83,792	31,275	19,346	-	133,133
	RB Board	0.05	0.03	0.03	-	-	0.05	0.03	1.00	1.00	-	-	-	-	-	1.00	85.154	-	-	-	-	-	-	85.154
	RB Business Transformation	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	RB Commercial Property	0.00	0.03	0.10	0.04	0.00	0.05	0.02	0.24	1.00	-	-	-	-	-	1.00	85.154	-	-	-	-	-	-	85.154
	RB Communications	0.03	0.11	0.49	1.63	0.97	0.22	0.14	2.97	1.00	-	-	-	-	-	1.00	85.154	-	-	-	-	-	-	121,717
	RB Finance	0.08	0.19	1.14	0.76	0.49	0.46	0.08	3.19	1.00	-	-	-	-	-	1.00	85.154	-	-	-	-	-	-	147,308
	RB Human Resources	0.05	0.32	1.41	1.43	1.08	0.43	0.46	5.19	1.00	-	-	-	-	-	1.00	85.154	-	-	-	-	-	-	180,696
	RB Information Technology	0.03	0.32	0.49	0.81	0.92	0.03	0.03	1.95	1.00	-	-	-	-	-	1.00	85.154	-	-	-	-	-	-	109,791
	RB Legal	0.05	0.16	0.41	0.32	0.03	0.05	0.08	1.11	1.00	-	-	-	-	-	1.00	85.154	-	-	-	-	-	-	96,190
	RB NOBO / DEBO	0.05	0.03	0.46	0.11	0.14	0.05	0.05	0.89	1.00	-	-	-	-	-	1.00	85.154	-	-	-	-	-	-	105,154
	RB Operations	0.38	3.19	7.54	6.33	4.43	2.48	1.19	22.52	1.00	3.00	8.00	6.00	1.00	1.00	23.00	85.154	134,320	242,887	125,554	15,638	32,839	7,662	644,953
	RB Strategy	0.03	1.03	2.93	1.84	0.38	0.69	0.54	7.80	1.00	1.00	2.00	2.00	-	-	1.00	1.82	85.154	44,773	60,722	41,851	10,946	7,662	251,989
RB Supply Chain	0.03	0.35	1.76	0.46	0.11	0.05	0.19	2.95	1.00	-	-	-	-	-	1.00	85.154	-	-	-	-	-	-	146,875	
RB Renewals and Enhancement	1.85	11.02	38.67	13.44	3.08	4.30	5.31	77.87	2.00	11.00	39.00	13.00	3.00	5.00	50.00	179,387	489,506	1,184,076	372,013	46,813	54,731	38,312	2,588,584	
RB Maintenance	-	-	790.72	-	-	-	790.72	-	-	-	791.00	-	-	-	791.00	-	-	-	16,552.94	-	-	-	-	16,552.94
EE Asset Management	0.11	0.55	1.78	0.83	0.42	0.23	0.20	4.12	0.20	0.60	1.80	0.80	0.40	0.20	0.20	4.20	20.321	32,053	65,206	19,974	7,463	2,612	1,829	149,459
EE Board	-	-	0.17	0.06	-	-	0.01	0.24	-	-	0.20	0.20	-	-	-	0.40	20.321	-	7.245	4.994	-	-	-	12,229
EE Business Transformation	0.00	0.01	0.02	0.01	0.00	0.01	0.01	0.06	0.20	-	-	-	-	-	0.20	20.321	-	-	-	-	-	-	-	20,321
EE Commercial Property	0.01	0.03	0.12	0.25	0.24	0.05	0.03	0.73	0.20	-	-	-	-	-	0.40	20.321	-	-	-	-	-	-	-	34,599
EE Communications	0.02	0.05	0.28	0.19	0.12	0.11	0.02	0.78	0.20	-	-	-	-	-	0.20	20.321	-	-	-	-	-	-	-	30,291
EE Finance	0.01	0.08	0.34	0.35	0.26	0.11	0.11	1.27	0.20	-	-	-	-	-	0.40	20.321	-	-	-	-	-	-	-	49,096
EE Human Resources	0.01	0.08	0.12	0.03	0.01	0.01	0.01	0.36	0.20	-	-	-	-	-	0.20	20.321	-	-	-	-	-	-	-	27,586
EE Information Technology	0.01	0.02	0.05	0.04	0.00	0.01	0.01	0.14	0.20	-	-	-	-	-	0.20	20.321	-	-	-	-	-	-	-	20,321
EE Legal	0.01	0.00	0.08	0.02	0.02	0.01	0.01	0.16	0.20	-	-	-	-											

Figure 1-26 - Option cost calculations

All costs annual in EUR			Option 5				Cost Profile								
Organisation	Element	Single/Multiple	Salaries	Offices	Spend	Total	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9
Rail Baltica	RB Asset Management	Single	513,151	51,295	439,279	1,003,725	1,003,725	1,003,725	1,003,725	1,003,725	1,003,725	1,003,725	1,003,725	1,003,725	1,003,725
	RB Board	Single	85,154	3,017	-	88,171	88,171	88,171	88,171	88,171	88,171	88,171	88,171	88,171	88,171
	RB Business Transformation	Single	-	-	-	-	-	-	-	-	-	-	-	-	-
	RB Commercial Property	Single	85,154	3,017	-	88,171	88,171	88,171	88,171	88,171	88,171	88,171	88,171	88,171	88,171
	RB Communications	Single	121,717	9,052	-	130,769	130,769	130,769	130,769	130,769	130,769	130,769	130,769	130,769	130,769
	RB Finance	Single	147,389	12,069	-	159,456	159,456	159,456	159,456	159,456	159,456	159,456	159,456	159,456	159,456
	RB Human Resources	Single	180,666	18,184	17,961,342	18,160,012	22,700,015	22,700,015	22,700,015	22,700,015	22,700,015	22,700,015	22,700,015	22,700,015	22,700,015
	RB Information Technology	Single	100,791	6,035	5,866,353	5,973,179	5,973,179	5,973,179	5,973,179	5,973,179	5,973,179	5,973,179	5,973,179	5,973,179	5,973,179
	RB Legal	Single	96,100	6,035	-	102,135	102,135	102,135	102,135	102,135	102,135	102,135	102,135	102,135	102,135
	RB NOBO / DEBO	Single	85,154	3,017	-	88,171	88,171	88,171	88,171	88,171	88,171	88,171	88,171	88,171	88,171
	RB Operations	Single	844,053	89,399	4,327,626	5,041,078	5,041,078	5,041,078	5,041,078	5,041,078	5,041,078	5,041,078	5,041,078	5,041,078	5,041,078
	RB Strategy	Single	251,109	24,139	11,988,182	12,263,430	12,263,430	12,263,430	12,263,430	12,263,430	12,263,430	12,263,430	12,263,430	12,263,430	12,263,430
	RB Supply Chain	Single	145,875	9,052	9,586,527	9,741,455	9,741,455	9,741,455	9,741,455	9,741,455	9,741,455	9,741,455	9,741,455	9,741,455	9,741,455
	RB Renewals and Enhancement	Single	2,258,878	235,352	3,026,623	5,520,854	5,520,854	5,520,854	5,520,854	5,520,854	5,520,854	5,520,854	5,520,854	5,520,854	5,520,854
RB Maintenance	Single	18,552,164	2,386,711	4,291,456	23,530,331	23,530,331	23,530,331	23,530,331	23,530,331	23,530,331	23,530,331	23,530,331	23,530,331	23,530,331	
Estonia	EE Asset Management	Single	-	-	-	-	-	-	-	-	-	-	-	-	-
	EE Board	Single	-	-	-	-	-	-	-	-	-	-	-	-	-
	EE Business Transformation	Single	-	-	-	-	-	-	-	-	-	-	-	-	-
	EE Commercial Property	Single	-	-	-	-	-	-	-	-	-	-	-	-	-
	EE Communications	Single	-	-	-	-	-	-	-	-	-	-	-	-	-
	EE Finance	Single	-	-	-	-	-	-	-	-	-	-	-	-	-
	EE Human Resources	Single	-	-	-	-	-	-	-	-	-	-	-	-	-
	EE Information Technology	Single	-	-	-	-	-	-	-	-	-	-	-	-	-
	EE Legal	Single	-	-	-	-	-	-	-	-	-	-	-	-	-
	EE NOBO / DEBO	Single	-	-	-	-	-	-	-	-	-	-	-	-	-
	EE Operations	Single	-	-	-	-	-	-	-	-	-	-	-	-	-
	EE Strategy	Single	-	-	-	-	-	-	-	-	-	-	-	-	-
	EE Supply Chain	Single	-	-	-	-	-	-	-	-	-	-	-	-	-
	EE Renewals and Enhancement	Single	-	-	-	-	-	-	-	-	-	-	-	-	-
EE Maintenance	Single	-	-	-	-	-	-	-	-	-	-	-	-	-	
Latvia	LV Asset Management	Single	-	-	-	-	-	-	-	-	-	-	-	-	-
	LV Board	Single	-	-	-	-	-	-	-	-	-	-	-	-	-
	LV Business Transformation	Single	-	-	-	-	-	-	-	-	-	-	-	-	-
	LV Commercial Property	Single	-	-	-	-	-	-	-	-	-	-	-	-	-
	LV Communications	Single	-	-	-	-	-	-	-	-	-	-	-	-	-
	LV Finance	Single	-	-	-	-	-	-	-	-	-	-	-	-	-
	LV Human Resources	Single	-	-	-	-	-	-	-	-	-	-	-	-	-
	LV Information Technology	Single	-	-	-	-	-	-	-	-	-	-	-	-	-

### 1.4.2. Assumptions

A set of assumptions on the adjustments required to the benchmarked headcounts and spends have been developed, in order to ensure that the specific situation of Rail Baltica is accurately represented. These assumptions broadly divide into two categories: areas where the material situation of Rail Baltica is different to the benchmarked organisations, affecting all Infrastructure Management models; and areas where the cost incurred depends on the IM model used.

Examples of the former include Commercial Property (Rail Baltica has a very small commercial property portfolio) and fleet leasing and overhaul costs (Rail Baltica will have a newer fleet, leading to lower expenditure on fleet overhaul). Areas where the costs depend on the IM model include Board (existing IMs will not need to take on extra board members for a relatively modest increase in overall network length) and Business Transformation (which is assumed to be unnecessary when setting up a new organisation from scratch). Synergies assumed for multiple IMs would be lost if new organisations were set up in each country to run the new route.

The tables below detail each of the assumptions made:

Table 1-6 - Assumptions (1)

Organisational Element	Headcount factor		Rationale
	Single	Multiple	
Asset Management	1	0.9	Track and structures synergy. No synergy for OHLE, electrification & power, maintenance, signalling, telecoms.
Board	1	0	No new board required for existing IMs
Business Transformation	0	2	Spend required in existing IMs to achieve required efficiency, whereas new organisation set up to be efficient
Commercial Property	0.1	0.1	Small commercial property portfolio compared with benchmarked IM
Communications	1	0.95	Some synergies with existing national IMs
Finance	1	0.95	Some synergies with existing national IMs
Human Resources	1	0.95	Some synergies with existing national IMs
Information Technology	1	0.95	Some synergies with existing national IMs
Legal	1	0.5	Overlap with existing roles
NOBO / DEBO	1	0.75	Overlap with existing roles
Operations	1	0.95	Some synergies with existing national IMs
Strategy	1	0.95	Some synergies with existing national IMs
Supply Chain	1	0.95	Some synergies with existing national IMs
Renewals and Enhancement	0.5	0.5	Reduced renewals for new infrastructure
Maintenance	1	0.95	Some synergies with existing national IMs

Table 1-7 - Assumptions (2)

Item	Factor		Rationale	
	Single	Multiple	Single	Multiple
Charges, payments and penalties paid in the operation of the railway	100%	100%	No difference	No difference
Costs of human resource and training services to operate the railway	110%	100%	Building new organisation, more training needed.	No difference
Costs of leasing, overhauling or improving our rail fleet	75%	75%	Newer yellow fleet	Newer yellow fleet
Costs of recruitment services to recruit the right people	110%	110%	General recruitment challenges in the region	General recruitment challenges in the region
Costs of specialist labour activity on the railway (Contingent Labour)	100%	100%	No difference	No difference
Procurement and operation of our road fleet	100%	95%	No difference	Synergies with existing fleet
Procurement of ballast and aggregates to maintain and improve the railway	100%	100%	No difference	No difference
Procurement of civil engineering services to maintain and improve the railway	0%	0%	NA	NA
Procurement of digital services to improve our understanding of the railway	100%	100%	No difference	No difference
Procurement of infrastructure spares and associated services that maintain and improve the railway	100%	100%	No difference	No difference
Procurement of infrastructure support services such as de-vegetation and fencing to operate the railway	100%	95%	No difference	Synergies with existing fleet
Procurement of IT equipment and services to operate the railway	100%	25%	No difference	No new systems or IT needed – stakeholders views to be sought over changes

Item	Factor		Rationale	
	Single	Multiple	Single	Multiple
Procurement of logistical services to distribute materials around the railway	0%	0%	NA	needed to existing IT systems
Procurement of materials and services for building maintenance and development	0%	0%	NA	NA
Procurement of On Track Machines, spare parts and resources to maintain and improve the railway	0%	0%	NA	NA
Procurement of On Track Plant, spare parts and resources to maintain and improve the railway	100%	100%	No difference	No difference
Procurement of overhead line materials and services to maintain and improve the railway	0%	0%	NA	NA
Procurement of plant and tools to maintain and improve the railway	100%	95%	No difference	Synergies.
Procurement of points and crossings to maintain and improve the railway	0%	0%	No difference	No difference
Procurement of rail to maintain and improve the railway	125%	125%	No difference	No difference
Procurement of security services to keep the railway safe and secure	100%	100%	No difference	No difference
Procurement of services such as travel, printing, and hotel accommodation	100%	100%	No difference	No difference
Procurement of services to help operate our buildings	0%	0%	N/A	N/A
Procurement of services to maintain and deliver small improvements to our buildings	0%	0%	N/A	N/A
Procurement of signalling equipment to maintain and improve the railway	0%	0%	N/A	N/A

Item	Factor		Rationale	
	Single	Multiple	Single	Multiple
Procurement of sleepers and related items to maintain and improve the railway	0%	0%	N/A	N/A
Procurement of specialist human resource to maintain and improve the railway (Professional Services)	100%	100%	No difference	No difference
Procurement of specialist services to renew and improve the railway (Track)	0%	0%	N/A	N/A
Procurement of telecoms related equipment to maintain and improve the railway	100%	100%	No difference	No difference
Procurement of utilities to operate the railway	100%	100%	No difference	No difference
The acquisition of land and property	0%	0%	N/A	N/A

### 1.4.3. Outputs

The Lifecycle Cost Model produces outputs of the annual costs of each of the shortlisted options, as well as a 10-year lifecycle cost. The 'single-year cost' is the assumed steady-state operating cost of the IM, taken to be Year 10. In the first ten years, costs are assumed to differ from the steady-state costs due to transient effects, such as increased costs for initial training when setting up a new organisation or reduced maintenance for brand new infrastructure.

The cost score for each option is then calculated using the following formula:

$$\text{Option Cost Score} = \frac{\text{Cost of minimum cost option}}{\text{Cost of option}}$$

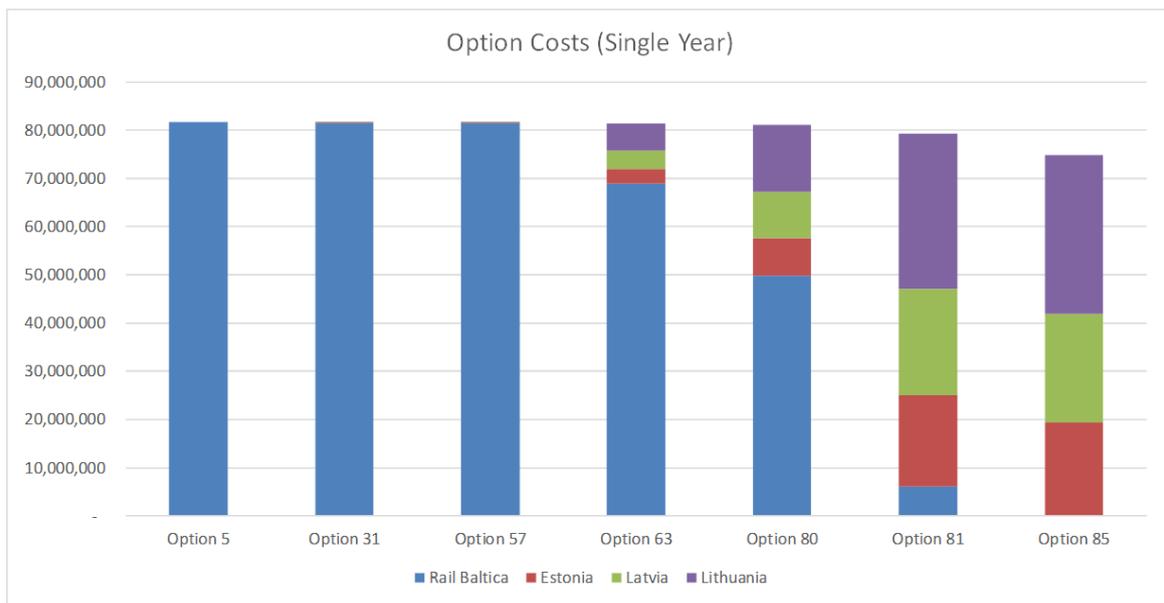
Note that it is customary to add an optimism bias of 50-100% to any costings, given the early stage of the project. These have not been added by Atkins (to avoid the risk of double counting) but should be picked up during development of the business plan.

Figure 1-27 – Costs for the shortlisted options

Single-year cost		Option 5	Option 31	Option 57	Option 63	Option 80	Option 81	Option 85
Rail Baltica	RB	81,654,519	81,435,580	81,435,580	68,822,389	49,895,068	6,061,350	-
Estonia	EE	-	55,909	71,523	3,135,958	7,738,566	18,998,950	19,405,332
Latvia	LV	-	48,353	65,388	3,835,881	9,510,086	22,053,137	22,541,401
Lithuania	LT	-	54,769	76,930	5,628,247	13,999,067	32,178,076	32,884,220
<b>Grand Total</b>		<b>81,654,519</b>	<b>81,594,610</b>	<b>81,649,420</b>	<b>81,422,475</b>	<b>81,142,786</b>	<b>79,291,513</b>	<b>74,830,953</b>

Life-cycle cost		Option 5	Option 31	Option 57	Option 63	Option 80	Option 81	Option 85
Rail Baltica	RB	776,500,259	774,310,862	774,310,862	648,178,952	445,463,043	60,613,501	-
Estonia	EE	-	559,085	715,231	31,359,585	77,385,658	175,857,244	179,921,067
Latvia	LV	-	483,533	653,880	38,358,809	95,100,862	205,202,740	210,085,379
Lithuania	LT	-	547,688	769,296	56,282,471	139,990,667	299,726,776	306,788,220
<b>Grand Total</b>		<b>776,500,259</b>	<b>775,901,168</b>	<b>776,449,269</b>	<b>774,179,816</b>	<b>757,940,231</b>	<b>741,400,261</b>	<b>696,794,666</b>
<b>Cost Score</b>		<b>89.7</b>	<b>89.8</b>	<b>89.7</b>	<b>90.0</b>	<b>91.9</b>	<b>94.0</b>	<b>100.0</b>



Note that the annual cost of around €80m, corresponds to a spend of around €90,000 per track km, which is broadly similar to the assumptions contained in the CBA<sup>81</sup>.

<sup>81</sup> The CBA gives a maintenance expenditure of €69 402 per km, with other expenses an estimated 20% extra, totalling around €85 000 per km.

## 1.4.4. Option Scores

### 1.4.4.1. Key Findings

Both the MCA and the Cost Model analysis have provided us with key information to help us identify three key options to take forward for detailed assessment.

- Options that relate to a single infrastructure manager over the entire route will most likely provide a better performing infrastructure manager than multiple infrastructure managers.
- Options that relate to multiple infrastructure management options will result in a lower cost solution than having a single infrastructure manager for the entire route. However, the absolute cost differential between options is relatively small.
- A number of the criteria assessed in the MCA, specifically, Strategy, Policy and Financial Management show only very minor differences in scoring between the different options as we anticipate that there is no impediment to effective implementation of these across any model. This is in contrast to Asset Management, where there were major differences between the options.

Scoring has been combined at a rate of 80/20 MCA/Cost Model Assessment, reflecting the relatively low cost base anticipated versus the total opportunity associated with the line. The impact of adjusting the MCA-Cost weighting is discussed in Section 1.4.7 below. This yields the following outcomes:

**Table 1-8 - Overall Option Scores**

	MCA Score	MCA Percentage	Weight Adjusted MCA	Cost Score From MCA	Weight Adjusted Cost Score	Overall Ranking	Position
Option 5	220.0	98%	78%	89.7	18%	96.3%	3
Option 31	219.4	98%	78%	89.8	18%	96.1%	4
Option 57	224.7	100%	80%	89.7	18%	97.9%	2
Option 63	224.7	100%	80%	90.0	18%	98.0%	1
Option 80	194.0	86%	69%	91.7	18%	87.4%	6
Option 81	191.0	85%	68%	94.0	19%	86.8%	7
Option 85	190.0	85%	68%	100.0	20%	87.6%	5

We therefore have 2 options to be taken forward for detailed analysis in the next stage of the commission, these being:-

- Option 63**
- Option 57**

These will be analysed in detail, with Options 5 and 85 retained alongside for comparison, to ensure that the full range of options is represented in further discussion. These represent the marginally best performing of the alternatives for each set of shortlist options above and below the best-performing pair (in Table 1-8). It is important to note that Option 5 is based on RB IM undertaking more wider function rather than core functions than any other option, and it will be difficult to justify this wider role unless it is clear that the RB IM will somehow be able to do these more efficiently than other bodies, the case for which is yet to be proven. Undertaking more functions – especially wider functions – increases the risk of cross-subsidy between nations, as it will entail more and wider-reaching contracts being in place. Similarly, Option 85 is based on there being no need for an RB IM, and the core and wider functions being undertaken by other entities. It is not clear that having three entities

undertake the core functions that could be delivered by a single entity will require anything other than a very complex legal agreement that will necessarily blur accountability, reducing the likelihood of effective delivery. It is also unclear how having three entities will deliver on the transparency and requirement for competition that underpin the direction of travel of the EU railway interoperability packages.

### 1.4.5. Recommendation - Options to be Taken Forward

OPTION 57	OPTION 63
<p><b>Partial commercial freedom without the right to seek to acquire land with freight REGULATED pricing for single entity which cannot act as passenger concession letting agency, with minimally modified share ownership and no rail haulage:</b></p> <p><b>Pros</b></p> <ul style="list-style-type: none"> <li>• Can control core activities (TM, CA, Maintenance, VA and Int. rail rel.)</li> <li>• Economies of scale related to the many services in-house</li> <li>• International rail relations lead</li> <li>• Control by public authorities</li> </ul> <p><b>Cons</b></p> <ul style="list-style-type: none"> <li>• Share model not attractive for private investors</li> <li>• No freedom to set all track access for passengers</li> <li>• No freedom to set all track access for freight</li> <li>• No freedom to set freight only flows</li> <li>• No passenger concession letting agency</li> <li>• Low innovation capacity linked to degree of commercial services freedom</li> <li>• Public entities are considered less efficient than private entities</li> </ul>	<p><b>Minimal commercial freedom without the right to seek to acquire land with some modification to share structure with freight REGULATED pricing for single entity which cannot act as passenger concession letting agency, with moderately modified share ownership, but can offer back-stop rail haulage:</b></p> <p><b>Pros</b></p> <ul style="list-style-type: none"> <li>• Can control core activities (TM, CA, Maintenance, VA and Int. rail rel.)</li> <li>• Economies of scale related to the many services in-house</li> <li>• International rail relations lead</li> <li>• Full control by public authorities</li> </ul> <p><b>Cons</b></p> <ul style="list-style-type: none"> <li>• Share model prevents private involvement</li> <li>• No freedom to set all track access for passengers</li> <li>• No freedom to set all track access for freight</li> <li>• No freedom to set freight only flows</li> <li>• No passenger concession letting agency</li> <li>• Minimal innovation capacity linked to degree of commercial services freedom</li> <li>• Public entities are considered less efficient than private entities</li> </ul>

### 1.4.6. Way forward

Throughout this process, Atkins has remained independent from RB Rail AS, the EU and the beneficiaries. This independence is important to the professional integrity of Atkins. This independence has not prevented Atkins from consulting with stakeholders and from being open to further engagement with stakeholders.

Ideally, the beneficiaries, RB Rail AS, and representatives of the EU, will be able to come to a common agreement on the preferred two structures for Infrastructure Management on the Rail Baltica route at or shortly after the scheduled meeting on 6<sup>th</sup> August. However, in the event that the parties cannot reach an agreed position, Atkins will formally present our preferred two shortlisted options, taking into account the MCA, Cost, other strategic considerations, and feedback from stakeholders.

Atkins will then present a final option for consultation. In the event that the parties cannot recommend this option or reach agreement on any other option as a final option, Atkins will set out the case for its recommended final option. And this will be *the* final recommended option for this commission. It is important to note that a failure of the stakeholders to agree a way forward will not prevent Atkins from recommending a final option – although Atkins will take into account all of the feedback and comments that it receives using its professional judgement.

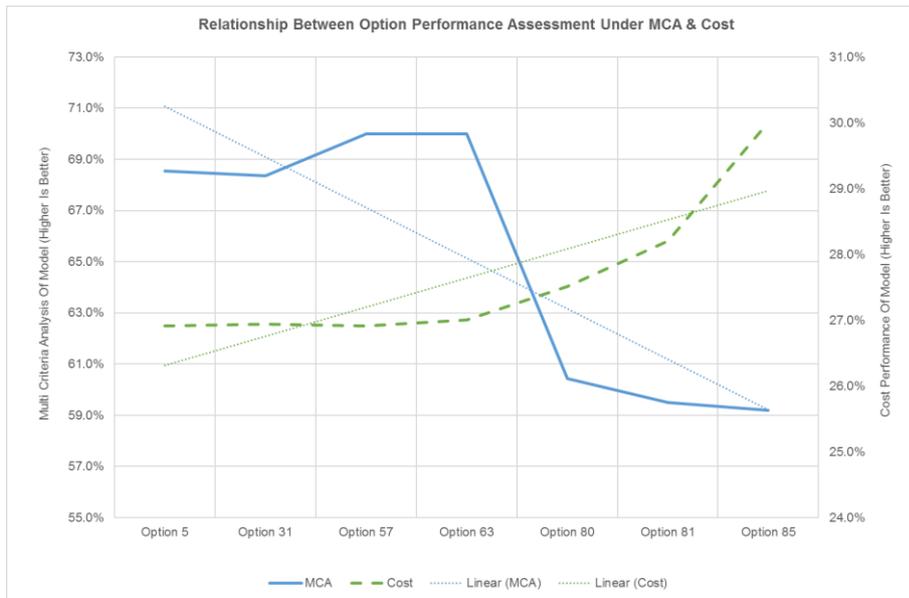
It is strongly recommended that the importance of consensus be re-iterated to all of the stakeholders, including RB Rail AS, and that Atkins' recommendation of a final option will only happen where stakeholders are unable to come forward to a unified view.

Atkins notes therefore that the establishment of a preferred IM option will not close the debate between stakeholders, as legal contracts will need to be put in place to cover the governance of the functions discussed in this paper, regardless of the option selected. That legal process will be complicated, and require consensus, particularly for options 5, 31, 80, 81 and 85. This legal process, therefore, may need to be moderated by the EU.

### 1.4.7. Model Sensitivity

The relationship between the MCA scores and option costs is shown in the table below.

**Figure 1-28 - Relationship between option performance assessment under MCA & cost**



Sensitivity testing was undertaken to assess the sensitivity of the overall score to the Cost weighting. The tables below show the Overall Scores and Rankings of the options for Cost weightings between 0% and 50%:

**Table 1-9 - Overall Scores**

Cost Weighting	0%	10%	20%	30%	40%	50%
Option 5	97.9%	97.1%	96.3%	95.4%	94.6%	93.8%
Option 31	97.6%	96.9%	96.1%	95.3%	94.5%	93.7%
Option 57	100.0%	99.0%	97.9%	96.9%	95.9%	94.9%
Option 63	100.0%	99.0%	98.0%	97.0%	96.0%	95.0%
Option 80	86.3%	86.9%	87.4%	87.9%	88.5%	89.0%
Option 81	85.0%	85.9%	86.8%	87.7%	88.6%	89.5%
Option 85	84.6%	86.1%	87.6%	89.2%	90.7%	92.3%

**Table 1-10 – Rankings**

Cost Weighting	0%	10%	20%	30%	40%	50%
Option 5	3	3	3	3	3	3
Option 31	4	4	4	4	4	4
Option 57	1	2	2	2	2	2
Option 63	1	1	1	1	1	1
Option 80	5	5	6	6	7	7
Option 81	6	7	7	7	6	6
Option 85	7	6	5	5	5	5

As can be seen, the relative performance of the options has a low sensitivity to the weighting assigned to the Cost Score.

## 1.4.8. RMMS Analysis

### 1.4.8.1. RMMS Introduction

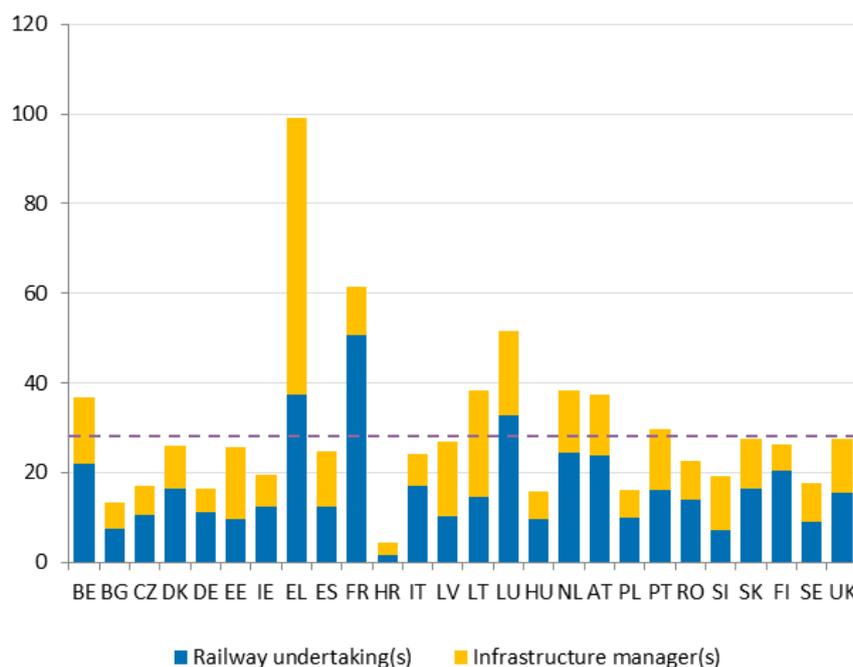
During early stakeholder meetings it was identified that some parties desire for a solution which would be based around existing Infrastructure Managers in the Baltic region. To complete an assessment of this, RMMS data has been analysed, to understand to what degree the existing IMs are able to deliver the best in class operations as required by the Rail Baltica remit. The comparison has been conducted between the three Baltic states, as well as comparing to the EU and Germany. The data has been sourced the *Fifth Report on monitoring development of the rail market*<sup>82</sup>. This gives an indication as to how well the current Infrastructure Managers in the Baltics are performing. It will also inform the MCA, such as in terms of investments in how much training the existing IMs would need to be brought up to speed.

## RMMS Analysis and Findings

### 1.4.8.2. Operating Costs per Train-km

The operating costs per train-km by member state source data is not available and therefore the standard graph produced for the RMMS fifth report is shown in Figure 1-29. The broad range of operating costs for most EU nations fall between 20 and 40 euros per train-km. The three Baltics nations operating costs fall within this broad range. Lithuania have the highest operating cost between the Baltics, followed by Latvia and the Estonia.

Figure 1-29 - Operating costs per train-km by Member State (Euro per train-km, 2012)

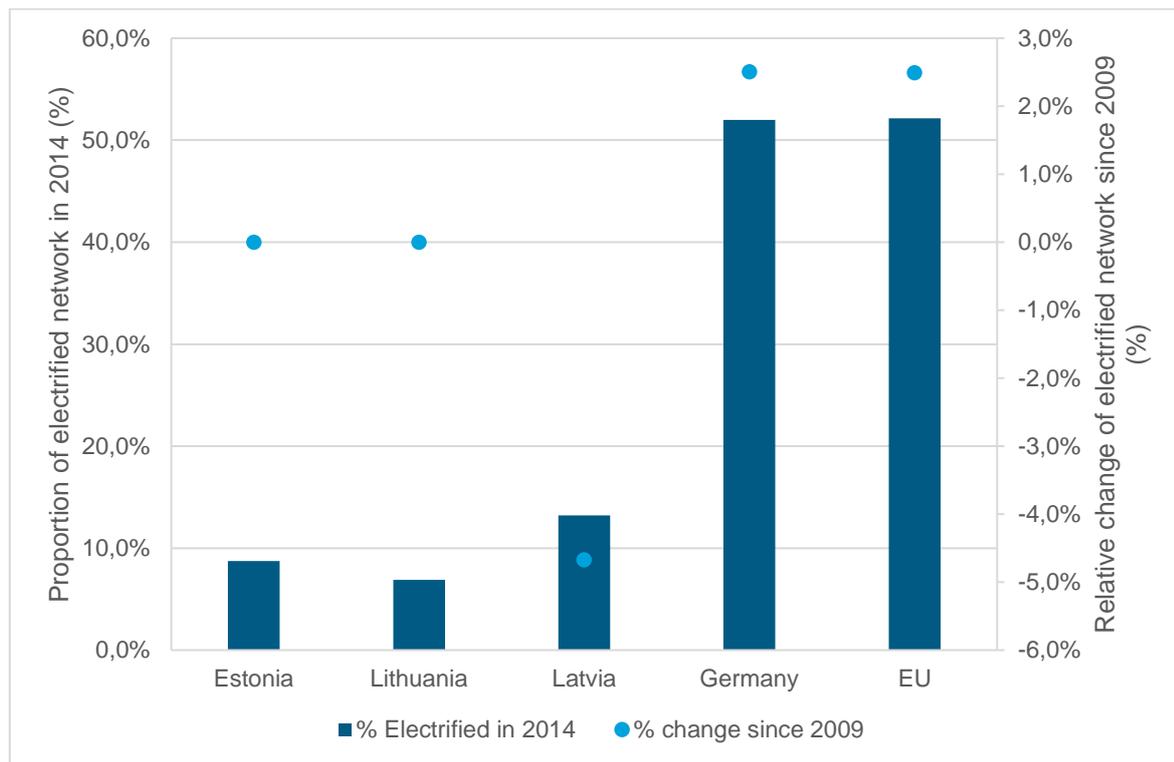


### 1.4.8.3. The proportion of electrified rail network

Figure 1-30 illustrates the proportion of electrified rail networks across the Baltics, alongside a comparison to the EU and Germany. Pertinent to note is the difference between the Baltics and Germany and the EU. The Baltics have between 7% and 13% of their networks electrified, whilst the EU and Germany have around 52% of their railway networks electrified. Moreover, the relative change of the electrified network since 2009 to 2014, is +2.5% for Germany and the EU, with Estonia and Lithuania seeing no change and Latvia experiencing a decline in the electrified network with -4.7%.

<sup>82</sup> European Commission. *Fifth Report on monitoring development of the rail market*.

Figure 1-30 - Proportion of electrified rail network in 2014 and relative change since 2009



#### 1.4.8.4. Length of dedicated high-speed lines

There is a distinct lack of data for the Baltics for this metric, due to the lack of high speed in the region. Germany, the UK and the EU have been provided for comparison, with Germany accounting for 18% of the EU's high-speed rail network (Table 5-1). With Rail Baltica's 870km<sup>83</sup> of electricity powered railway, it has the potential to ensure the Baltics can offer similar options to other EU nations in terms of electrified rail networks.

Table 1-11 - Length of dedicated high speed lines (2015)

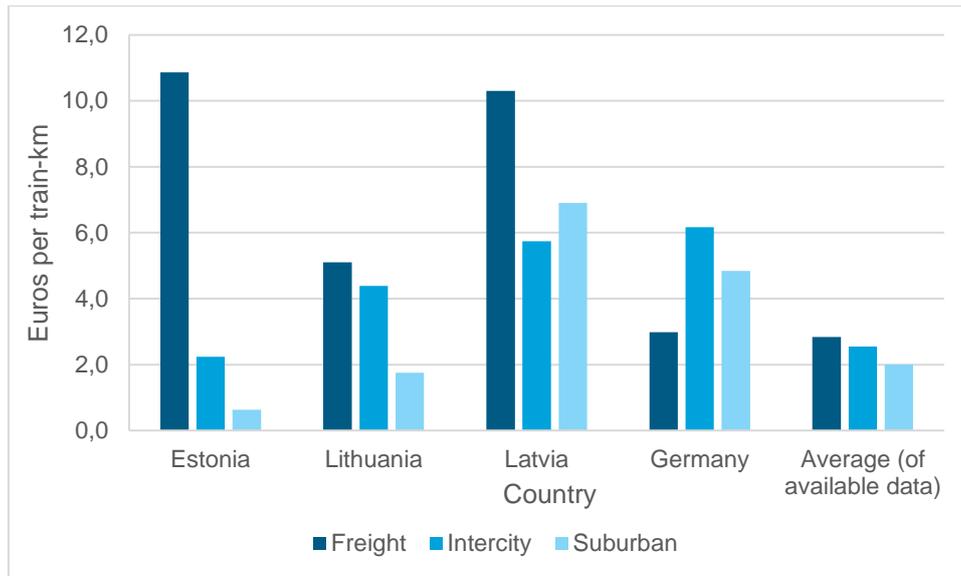
Country	Km (2015)
Germany	1475
UK	113
EU 28	8019

#### 1.4.8.5. Track access charges for different categories of trains

Estonia and Latvia's freight track access charges are higher than Lithuania's, significantly higher than the average (of available data) and that of Germany. The Baltics higher charges for freight can partly be justified due to the higher permitted axle-loads. The three Baltic nations have freight charges higher than passenger charges, whilst Germany has passenger charges higher than that of freight. The Baltics align with the average (of available data) in terms of track access charges for freight being more than that of passengers.

<sup>83</sup> Rail Baltica. *Rail Baltica – Project of the Century*. (Website).

Figure 1-31 - Track access charges for different categories of trains (2016)



1.4.8.6. Punctuality and Reliability

Figure 1-32 indicates that the Baltics are above the average in terms of regional and local passenger services being on time. 99% of Estonian local and regional passenger services arrive at their destination 'on time'. This is the highest percentage out of all the nations data reported in the RMMS fifth report. Latvia is the second most punctual nation, followed by Lithuania in fifth. However, the range of factors that can affect punctuality, such comparison of the member states should not be considered conclusive. Moreover, the classification of 'on time' is ambiguous with nations such as Lithuania defining regional services as on time if it is delayed by 5 minutes or less, whereas Denmark define on time as 2 minutes 29 seconds or less.

Figure 1-33 illustrates the long-distance passenger services punctuality which is a closer indication as to how Rail Baltica will be expected to perform. Estonia, again is on top in terms of punctuality across the EU member states. Lithuania has significantly improved their punctuality on long distance passenger services from 75% in 2012 to 97% in 2014. Latvia's punctuality has also been improving from around 90% in 2012 to 96% in 2014.

Figure 1-32 - Punctuality of regional and local passenger services, showing percentage of services on time

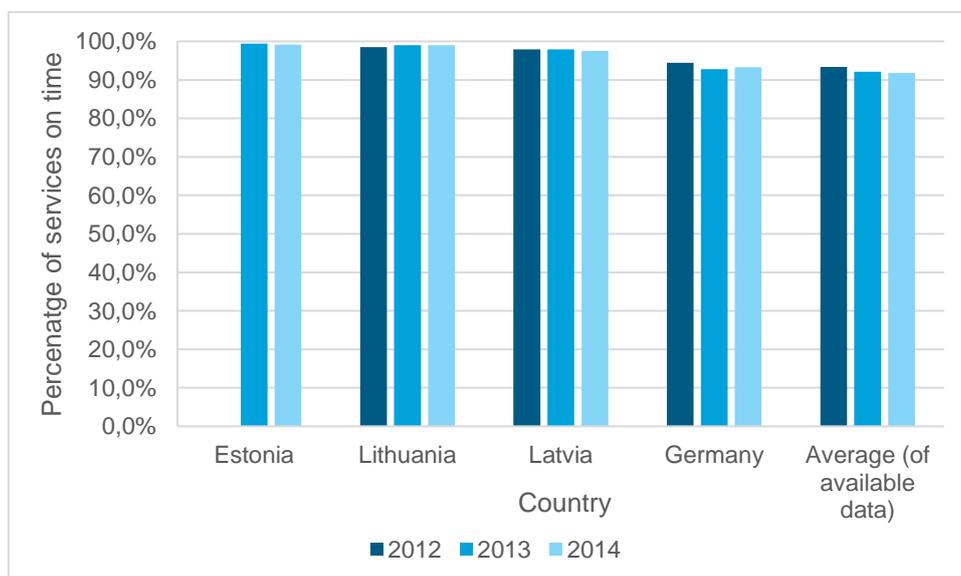


Figure 1-33 - Punctuality of long distance passenger services, percentage of services on time

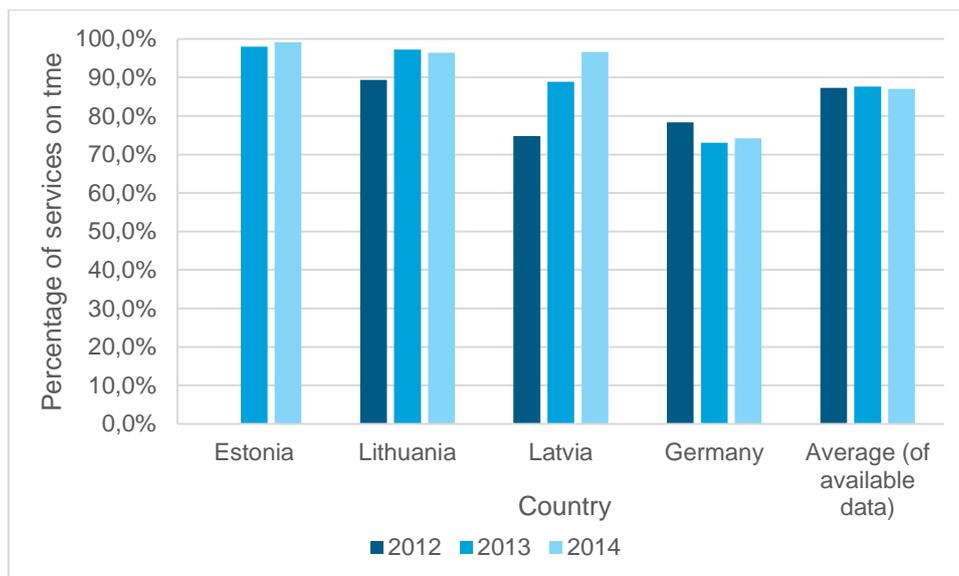


Table 5-3 **Error! Reference source not found.** shows the reliability of long distance passenger services, although data for Latvia is not reported in the fifth RMMS report. Lithuania cancels a higher percentage of long distance trains than the average EU country (of available data). However, the RMMS report suggest that this could explain Lithuania’s strong performance against punctuality metrics because if a train is cancelled it is not recorded as late<sup>84</sup>.

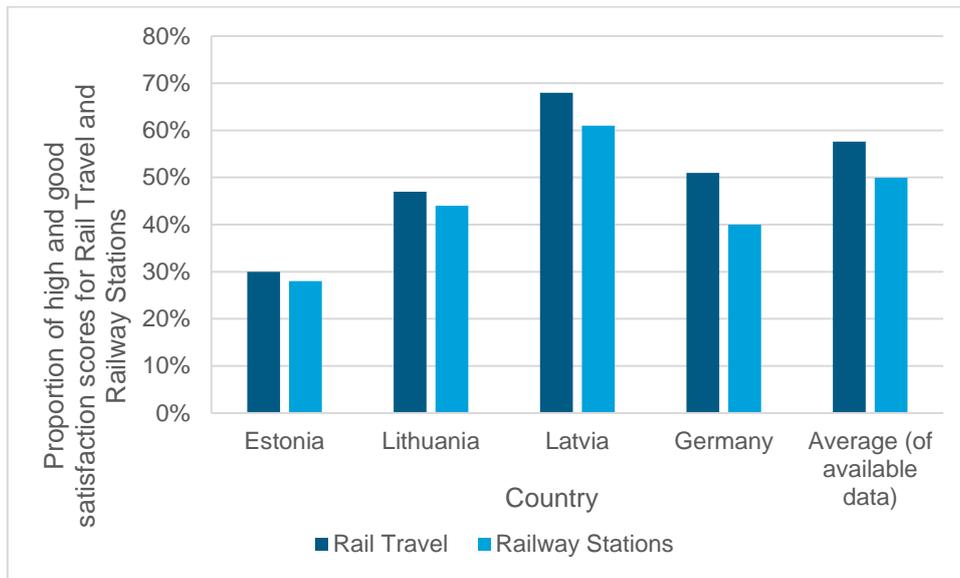
Table 1-12 - Reliability of long distance passenger services, percentage of services cancelled

Country	2013	2014
Lithuania	7.1%	5.7%
Estonia	0.0%	0.1%
Germany	0.2%	0.3%
Average (of available EU data)	3.5%	2.0%

<sup>84</sup> European Commission. *Fifth Report on monitoring development of the rail market.*

1.4.8.7. Satisfaction scores for railway stations and rail services

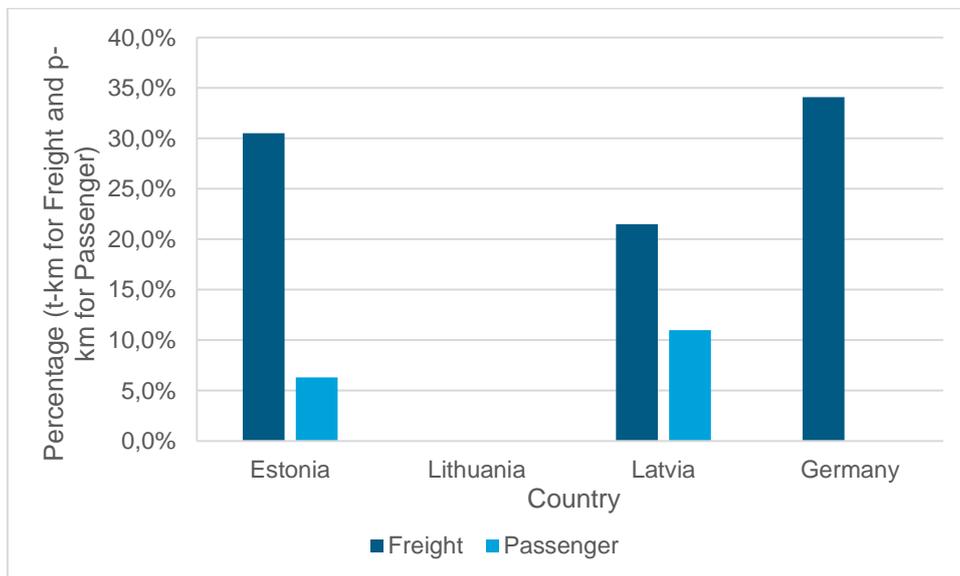
Figure 1-34 - Proportion of high and good satisfaction scores for rail travel and railway stations



1.4.8.8. Competition in the freight and passenger markets

The market share of competitors in the freight and passenger market are very different, due to the different stage of the market opening, passenger markets therefore tend to be lower as demonstrated in Figure 1-35. In Lithuania the market share of competitors in both the freight and passenger market is 0%, due to the monopoly of Lithuanian Railways. Estonia and Latvia have a competitor's freight market share of 31% and 22% respectively, whilst their passenger market share is 6% and 11% respectively.

Figure 1-35 - Market share of competitors in the freight and passenger market



1.4.8.9. Additional Data

In addition to the RMMS data, other data sources were scouted to provide wider metrics, especially those in relation to safety.

Information from the European Transport Safety Council has flagged issues with Lithuania, after referring Lithuania to the European Court of Justice over rail safety failings<sup>85</sup>.

Below details the European Union's level crossing safety levels and railway safety performance with a focus on the Baltic nations.

1.4.8.10. Level Crossings Safety

The European Railway agency produced the document '*Level crossing safety in the European Union*'<sup>86</sup>. Figure 1-36 compares the number of level crossing deaths per million train kilometres across the EU nations. Lithuania has the second highest number of deaths at just over 0.4 per million train kilometres, whilst Estonia and Latvia have experienced between 0.2 and 0.3 deaths per million train kilometres. The existing Baltic states are not effective on safety.

Figure 1-36 - Level crossing deaths per million train kilometres (2008-2010)

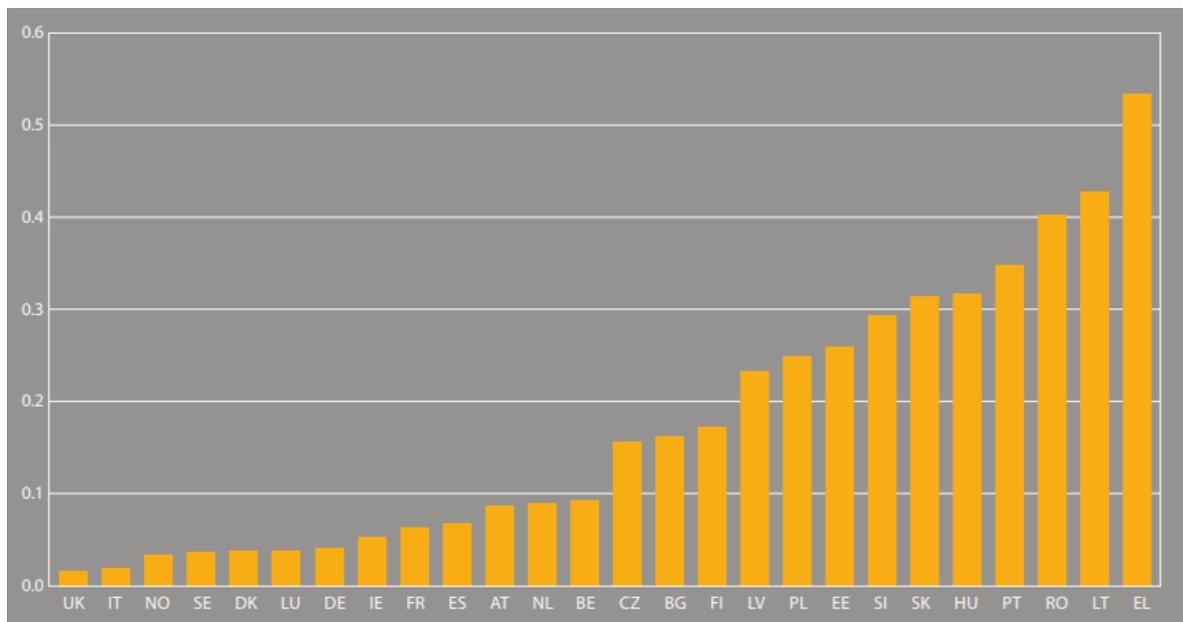
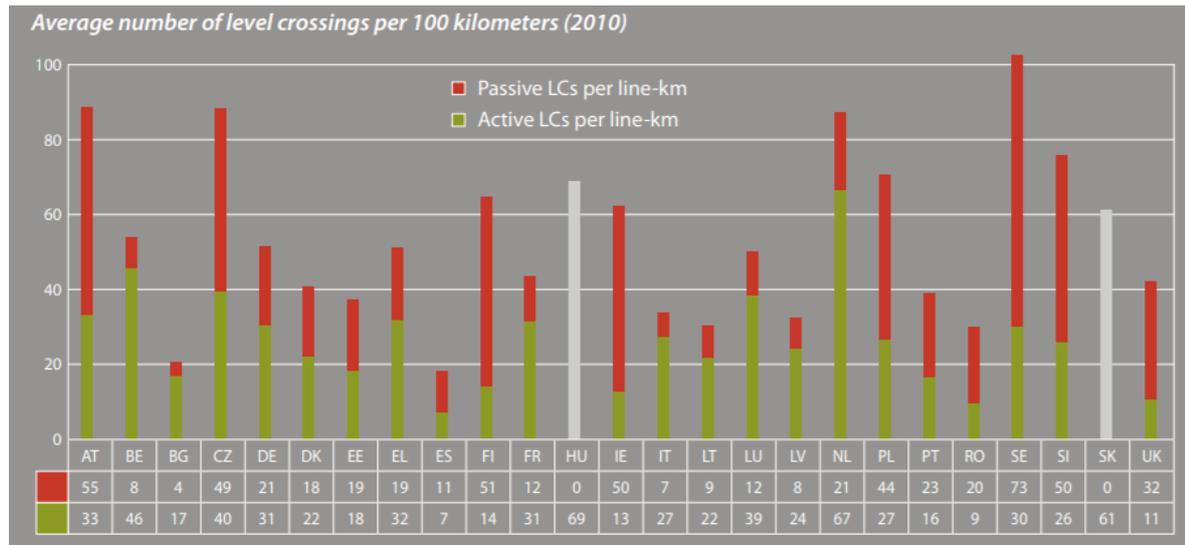


Figure 1-37 below highlights the average number of level crossings per 100 kilometres has less active level crossings per 100km than countries with less level crossing deaths, highlighting further that Lithuania's safety is questionable. Estonia and Latvia also both have a low number of level crossings per 100km in comparison with the number of level crossing deaths.

<sup>85</sup> European Transport Safety Council. *Lithuania referred to European Court of Justice over rail safety failings.*

<sup>86</sup> European Railway Agency. *Level crossing safety in the European Union.*

Figure 1-37 - Average number of level crossings per 100 kilometres (2010)

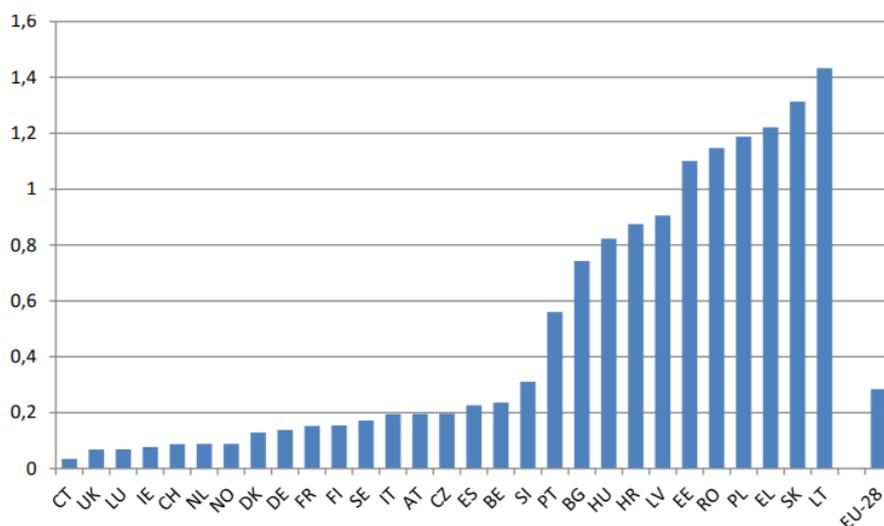


1.4.8.11. Railway Safety Performance

The European Railway Agency has published a report ‘Railway Safety Performance in the European Union’<sup>87</sup>. Data from this report has been given to compare the performance of safety between the Baltics, as well as Germany and the wider EU nations.

Figure 1-38 shows the Baltic nations amongst the worse for safety, in terms of fatalities per million train-km. Lithuanian has the highest number at just over 1.4, with Estonia and Latvia experiencing 1.1 and 0.9 fatalities respectively. On the other hand, Germany has only around 0.1 - 0.2 fatalities per million train-km, with the EU average being just under 0.3. The Baltics therefore have a significant higher risk than other EU countries of having a fatality on their railway network.

Figure 1-38 - Railway fatalities per million train-km (2010-2014)



To give a more general overview of how the EU is performing in terms of safety and improving safety, Figure 1-39 provides an illustration in terms of fatalities, significant injuries and significant accidents. The EU’s railway network is improving in terms of safety with a downward trend in fatalities, injuries and accidents. From 2007 to 2014, fatalities have reduced by around 500 and serious injuries has also been reduced by around 500.

<sup>87</sup> European Railway Agency. *Railway Safety Performance in the European Union*.

Figure 1-39 - Significant accidents and resulting casualties for the EU-28 countries (2007 - 2014)

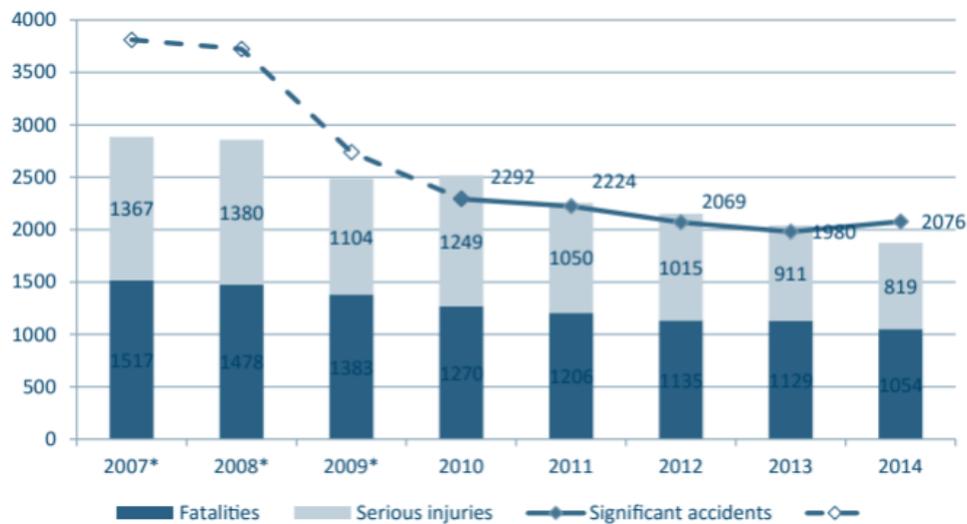
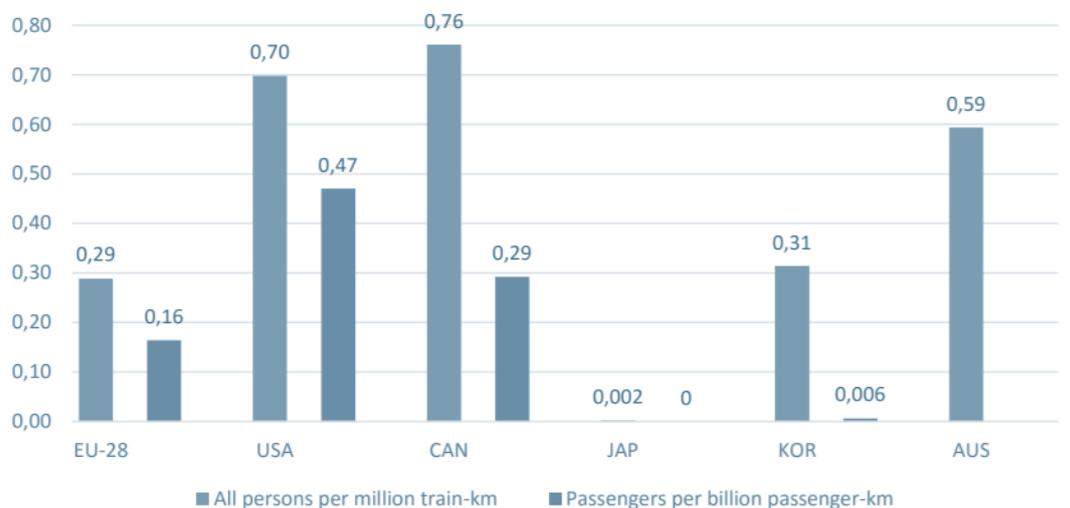


Figure 1-40 provides a comparison of the EU-28 to other nations across the globe. With exception of Japan, the EU-28 have a lower railway and passenger fatality risk than the USA, Canada, South Korea and Australia. Rail Baltica will have to ensure this risk is not increased in the creation of their network.

Figure 1-40 - Railway fatality risk and passenger fatality risk for EU-28, USA, Canada, Japan, South Korea and Australia



### 1.4.9. Stakeholder Engagement

Stakeholder engagement was conducted across Latvia, Lithuania and Estonia. Atkins conducted the interviews, with members of RB Rail AS present. This information was used to inform the Multi-Criteria Analysis. A standard interview pack was used for all meetings, with all stakeholders receiving a copy pre-interview, which can be seen in Appendix F. The questions broadly covered the following categories:

- Interviewee Record;
- Information About Your Business;
- Stakeholder View of Target Operating Model; and
- Your Vision for Rail Baltica.

There were many opposing and differentiating views, however, we believe all stakeholders are committed to delivering an effective outcome for the project, to deliver the most effective Infrastructure Management model.

Almost all the stakeholders mentioned and agreed that simple charges for Rail Baltica are a priority. However, only the Lithuanian Private Railways Associate agreed explicitly that charges should be fixed, suggesting a more flexible charging system should be adopted. Of those who mentioned the agreement of charges in advanced four agreed with this. Moreover, of those that mentioned it, they agreed that there should be one window/ the same charges for whoever they contact. It is generally agreed that the charges should be the same in each country, although Lithuanian Railways did not agree with this.

The idea of having a single Infrastructure Manager received a mixed response, as did having the IM separate from current IMs. Estonian and Latvian stakeholders generally agree with the idea that the IM could come from any country, apart from DB Schenker/ Lineka.

Single traffic management across all countries was generally agreed with, alongside the maintenance arrangements should prioritise efficiency. Additionally, it was agreed that the whole network should be optimized, not just RB, as well as strong transport regulation.

The views of the stakeholders during the engagement period are varied, with varying degrees of polarisation. As described in the Inception report, we intend to use the stakeholder engagement to draw out the political detail of individual infrastructure management models that currently exist in the Baltic States alongside the wishes of the national infrastructure managers. The results of this engagement have gone on to influence and be directly reflected in the MCA and will ensure that an infrastructure management model can be successful in a multi-territory environment.

**Table 1-13 - Stakeholder Engagement Analysis**

Key: ✓ - agree explicitly, (✓) agree implicitly, ✗ - disagree explicitly, (✗) - disagree implicitly, – - not mentioned

Priorities for Rail Baltica	Lithuania Railways	Lithuania Railways IM Board	Lithuanian Private Railways Association	Arijus (Lithuania)	Estonian Regulatory Authority /Ministry of Economic Affairs	RB Estonia	DB Schenker/Lineka	Lithuanian Railways /Ministry	Latvian Safety and Technical State Inspectorate	Latvian State Joint Stock Company (Latvijas dzelzceļš)	Lithuania Communications Regulatory Authority
Simple charges	✓	(✓)	✓	✓	✓	-	(✓)	✓	✓	-	-
Charges fixed (vs. market-driven)	✗	✗	✓	-	-	-	-	✗	-	-	-
Charges agreed in advance	✗	✓	✓	-	-	-	✓	✗	✓	-	-
One window/same charges whoever they contact	✓	✓	-	-	✓	-	(✓)	✓	-	-	-
Charges the same in each country	✗	✓	✓	-	✓	-	✓	-	-	-	-
Single IM	✗	✗	✓	-	✓	✓	✓	✗	✓	(✓)	-
IM separate from existing IMs	(✗)	✗	✓	-	✓	-	-	(✗)	✗	✗	-
IM from any country	-	-	-	-	✓	✓	(✓)	(✗)	(✓)	(✓)	-
Single capacity allocation across all three countries	✓	-	✓	-	✓	✓	-	✓	✓	-	-
Single Traffic Management across all three countries	✓	✗	-	-	-	✓	(✓)	✓	✓	(✓)	(✗)
Maintenance arrangements should prioritize efficiency	✓	✓	✓	-	✓	-	-	✓	-	-	-
Effective scheduling for both passengers and freight	✓	-	-	-	-	-	(✓)	✓	-	-	-
Market to decide passenger services	✓	✓	-	-	-	-	-	✓	-	-	-

(with minimum Passenger Service Obligation)											
Synergy between 1520mm and 1435mm	✓	-	✗	-	-	-	-	✓	-	✓	-
Whole network optimized, not just RB	✓	-	-	-	-	-	(✓)	✓	-	-	-
Transparent regulation	-	-	✓	-	-	-	(✓)	-	-	-	✓
CSM System with national control	-	-	-	-	✓	-	-	-	(✓)	-	-
Regulation more important than the IM	-	-	-	-	✓	-	(✓)	-	-	-	(✓)
States own the railway within their own country	-	-	-	-	✓	-	-	-	-	-	-
Profits go to shareholders	-	-	-	-	✓	-	-	-	-	-	-
IM does not operate passenger/ freight services	-	-	-	-	-	✓	-	-	✓	-	-

#### 1.4.10. Legal Text Analysis

An initial assessment has been conducted on all Directives and Legal Documents that are mentioned in this document, of which have relevance to the infrastructure manager role for Rail Baltica. These will be studied in more detail for the development of the final report.

The directives are provided in 0, alongside text extracts and the analysis of the documents.

### 1.4.11. Update and summary of the two recommended options

The costs for the two recommended options are broadly, similar, at around €57-58 million per year. In option 57, more of this cost falls to the Rail Baltica New Entity (RBNE), due to it taking on incremental headcount associated with Finance, Legal and Strategy departments in order to deal with the increased commercial risks. The single-year and life-cycle costs are shown in the figure below.

**Figure 1-41 - Costs for Options 57 and 63**

Single-year cost	Option 57	Option 63
Rail Baltica IM	57,610,773	56,927,790
Estonia	78,282	219,832
Latvia	71,454	201,372
Lithuania	83,755	246,741
<b>Grand Total</b>	<b>57,844,264</b>	<b>57,595,735</b>

Life-cycle cost	Option 57	Option 63
Rail Baltica IM	525,103,454	518,273,618
Estonia	782,819	2,198,324
Latvia	714,538	2,013,724
Lithuania	837,554	2,467,411
<b>Grand Total</b>	<b>527,438,364</b>	<b>524,953,076</b>



Note that the cost model assumptions have been amended since the Interim report following alignment discussions with the client. These have not altered the relationships between any of the Options under consideration, with amendments being made equally to all.

- Salaries have been uplifted to reflect the increased employment costs in the region following advice regarding an adjustment associated with local employment taxation.
- Spend on professional services was previously around €10 million per annum for the whole route, and has been removed following external review, due to the organisation being new and not being anticipated to need to substantial renewals and enhancements for the first ten years of operation
- Further, compensation and penalty payments have been reduced from around €4 million per annum to around €1.1 million per annum, as they are expected to be lower than in the benchmarked organisation, due to lower levels of passenger compensation being payable and therefore lower justification for passenger railway undertakings to claim the same the RBNE.
- Further, around €12 million per annum spend on purchasing utilities has been removed, as this is a pass-through cost.

Following discussions with stakeholders, we were also requested to conduct an extrapolation of the cost model, including renewals activity over a 40 year lifecycle. While there is naturally a high degree of uncertainty when forecasting costs so far ahead, we have developed a MonteCarlo analysis, covering at individual asset group level (e.g. signalling, OLE, track) a forecast for this period. This has enabled us to provide a forward look of spend on an annual basis as well as a cumulative position as indicated below.

Figure 1-42 - Annual Spend Profile Monte Carlo Extrapolation RBNE

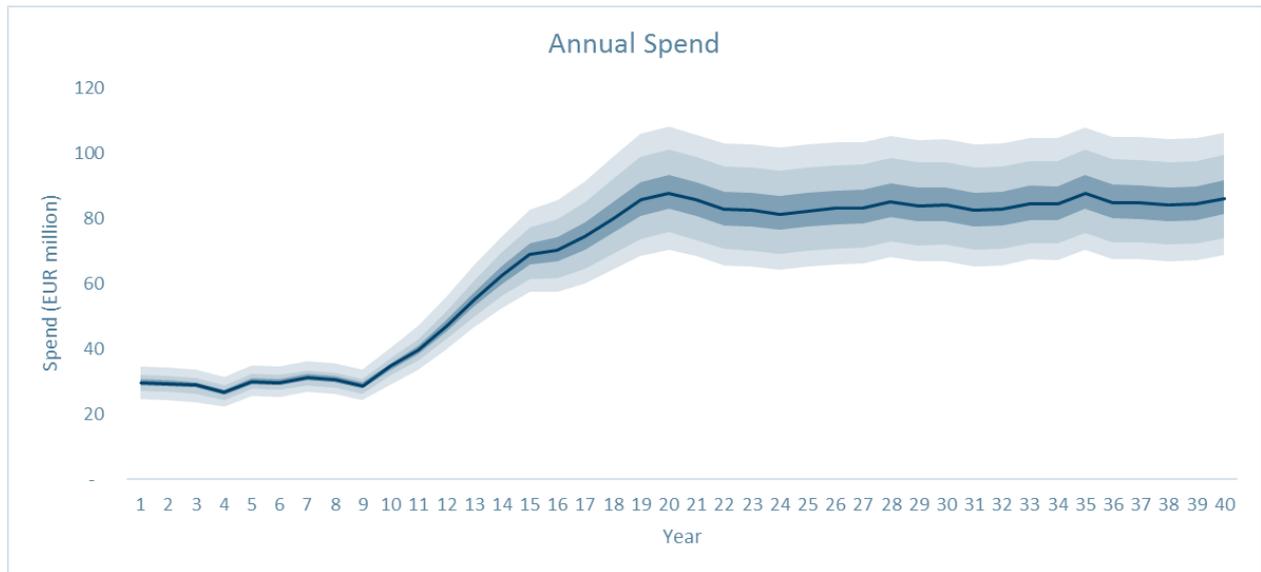
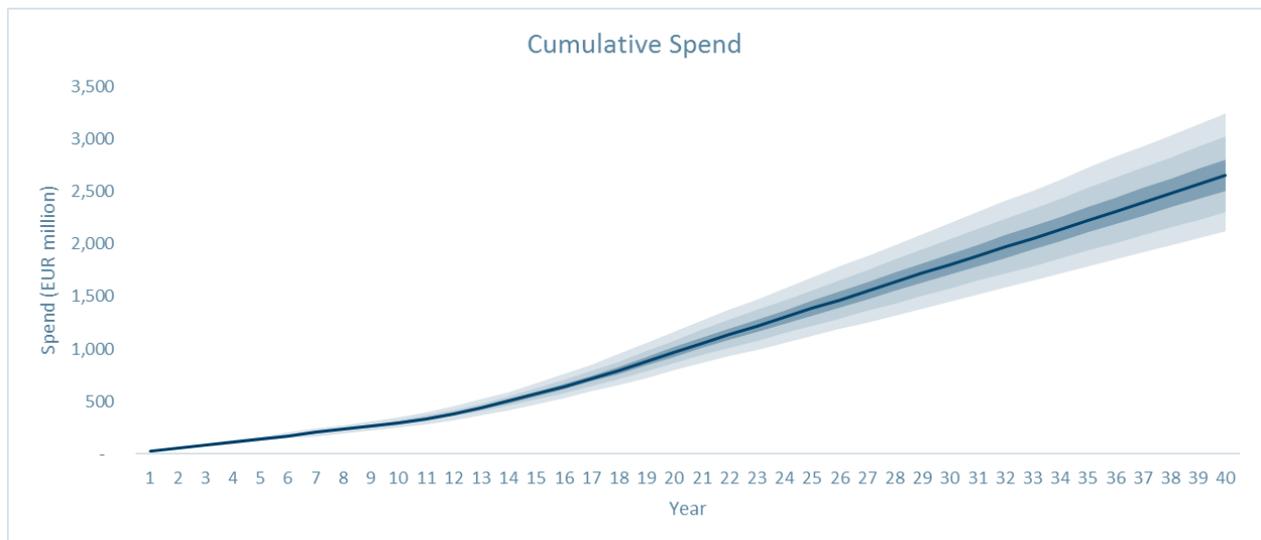


Figure 1-43 - Cumulative Spend Profile Monte Carlo Extrapolation RBNE



### 1.4.12. Further Sensitivity Analysis (Option 85 Versus Option 57)

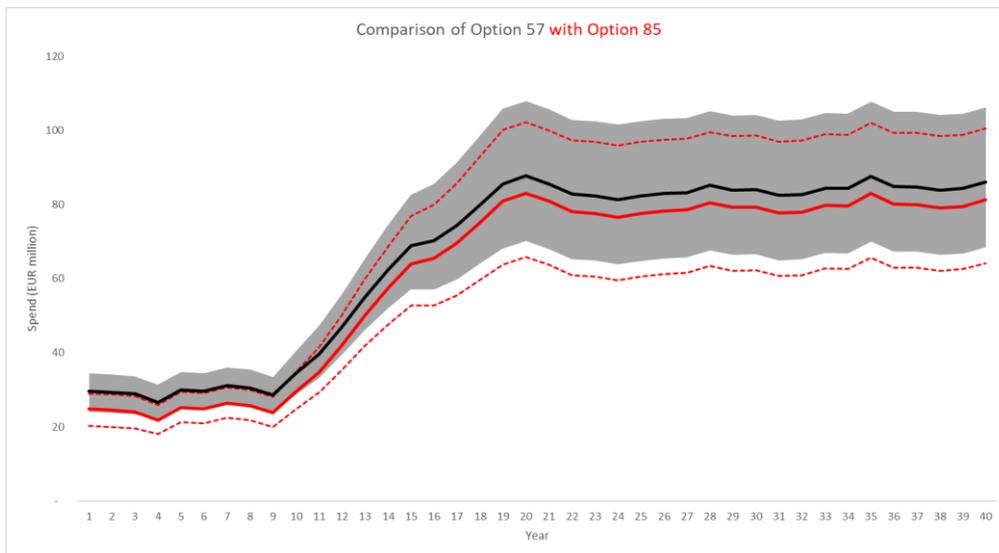
Undertaking a sensitivity in which the Life Cycle Cost Model timeframe is extended beyond 10 years to be consistent with the CBA was requested by Lithuania, as well as increasing the cost weightings to 50%. These sensitivities were undertaken for Options 57 and 85, with cost scores calculated based on 40-year costs rather than 10-year.

The result of this analysis was to reduce the cost advantage of Option 85 over Option 57, since the impact of the initial synergies of the already-established Infrastructure Managers would diminish over time. As the Monte Carlo analysis shows, the difference in cost between Options 57 and 85 is small compared with the cost uncertainty over a 40-year timeframe.

This does not take into account factors such as the likely reduction in recruitment costs and ongoing Information Technology spends for the RBNE under Option 57 over time, which would further reduce the cost differential over a longer timeframe.

10-year timeframe	Option 57	Option 85	40-year timeframe	Option 57	Option 85
MCA	224.7	190.0	MCA	224.7	190.0
MCA %	100.0%	84.6%	MCA %	100.0%	84.6%
Cost %	89.7%	100.0%	Cost %	92.8%	100.0%
Overall Score (80/20 weighting)	97.9%	87.6%	Overall Score (80/20 weighting)	98.6%	87.6%
Overall Score (50/50 weighting)	94.9%	92.3%	Overall Score (50/50 weighting)	96.4%	92.3%

Figure 1-44 - Cumulative Spend Profile Option 85 vs Option 57



## 2. WP6.1 In-depth comparative analysis of the two options proposed in WP5.2

Options 57 and 63 were recommended to be taken forward. They are based on a relatively small entity focused around the essential or core functions of an infrastructure manager. This included operational performance, being capable of acting as a single voice in discussion with customers and other bodies – but not responsible for wider functions (such as concession letting) which might be undertaken efficiently by other bodies.

Options 5 and 85 were not recommended but were recommended to be taken forward as comparators. Option 5 diffused the management focus on infrastructure and capacity delivery, while Option 85 would require relatively complicated legal and inter-governmental arrangements to be put in place to warrant the outputs required to be the “most effective and feasible” given the extra interfaces that would need to be governed.

It is important to note that whilst all the options will require further legal agreements covering all the core and some of the wider functions, but that option 85 would require the most because there is no single RBNE entity that can conflate functions (such as Traffic Management, Capacity Allocation and Maintenance) into operational outputs (such as performance) that can be contracted and because splitting the RBNE functions across three route sections will require three sets of agreements.

It is also important to note that 85 does not require there to be any RB RBNE management team, and therefore it will be harder to hold anyone to account for revenue and operational performance, as the entities and management team responsible for delivery of the Rail Baltica will be part of wider teams that will have other priorities and objectives that will be larger in terms of revenues and cost.

In this paper, we describe how we see each option would work (Options 5, 57, 63 and 85) before taking forward the detailed analysis. There are however, some elements which we believe need to be common across all options in order to make the new entity a success. The first of these relates to the establishment of a healthy inclusive corporate culture with a focus on transparency and ethics.

During our time working on the infrastructure management study, Atkins has encountered a number of stakeholders who made reference to issues relating to inappropriate behaviours and practices in the railway sector across Estonia, Latvia and Lithuania (either in reference to historical issues or with regards to ongoing activities).

None of the current issues referenced were substantiated or detailed in nature, but the frequency of these comments was significant. Atkins impression was that these were reflective of underlying issues regarding transparency and openness than individual events which would require escalation – the regulators confirming they were aware of such challenges. Notwithstanding this, “37% of EU businesses consider corruption to be a problem for them when doing business. EB [FL457] 60% agree with the statement that bribery and the use of connections is often the easiest way to obtain certain public services”<sup>88</sup>

As such, Atkins believes that one of the key benefits in establishing a new entity for the Rail Baltica route will be the ability to build an organisation from scratch, ensuring that it builds confidence in the supply chain as a consequence, and helping deliver the business case through maximizing the market opportunity.

The new entity throughout this document is referred to as ‘RBNE’ or the ‘Rail Baltica New Entity’. This is done to ensure there is no potential confusion with RB Rail AS. It is important to note that, Atkins does not provide any recommendation whether RB Rail should or should not evolve into RBNE.

<sup>88</sup> [https://ec.europa.eu/home-affairs/what-we-do/policies/organized-crime-and-human-trafficking/corruption\\_en](https://ec.europa.eu/home-affairs/what-we-do/policies/organized-crime-and-human-trafficking/corruption_en)

## Core Aims Of RBNE

The aim of the Infrastructure Manager most fundamentally is to secure the operation and maintenance of the network, the renewal and replacement of the network and the future development and improvement of the network. Note, this would not include the future enhancement of the network, whereby new track would be laid to connect new towns or regions.

Each Option must aim to do this in an ongoing basis in line with emerging best practice, in full compliance with European legislation and in a timely, efficient and economical manner so as to satisfy the reasonable requirements of the Beneficiaries.

The new entity will be responsible for the quality and capability of the network, including the facilitation of railway network performance relating to the carriage of passengers and freight by railway undertakings.

## 2.1. Priority Themes Across All Options

### Organisational culture

As stated, during the stakeholder consultation process, concerns were raised about the openness and transparency of existing National Infrastructure Managers. This included concerns being raised by the national regulators of those Infrastructure Managers. Atkins therefore believe that for all those options under consideration, an organisation should be considered that is an exemplar for transparency.

In addition to having a clear code of Ethics for the organisation, the RBNE should make available such data as to demonstrate that it is providing value for money to the general taxpayers in the region.

This means that:-

- Compensation is published for all Board Members.
- Details of meetings for all Board Members are published.
- Expenses for all Board Members are published.
- Accounts are published and accessible by the public.
- Details of contracts awarded are published.
- Salary band information should be published for all employees, showing the split by gender.

## 2.2. Options for Consideration

In this report, the preferred options (Options 57 and 63) are explored and analysed in greater detail, whilst retaining Options 5 and 85 to provide some comparison. The analysis includes exploring what best practice looks like in a variety of different areas, and seeing which option is most likely to lead to such practice.

### 2.2.1. First Option for Consideration: Option 57

This option focusses the RBNE on the core functions of infrastructure management. It allows the RBNE to undertake a more moderate amount of commercial risk to maximise revenue because that risk is concentrated on the core functions of an Infrastructure Manager.

In Option 57, RBNE would be prevented from acquiring land to minimise the risk to its owners. The governance arrangements would need to be modified from those of RB Rail AS, but minimally. RBNE would be able to undertake all of the core functions but not all of the ancillary functions. However, as a result of its limited commercial freedom, it would not be able to market price freight traffic.

## Option 57

**Partial commercial freedom without the right to seek to acquire land with freight REGULATED pricing for single entity which cannot act as passenger concession letting agency, with minimally modified share ownership/governance and no rail haulage:**

### Pros

- Some economies of scale related to the many services in-house
- Single point of contact for all bodies able to act coherently across all functions
- Some innovation capacity linked to degree of commercial services freedom
- Balance between commercial freedom and minimal modification of ownership/governance
- Less risk for shareholders from right to acquire land
- Less potential for ancillary functions to cause RB to lose management focus
- Minimal changes required to share/governance arrangements

### Cons

- RB constrained functionality may make it harder to recruit expertise

1. Freedom to set all track access (passenger and freight)	2. Freedom to set FREIGHT ONLY flows	3. Traffic Management	4. Capacity allocation	6. Inspection and maintenance across all route		
No	No	Yes	Yes	Yes		
7. Vision Author	8. International Rail Relations Lead	9. Passenger Concession Letting agency	10. No significant commercial freedom/capability	11: Commercial Services Freedom (minimal):	12. Commercial Services Freedom (partial – no extra land):	
Yes	Yes	No	No	No	Yes	
13. Commercial Service Freedom (partial – extra land for rail associated services only)	14. Commercial Service Freedom (full):	15. Duplicates existing RB Rail AS governance	16. Minimally modified governance from duplicate RB Rail AS (minimal relaxation)	17. Moderately modified governance from duplicate RB Rail AS (some relaxation + golden share)	18. Fully modified governance structure	19. Rail Haulage offer
No	No	No	Yes	No	No	No

### 2.2.2. Second Option for Consideration: Option 63

This option focuses the RBNE on the core functions of infrastructure management. It allows the RBNE to undertake only a very limited amount of commercial risk. In Option 63, the RBNE would be prevented from acquiring land to minimise the risk to its owners. The governance arrangements would be the same as those of RB Rail AS. RBNE would be able to undertake all of the core functions but not all of the ancillary functions. However, as a result of its limited commercial freedom, it would not be able to market price freight traffic.

#### Option 63

**Minimal commercial freedom without the right to seek to acquire land with no modification to share structure/governance with freight REGULATED pricing for single entity which cannot act as passenger concession letting agency or offer back-stop rail haulage:**

#### Pros

- Limited economies of scale related to the many services in-house
- Single point of contact for all bodies able to act coherently across all functions
- Limited innovation capacity linked to degree of commercial services freedom
- Minimal risk for shareholders from right to acquire land
- No potential for ancillary functions (back stop haulage) to cause RB to lose management focus
- No changes required to share/governance arrangements

#### Cons

- RB constrained functionality may make it harder to recruit expertise
- Tension between partial commercial freedom and no modification of ownership/governance

1. Freedom to set all track access (passenger and freight)	2. Freedom to set FREIGHT ONLY flows	3. Traffic Management	4. Capacity allocation	6. Inspection and maintenance across all route		
No	No	Yes	Yes	Yes		
7. Vision Author	8. International Rail Relations Lead	9. Passenger Concession Letting agency	10. No significant commercial freedom/capability	11: Commercial Services Freedom (minimal):	12. Commercial Services Freedom (partial – no extra land):	
Yes	Yes	No	No	Yes	No	
13. Commercial Service Freedom (partial – extra land for rail associated services only)	14. Commercial Service Freedom (full):	15. Duplicates existing RB Rail AS governance	16. Minimally modified governance from duplicate RB Rail AS (minimal relaxation)	17. Moderately modified governance from duplicate RB Rail AS (some relaxation + golden share)	18. Fully modified governance structure	19. Rail Haulage offer
No	No	Yes	No	No	No	No

### 2.2.3. Option for Reference: Option 5

In this option, RBNE undertakes the full range of core and ancillary functions and can market price freight traffic. In Option 5, the RBNE would have full commercial freedom, which would mean that the governance arrangements would need to be fully modified from those of RB Rail AS, with no government shareholding interest.

#### Option 5

**Full commercial freedom with freight market pricing for single entity which can act as passenger concession letting agency, with fully modified share ownership/governance and offer back-stop rail haulage:**

#### Pros

- Economies of scale related to the many services in-house
- Single point of contact for all bodies able to act coherently across all functions
- High innovation capacity linked to degree of commercial services freedom

#### Cons

- Creates greatest risk for shareholders
- Risk from significant change to existing governance/share structure
- Potential for ancillary functions (e.g. passenger concession authority) to cause RB to lose management focus

1. Freedom to set all track access (passenger and freight)	2. Freedom to set FREIGHT ONLY flows	3. Traffic Management	4. Capacity allocation	6. Inspection and maintenance across all route		
No	Yes	Yes	Yes	Yes		
7. Vision Author	8. International Rail Relations Lead	9. Passenger Concession Letting agency	10. No significant commercial freedom/capability	11: Commercial Services Freedom (minimal):	12. Commercial Services Freedom (partial – no extra land):	
Yes	Yes	Yes	No	No	No	
13. Commercial Service Freedom (partial – extra land for rail associated services only)	14. Commercial Service Freedom (full):	15. Duplicates existing RB Rail AS governance	16. Minimally modified governance from duplicate RB Rail AS (minimal relaxation)	17. Moderately modified governance from duplicate RB Rail AS (some relaxation + golden share)	18. Fully modified governance structure	19. Rail Haulage offer
No	Yes	No	No	No	Yes	Yes

### 2.2.4. Option for Reference: Option 85

In this option, there is no RBNE, and all functions are undertaken by other bodies, most likely the existing national Infrastructure Managers. In Option 85, the lack of a centralised RBNE would necessitate several complex legal agreements in order to assure the smooth functioning of the Rail Baltica route.

#### Option 85

#### No whole route role. All powers with other bodies (probably legacy, national IMs):

##### Pros

- Minimal risk for shareholders
- Balance between no significant commercial freedom and no modification of ownership/governance
- No changes required to share/governance arrangements

##### Cons

- No significant economies of scale related to the many services in-house
- No innovation capacity linked to degree of commercial services freedom
- No single vision for the route
- No accountability for train performance given split of traffic management and timetabling and for route maintenance
- Much greater commercial complexity for users and governments because of increased interfaces

1. Freedom to set all track access (passenger and freight)	2. Freedom to set FREIGHT ONLY flows	3. Traffic Management	4. Capacity allocation	6. Inspection and maintenance across all route		
No	No	No	No	No		
7. Vision Author	8. International Rail Relations Lead	9. Passenger Concession Letting agency	10. No significant commercial freedom/capability	11: Commercial Services Freedom (minimal):	12. Commercial Services Freedom (partial – no extra land):	
No	No	No	Yes	No	No	
13. Commercial Service Freedom (partial – extra land for rail associated services only)	14. Commercial Service Freedom (full):	15. Duplicates existing RB Rail AS governance	16. Minimally modified governance from duplicate RB Rail AS (minimal relaxation)	17. Moderately modified governance from duplicate RB Rail AS (some relaxation + golden share)	18. Fully modified governance structure	19. Rail Haulage offer
No	No	Yes	No	No	No	No

## 2.3. Factors for Consideration

### Overview of factors

The following factors have been considered, discussed in detail in the sections below:

- a) Institutional Factors:
  - a proposed legal framework and shareholding structures;
  - transition from the infrastructure delivery to infrastructure management/operation phase;
  - asset management;
  - funding allocation mechanisms;
  - efficient functioning of the single European railway area; and
  - management of freight and passenger terminal and related railway infrastructure.
  
- b) Technical and Operational Factors:
  - infrastructure maintenance, upgrade and renewal;
  - capacity allocation and management; and
  - cross-border interoperability, technical compatibility and cross acceptance.
  
- c) Commercial Factors:
  - determination and management of Track Access Charges;
  - model of engagement with railway infrastructure users/operators;
  - Rail Baltica business development and commercialisation; and
  - development and provision of additional value-added services.

### 2.3.1. Institutional Factors

#### 2.3.1.1. A proposed legal framework and shareholding structures

Today, equal shares in RB Rail AS are held by SIA Eiropas dzelzceļa līnijas in Latvia, UAB Rail Baltica statyba in Lithuania and OU Rail Baltic Estonia in Estonia in a joint venture that represents all the shareholders' interests equally.

This model recognises the advantages of central project management, with RB Rail representing the overall project and complete interoperability, representing all shareholders interest, capturing cost savings generated by economies of scale with the aim of furthering the unrestricted functioning of the single market and ensuring equal access to the infrastructure.

While not perfect, this structure does function and has permitted the three governments of Estonia, Latvia and Lithuania to work together to develop the Rail Baltica project. This is a significant achievement, but it is not a model that is fit for purpose upon completion of the railway.

#### 2.3.1.2. Shareholding Structures

To consider the potential options for shareholding structures for each of the Options, we need to look at both the detail of the Options themselves and the overall context of the Rail Baltica project today.

At an Option specific level, we can see that the differential between the Core Options under consideration is primarily the degree of commercial freedom for each that will drive a need to change the shareholding structure. Both Options 57 and 63, would not at first sight need any radical changes to the status quo, unlike Option 5, which would require the creation of a completely independent entity, with no effective oversight from the beneficiaries (other than through their regulators) or Option 85, which would not require a shareholding structure as the option would effectively result in no central entity existing.

- Option 57 has minimally modified governance duplicate RB Rail AS (minimal relaxation) and Commercial Services Freedom (Partial – no extra land).
- Option 63 has Commercial Services Freedom (Minimal) and a Duplication of the Existing RB Rail AS Governance.

Versus Option 63, which would maintain the existing RB Rail AS shareholder structure, Option 57 would have the flexibility to engage in low risk commercial activities, the majority of which would effectively provide an ongoing monthly income within minimal management or involvement required on behalf of the RBNE.

Some activities however would require an element of independence for the RBNE from its shareholders. Decisions on how to develop stations in order to make them more attractive as end destinations or to bid for contracts associated with station management (subject to state aid compliance and other relevant legislation) should not be hindered by potential delays caused by the shareholders when the end result is only likely to be additive to the business case.

The risk for interference of this nature or simply the time delay which would result as a consequence of the existing structure is real, but we see that there are a number of different ways which this could be managed.

While a change in the shareholding structure could be made, such that no one shareholder could veto commercial activity, for commercial transactions of this nature alone, this is unlikely to be necessary.

A simpler solution would be that the existing shareholding structure could be retained, but with delegated authority to the RBNE to conduct commercial activity in the defined areas up to a cumulative amount and / or specified transaction limit. Further rules could be put in place with regards to contentious transactions, this protecting the beneficiary positions.

There is therefore little justification for a radical change to the existing shareholder structure based upon the commercialisation elements of the infrastructure manager alone.

When we consider the overall context of the project however, we see a much stronger case for a material change to the shareholding structure.

Rail Baltica is, as a multi-national mega project, inherently politicised. This is not a criticism of any group and in fact, one of the most positive elements seen during stakeholder engagement has been the desire of key stakeholders to extract the best value out of the project for their national benefit, commensurate with ensuring the effective progression of the project. At this stage of network design and development, this is positive as it brings with it passion, enthusiasm and an energy that cannot be bought.

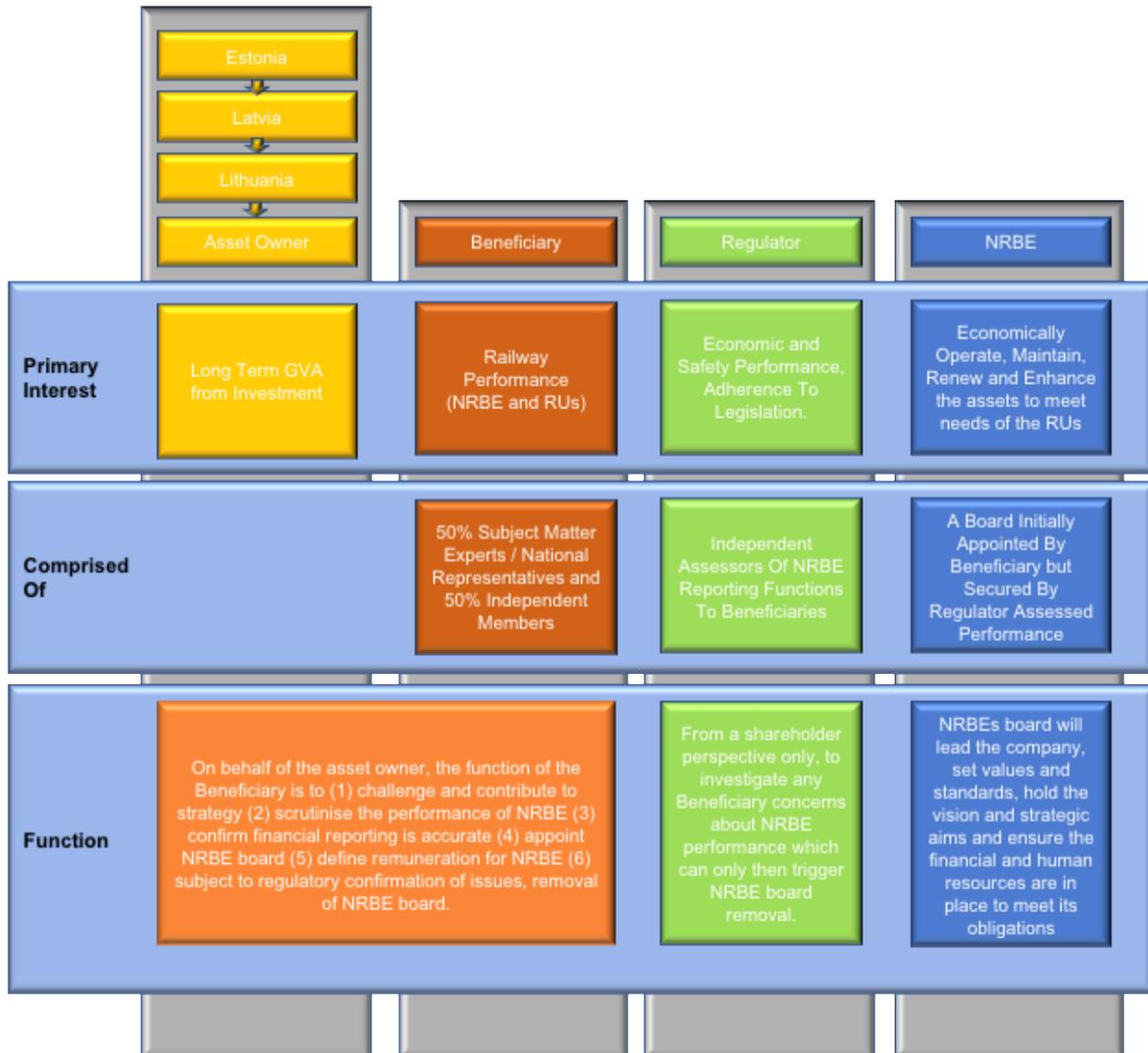
Once the Rail Baltica route is completed however, this will however be negative and could be deemed to be a structure that is contrary to the 'Independence of the essential functions' described in Article 7a of Directive (EU) 2016/2370, in that '*Member States shall ensure that the infrastructure manager has organisational and decision-making independence...as regards the essential functions [AND] ...Member States shall ensure in particular that a railway undertaking or any other legal entity does not exercise a decisive influence on the infrastructure manager in relation to the essential functions*'. This is a particular risk insofar as other infrastructure managers are currently strongly represented in a beneficiary capacity.

In the creation of a new Infrastructure Manager, this however may prove hard to avoid, given that for proper oversight on the operations of the RBNE, checks and balances will need to be put in place to

ensure that it discharges its primary interests and responsibilities, and this will require a level of technical expertise and due diligence.

Atkins has therefore proposed the shareholder structure shown in Figure 2-1 below.

**Figure 2-1 - Proposed Shareholder Structure for the RBNE**



### The Asset Owner

The asset owners should not, except for in exceptional circumstances need to have direct contact with the RBNE. Their interest should be restricted to economic and safety performance, plus how effectively long term Gross Value Add is being unlocked.

### The Beneficial Owner(s)

The role of the beneficiary needs to continue and will act on behalf of the asset owner. The role and behaviours should be challenging but helpful, actively contributing to the strategy of the business – this function will need to understand the overall health of the economics of the route, including therefore Railway Undertaking performance.

We are defining the Beneficial Owner(s) as the representatives of those nation states that gain the benefits of ownership of the railway assets (e.g. a transport or economics ministry) associated with the successful performance of the route, plus an assumed 50% of fully independent members (not nominated by Government ministries) to address prior concerns, introduce a level of corporate best practice and hopefully introduce a buffer against direct political interference in the running of the railway.

The construction of the Beneficial Owner function is not directly part of the Infrastructure Manager, but remains intrinsically linked to how effective the operations of the Rail Baltica route will be.

There are many options as to how this body could be developed, these being:-

- A body bound together only by common agreement, under which the RBNE would negotiate directly with each of the national governments representatives directly, We believe this would add significant overhead, reduce transparency and make the role of independent members difficult, risking the creation of an infrastructure manager with poor governance and oversight.
- A body, without formal legal structure, that meets and reviews the network performance, discharging the duties identified below, meaning that the transfer of subsidies etc., would be direct from the nation states into RBNE. It would act as the interface between RBNE and the national governments.
- A body that is a discrete legal entity, acting as a holding company that channels subsidy through a single bank account into RBNE. It would act as the interface between RBNE and the national governments.

Regardless of the form, the Beneficial Owner structure must be capable of acting as an independent body that appropriately challenges and supports RBNE, discharging key elements of corporate governance; Through the receipt of the annual accounts and performance KPIs, some of which we indicate later in this document (See Appendix B), the Beneficial Owner will need to inform the asset owners that the financial reporting and performance position is aligned with the business plan as well as to communicate their acceptance of the asset condition to the owner.

The Beneficial Owner will be responsible for the appointment of RBNE Supervisory Board Members for a fixed term. Within this fixed term, they shall not be able to remove the directors, except following investigation of performance, safety or financial concerns by the regulator and these being proven OR in the case of allegations of significant impropriety, such as misfeasance or sexual misconduct by an individual. This is designed to provide a buffer against change and political interference in the running of the Rail Baltica route and to let RBNE focus on the operation and development of the railway.

The Beneficial Owner shall also have the obligation to appoint RBNE's auditors and to request the regulatory authority to investigate any aspect of RBNE's operations, though it may not conduct enquiries through any other route, except where it believes a criminal act may have occurred.

The Beneficial Owner shall be responsible for evaluating and approving any future changes to the operating scope of RBNE, where these relate to either incremental operational scope or to new commercial activity, where these items are outside of those originally envisaged.

### The Regulator (Regulatory Authorities)

The role of the regulator will need to be much more visible and active upon completion of the route. RBNE will have minimal competition (although some may potentially emerge from the Amber Train service) and customers will have little choice but to use the route once their supply chains are established.

RBNE will almost certainly not be permitted to issue its own debt, but its debts will have to be guaranteed by the governments of Estonia, Latvia and Lithuania. This means that RBNE will have few financial consequences as an organisation if the business is unable to live within its budgets –

the regulators will need to be strengthened to be able to proactively audit the performance of the RBNE and to act in the interests of the Railway Undertakings where performance is lacking.

## The RBNE

Under both options 57 and 63, RBNEs core focus is to economically operate, maintain, renew and enhance the assets to meet needs of the Railway Undertakings and as such needs to have the flexibility for independent operation, including to operate under the proposed commercial remit, which will naturally be subject to a clear definition as to permitted activity.

Day to day, the board of RBNE lead the company ethically, in line with clear values and standards and with a best in class position on transparency and diversity. They will be responsible for both setting the vision for the business, acting as the international lead for the route, but will also be responsible for operational performance. This means that the RBNE board shall ensure all appropriate financial and human resources are in place to achieve the vision and run a high performing, safe railway.

Given stakeholder concerns flagged during the consultation process about transparency and corruption, the RBNE must demonstrate that it is committed to conducting business in accordance with the highest ethical and legal standards. The integrity of its staff, and those with whom it does business, will be critical to its success. The users of the network, the general public and stakeholders have every right to expect that professional, competent and trustworthy people are working in the new entity.

As a result, the Beneficiaries must ensure that the new entity is established in a manner which ensures the high standards of openness and transparency and that staff will act in a manner which is congruent with the image and obligations that will be portrayed. A company constitution should be developed to reflect this.

Any individual working for the organisation will therefore be expected to adhere to a clear Anti-Bribery and Corruption Policy, even though this could in some cases be stricter than existing national laws. The new entity must take a zero-tolerance approach to bribery and corruption and must be committed to acting professionally, fairly and with integrity in all its business dealings and relationships wherever it operates.

## General

This model of shareholder governance would not be applicable to Option 85 and would not be appropriate for Option 5, due to the level of oversight on operations and economic performance which is imposed. In the long term, subject to successful commercialisation of the initial scope, it would be sensible for the scope of permitted commercial business to be expanded subject to regulatory approval (for similar products and services), but for major changes to be retained by the Beneficiary for approval.

### 2.3.1.3. Transition from the Infrastructure Delivery to Infrastructure Management/Operation Phase

At the point of transition from infrastructure delivery to an infrastructure management operation, the RBNE will need to obtain data from different parties to determine the condition of the assets which will form the route. This information would be common for Options 5, 57 and 63.

The same information should also be required based upon professional standards under Option 85, but as there would be no risk or liability passing to a central body, the effect would be negligible with regards to the operation of the route (save for in the event of trans-national systems), provided that each party retained liability for its geography. Examples of these are shown below-

**Table 2-1 - Information Required**

Stakeholder	Commercial	Corporate Knowledge	Asset Data	Safety
<b>Stakeholder Information</b>  e.g. records of disputes regarding local issues such as the noise of trains at a particular location	<b>Snagging</b>  e.g. work that a contractor does not / will not complete that the maintainer will resolve in exchange for financial payment.	<b>Risk Register</b>  e.g. Risks that have been identified during the construction phase that need to be actioned by the RBNE.	<b>Asset Management Plan</b>  e.g. Instructions on how the asset needs to be maintained based upon what has been built	<b>Safety Risk Logs</b>
<b>Legal Disputes</b>  e.g. Information on ongoing legal disputes which could impact the future management of the asset or provision of the service.	<b>Actual Cost Reports</b>  e.g. The actual cost spent on the construction of the asset, used to help inform the value of the regulated asset base.	<b>Lessons Learned</b>  e.g. Information regarding the construction of the asset that may be useful with regards to future renewals or enhancements.	<b>Safety Verification</b>  e.g. Confirmation that the assets are safe to be maintained and are accepted into service. This marks the transfer of liability for asset management from into RBNE.	<b>Health and Safety File</b>
			<b>As Built Records</b>  e.g. Detail of what has been constructed, as opposed to what was designed.	<b>Test &amp; Commissioning Logs</b>

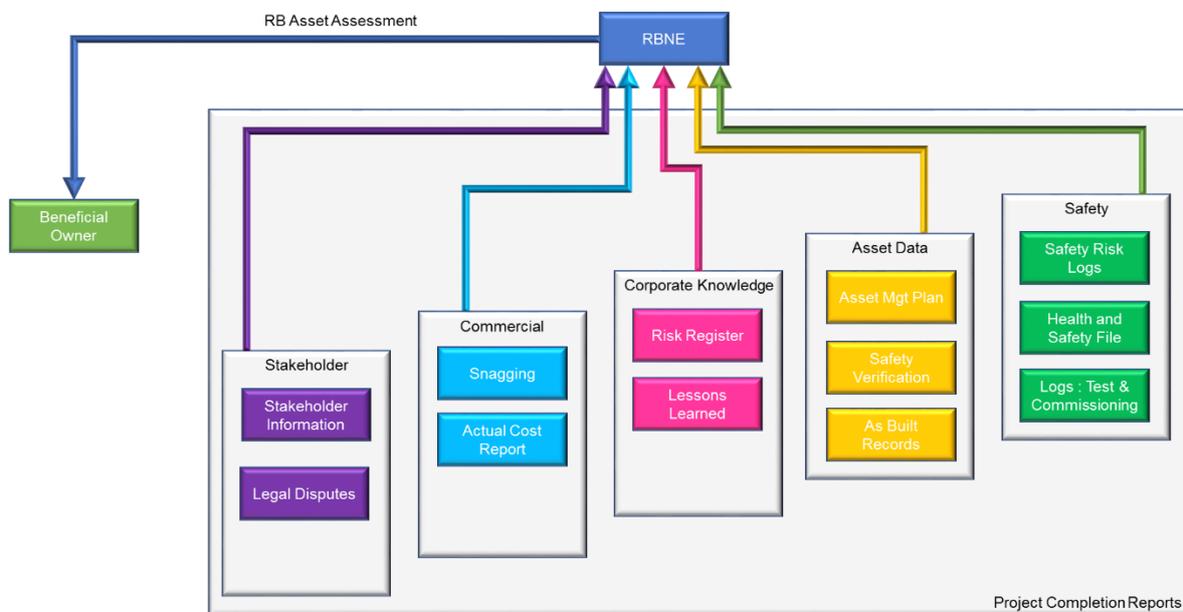
What changes under each option is the impact that this information would have upon the end entity and the requirements and liabilities that flow through to the beneficiaries.

While the aspiration with any construction scheme is that programmes are delivered to the right quality, at the right time and to the right cost, the reality is that the Rail Baltica project will encounter change, some positive and some negative.

This means that issues such as assets being installed differently versus design may emerge, different risks may be identified, items may not be built to the standard procured or indeed, completed at the point of handover, while stakeholders (typically lineside neighbours) may have raised issues during the construction of the line that must be managed thereafter.

This means that pre-acceptance of the assets (noting that this does not imply ownership), the RBNE will need to conduct an audit of the required information to ensure that it accepts into service the assets as expected. Failure to do this could impact both the reliability of the network, but more practically, would result in unidentified liabilities flowing back into the beneficiaries. This could result in the requirement for a funding adjustment to be made to the RBNE from any or all of the beneficiaries.

**Figure 2-2 - Transition to Infrastructure Management**



Atkins would recommend that a mechanism for determining how any such liabilities arising are funded.

#### 2.3.1.4. Asset management (consider, propose and compare different relevant models)

While Option 5 would have resulted in a potentially large number of commercial activities, we believe that a number of the commercial options in this scenario would have resulted in the RBNE not having control of all its assets and therefore a reduced asset management role would be envisioned. For Option 85, assets would have become the responsibility of the national infrastructure managers, meaning that there would have been a significant risk of diverging asset treatments, both in methodology and in intervention type (e.g. heavy maintenance in lieu of renewal), leading to a complex risk profile to manage for the route as a whole.

For both Options 57 and 63, the RBNE holds very traditional responsibilities in terms of infrastructure management, covering the lifecycle through design, construction and operation through to renewal and disposal and the consequences of each activity. The objective being to *ensure “Systematic and coordinated activities and practices through which an organization optimally manages its assets and their associated performance, risks and expenditures over their lifecycle for the purpose of delivering the organization’s business objectives.”*<sup>89</sup>, the way in which this is discharged for RBNE is therefore not dictated predominantly by the nature of the options, but by the nature (and scale of the route) and the economies of the network.

The fact that Rail Baltica will be a new asset and as such, presents the opportunity to have a different approach to asset management from that seen on most of the national networks of Estonia, Latvia and Lithuania.

The rail infrastructure will come with many aspects of remote condition monitoring and intelligent infrastructure already enabled (e.g. modern points heating reports its own performance status, while S&C units report a range of data including the time taken to move a switch). This means that Rail Baltica has a range of asset intervention treatments open to it for maintenance, ranging from ‘Find and Fix’, to ‘Fault Detection’ to ‘Predict and Prevent’.

Given that the infrastructure itself will be enabled with the latest technology, we see no reason for either Option 57 or 63 not to operate with a maintenance regime based on ‘Predict and Prevent’. This means that the rail assets are monitored using non-intrusive techniques. By Measurements are collected by data loggers which are then transmitted to a centralised alarm/alert processing and storage platform.

This will enable the RBNE to:-

- Detect faults earlier than we would anticipate to be the case on the existing national infrastructures (our working assumption for Option 85), with operational and maintenance processes specifically aligned to optimise these.
- Predict faults to allow for planning of remedial works, maximising the number of train paths available through lower levels of disruptive possessions, helping protect the business case.
- Understand asset behaviour to assist in making a case for changing the maintenance intervention intervals, optimising the workforce and informing the make / buy decision for maintenance resource requirements.
- Better understand the useful life of an asset for renewals planning purposes, enabling better long-term cost forecasting and demonstration of asset performance to the beneficiaries.

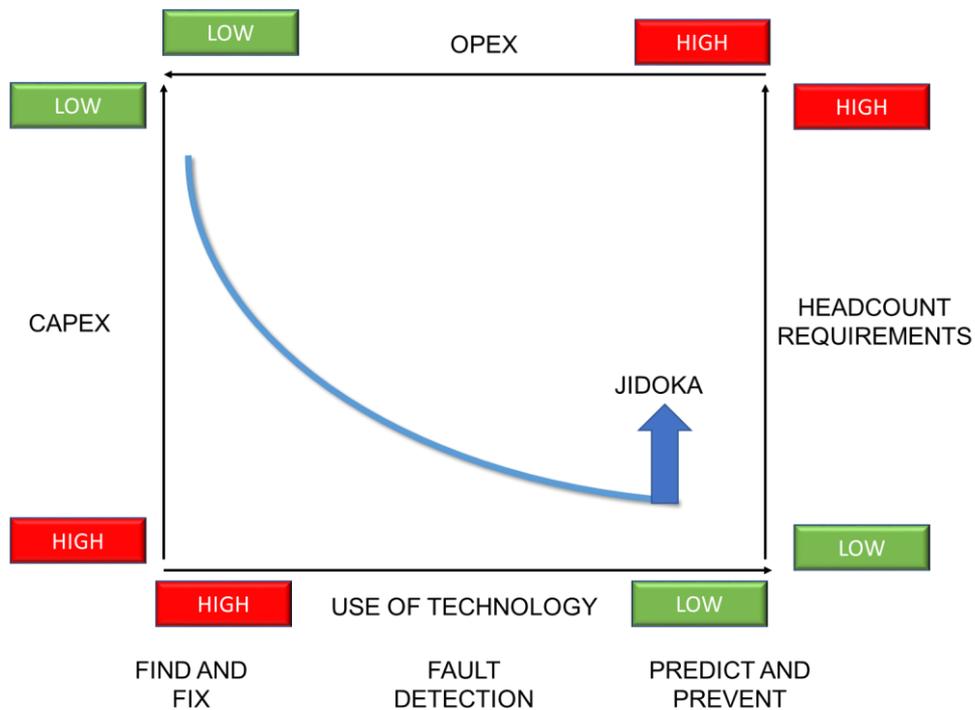
The efficiencies associated with this we have baked into our headcount assumptions, though we would recommend that in the Business Plan sufficient funding is in place for strong human component to front line asset management. The reason for this is that, while there are a great deal of positives

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<sup>89</sup> PAS 55-1

around intelligent infrastructure as the basis for asset management, the reality is that the maintenance workforce will remain key to Rail Baltica’s success – balance is needed, something that is often forgotten in the push towards a digital railway.

**Figure 2-3 - Balanced Asset Management Under Intelligent Infrastructure**



The reasons for this are fundamentally simple. Firstly, Remote Condition Monitoring cannot be placed everywhere. No matter, how small, how cheap, how specialised the devices, the RBNE will need to operate and maintain 870km of track. While RCM devices can report their own condition, and be remotely interrogated, the one thing they are not is ‘intelligent infrastructure’.

Intelligence comes from people, not devices. Value comes from the individuals who design the algorithms and detection flags that identify a condition has changed and intervention is now required. These are what trigger changes in maintenance cycles – when there is a shift from reacting to the red alert of an asset flag to an understanding of how intervention patterns can be improved. This is what reduces the frequency of maintenance staff working trackside and improving both safety and performance.

But an effective asset management model for the RBNE must go deeper than looking to technology for a solution; the need for human intelligence is no less reduced when we look at the role of the frontline maintenance teams versus the need for advanced engineering knowledge to sit behind the hardware and software.

Remote Condition Monitoring works well where there are key elements of fixed infrastructure, where there is a solid understanding of the failure modes of an asset, but they give us a narrow field of vision on a tiny fraction of railway infrastructure and that is where the role of frontline maintenance teams remain key.

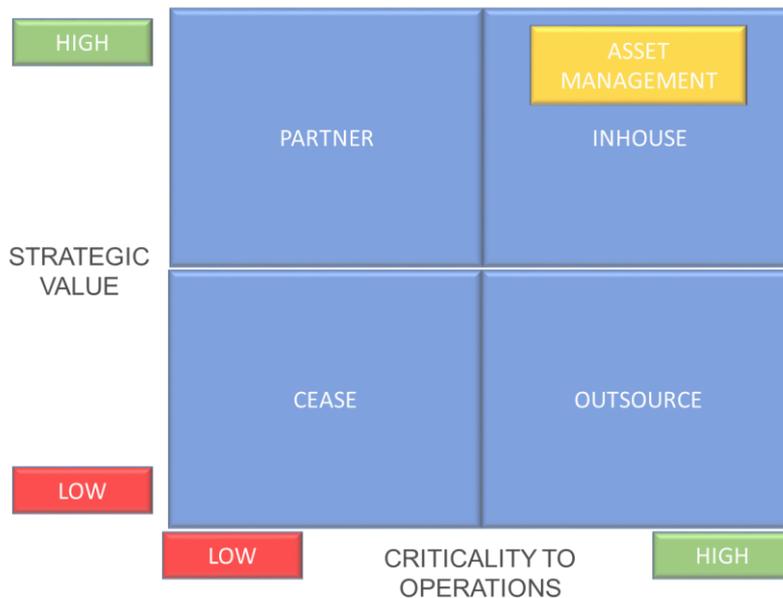
People are the most evolved, best piece of 'hardware' on the face of the planet, capable of recognising patterns and risks in a manner that remote monitoring cannot. A maintenance operative will notice a rusted bolt standing out in a sea of galvanised metal – there may still be a weak feedback loop, poor process that stops that item being flagged, but sensors cannot be pointed everywhere. Maintenance teams do not just give us eyes on the ground, they place intelligence to the infrastructure –after all,

machines do not improve processes and building an inclusive culture that genuinely values the skills of these individuals will be key to a successful asset management organisation for the RBNE and something that emphasises that RBNE will need to invest time and money developing positive relationships with its workforce, whether insourced or outsourced.

Together, Rail Baltica can create a first for a railway infrastructure manager and create a model akin to 'Jidoka' - automation of the railway with a human touch - working with technology to improve efficiency and to close those feedback loops through an empowered workforce.

The people and technology platform for asset management is at the heart of the effective functioning of any infrastructure manager and with high strategic value, consequences that are critical to operations in the event of failure means that delivery of asset management functions are invariably in house and we see no reason why this should not be the case for Rail Baltica in principle (Figure 2-4).

**Figure 2-4 - Make Vs. Buy – Asset Management**



Notwithstanding this, we recognise that the Rail Baltica line is disruptive in the region from an asset management perspective, in that it introduces new assets which are unparalleled, such as the high speed rail element. This means that it may prove difficult in the near term to recruit certain elements of the asset management team and so we have looked at the potential benefits of alternative models.

**Table 2-2 - Insource and Outsource Model Assessment**

Asset Management – Model Assessment		
Model	Pro	Con
<b>Inourced</b>	Creates a clear single point of accountability, builds the organisational competence and capability that is required to understand and manage the asset in the longer term.	Creating an organisational structure and filling those roles may prove challenging in the near term, particularly without increasing salaries to attract individuals with skills out of the existing national infrastructure managers. This is a genuine issue and has been seen in the UK, where schemes such as HS2 have resulted in salary increases in the national RBNE to counter offers seen.
<b>Outsourced</b>	Potentially a near term benefit in the event the infrastructure manager is not agreed by the beneficiaries; a contract could be let to manage the line in terms of pure asset management in short timescales and there are a large number of companies across Europe with the technical competence to deliver this.	While the competency of the companies performing asset management could be robustly established, the principle of direct control and accountability would remain obfuscated without direct ownership and could not be deemed acceptable in the longer term.
<b>Hybrid</b>	A hybrid model for asset management, whereby either (a) An agreement to second personnel from the national IMs into the RBNE is put in place or (b) contracts are let to provide incremental support would provide significant benefit in terms of reducing risk for the RBNE, particularly around recruitment and the need to rapidly establish a competent organisation.	There are few negatives in the longer term for this model, provided that the core staff in the RBNE have very high levels of competency and seniority that enable them to manage and direct those elements of the business that are let to the market.

Atkins recommendation is therefore that a hybrid asset management model is established for the RBNE, noting that over time it would be preferable for this to migrate into a wholly inourced model; this position would be unaltered for Options 5, 57 and 63. While it would not be applicable to Option 85, it would provide the benefits of the competencies of the existing national IMs in asset management around those assets which are common to all railways, such as track bed, drainage and structures. During their review of the document, at this point ProRail noted they have a *'good experience in terms of performance related to costs with outsourcing maintenance by tendering'*.

## Addendum

New technologies bring the opportunity for future cost savings and efficiencies in asset management, provided that they can be appropriately sourced from the market. High speed measurement trains (operating at line speed) can measure both track condition and OLE performance in addition to mapping GSM-R and ERTMS signal (wireless) performance.

Information on track geometry – the shape and profile of the rail head, and the twist of the track and even items such as missing clips can all be detected, reducing the risk of lineside inspection without traffic disruption.

There are however some challenges with the deployment of technology of this nature onto the Rail Baltica route. Setting aside the fact that the organisation would need to invest significantly in IT to manage the c. 10TB of data generated per train run (estimated based on c. 1TB of data per 77km), the economics of a dedicated train (while still needed a business case review) are unlikely to be viable for a line of this length and the frequency of train runs based upon a dedicated asset would likely be excessive.

While it is reasonable to note that some fixed elements of remote condition monitoring will be undoubtedly deployed on the route (e.g. POE performance, wet beds in risk areas, core SCADA systems etc.), many assets cannot be economically monitored using fixed technology. This element of asset management should therefore most likely be sought to be bought in as a managed service for RBNE.

### 2.3.1.5. Funding allocation mechanisms (national, EU, market sources, hybrid);

In looking at the potential outcome and requirements for funding mechanisms, Atkins has looked at the typical sources of funding and financing in the context of stakeholder feedback. These are shown in Table 2-3 below.

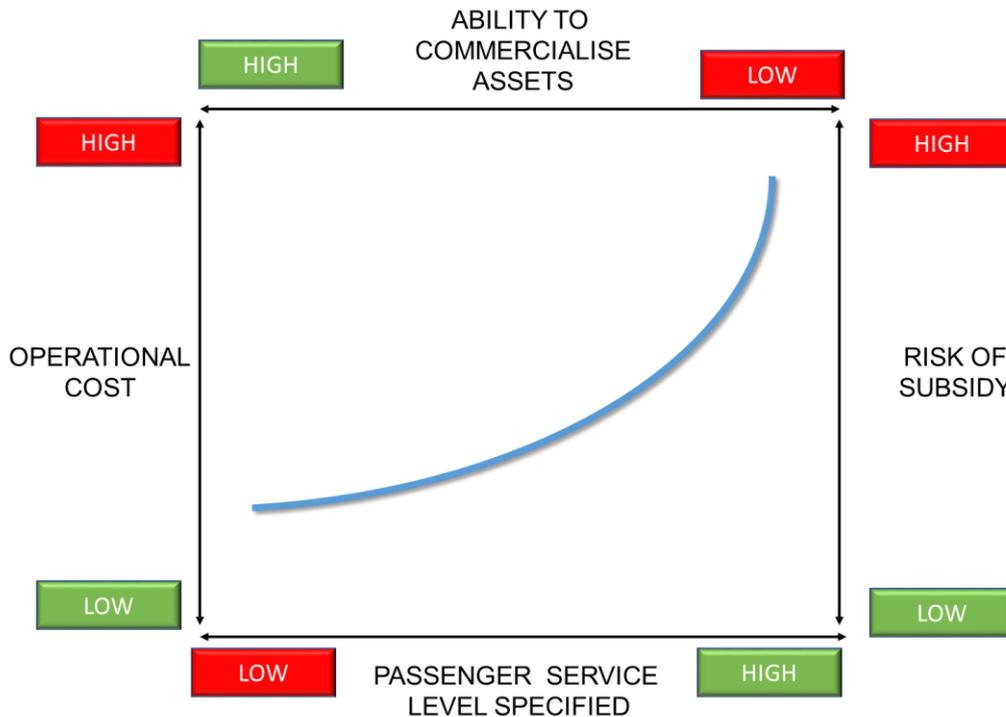
**Table 2-3 - Assessment of Funding / Financing Sources**

Funding Allocation Models		
Model	Position	Likely Outcome
National	The stakeholder engagement process has revealed that all the national governments have a hard line in that they are not prepared to cross subsidise the performance of the Rail Baltica Route on other national territories.	Funding allocation process needs to be mapped to ensure that the operational viability of the line as a whole is achieved while eliminating the risk of cross subsidy.
EU	Currently, EU funds come from a variety of sources, such as the Trans-European Networks programme and its related financial instrument, the Connecting Europe Facility, Structural Funds and Cohesion Funds as well as the European Fund for Strategic Investments (EFSI) as a part of the so-called Juncker Investment Plan.	EU funds are predominantly focussed on up front capital programmes and we do not envisage any funding coming from the EU once the line reaches operational status.
Market Sources	Under no circumstance do we believe that market sources would prove sufficient to finance the ongoing operation of the line, noting that such a model would also present significant operational risk for any infrastructure manager due to the pressure on operational cost and safety performance. There are however opportunities for the market to provide a positive contribution to the operational costs of the route; these are expanded on in the Hybrid section.	Not an option for the financing of the ongoing OPEX of the line, except in part.
Hybrid	For Option 5, there would be the opportunity for significant investment in the railway assets (but with consequential risk), while for Options 57 and 63, we would anticipate that there will be a modest level of income that will reduced the risk of subsidy being required. For Option 85, the potential exploitation of the assets would be greatly reduced, particularly in terms of long distance wayleaves and the outcome would be unsure due to potential differing appetites in commercialisation.	Based upon the risk profiles for commercialisation of this nature in the Multi-Criteria Analysis, we do not believe that there would be any disadvantage to the pursuit of a hybrid funding model and this is our recommended option.

The importance which the stakeholders all placed on non-subsidy of other national territories is held to be sacrosanct from the purposes of our analysis; Atkins recognises that despite the fact this might present challenges to operation of the line in some circumstances, the political implications of doing otherwise would be unacceptable.

This does not however mean that the RBNE will not at some stage need a subsidy in the form of a network grant – something that can be driven by a range of obligations being placed on the infrastructure manager, not just as a consequence of the performance of the line. This is shown in Figure 4 below.

**Figure 2-5 - Relationship between Passenger Service, Commercial Activity, Cost and Subsidy**



At this point, while Atkins has had access to the operational plan for Rail Baltica and the business case would appear to indicate that in the long term, no subsidy for the infrastructure manager should be required, it is considered that the funding mechanism for RBNE must take into account this risk, there being a number of risk factors to this being the case, specifically;

- Unknown willingness of Railway Undertakings to operate services on the line, meaning unpredictability of Track Access Revenues
- Consequences of Railway Undertakings bidding for the franchise at an unsustainable price, meaning negotiations to reduce track access charges result. ProRail noted at this point that this has not been the experience for Dutch HSL, although Atkins still identifies this as a risk.
- Increased competition from Open Access operators impacting franchise revenues (and out with the control of the RBNE, this being a regulatory decision)
- Service levels being defined politically, resulting in increased operational costs (e.g. reduced time for possessions, more track wear etc.
- Asset degradation worse than predicted due to construction issues.

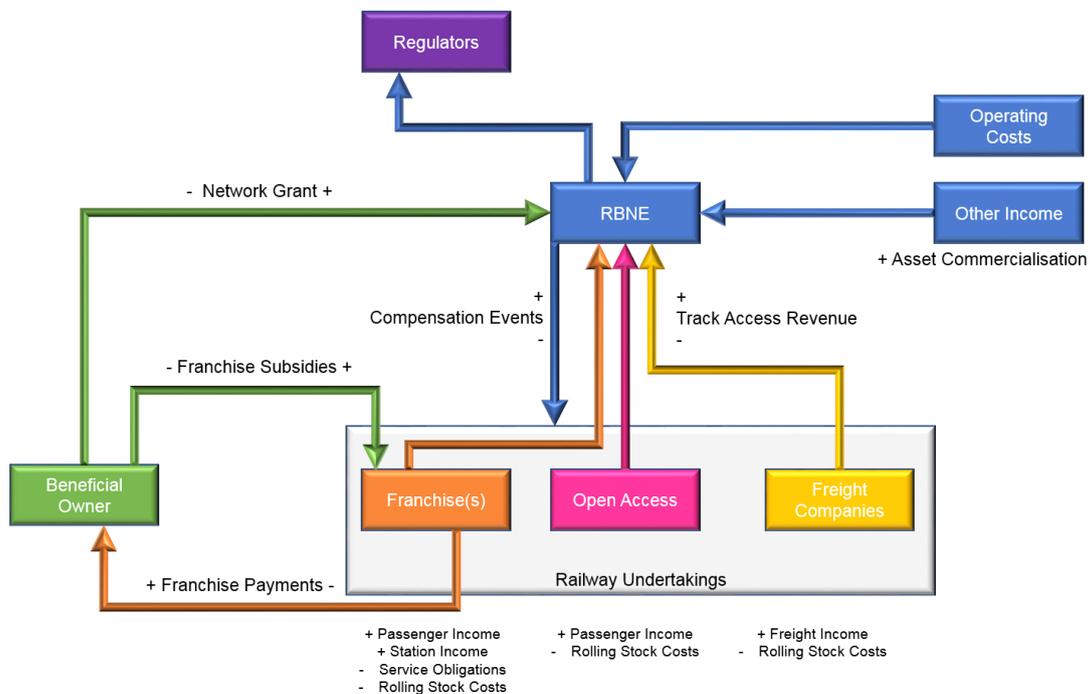
The complexity of managing these risks is one reason why rail franchises are frequently evolving into outsourced management contracts, with governments specifying exactly what service they wish, rather than letting the market decide. This is generally more politically acceptable in that it gives the travelling public a well understood and predictable service that helps unlock the wider socio-economic

benefits of the railway, but does carry with it a higher initial risk that the franchise service negotiation becomes one focused around who will operate the service for the lowest subsidy.

The Options under consideration each have different risks in being able to mitigate the risk of subsidy being required. Option 5, if successful, could be able to generate significant commercial revenues, but with a much higher risk of exposure to the beneficiaries, while we believe that Option 85, in light of the complexity which would result in the development of an Open Access operations, would actually have a lower risk profile in terms of potential variance for track access charges (whole route level competition would be less likely), despite the fact that achieving the overall business case would be considerably less probable – the risk of subsidy here would fall in the context of the overall viability of the route.

Options 57 and 63, carry neither material advantage nor disadvantage in terms of subsidy (although Option 57 carries a minor reduction in potential requirement due to the potential for modestly higher commercial revenues), but are balanced positions that come with a well understood risk profile and they therefore form a pragmatic base from which we can construct an appropriate funding model, as shown in Figure 2-6 below.

**Figure 2-6 - Proposed Funding Model For RBNE (Options 57 and 63)**



The chart above describes the money flows for the New RB Entity under Options 57 and 63. The Beneficial Owner would hold the risk for the passenger franchises, paying any franchise subsidies required and receiving franchise payments. It would also fund the New RB Entity via the Network Grant.

In addition to the Network Grant, the RBNE's primary income would be from Track Access charges from the Railway Undertakings (Passenger Franchisees, Open Access Operators and Freight Companies), with any income from Asset Commercialisation and other activities in addition.

Income from these sources would primarily be funding the day-to-day operating costs of the RBNE, as well as paying a regulatory charge and paying any compensation owed to Railway Undertakings in the case of disruption.

### 2.3.1.6. Efficient functioning of the single European railway area (promotion of competition and market participation; reduction of entry barriers of entry; avoidance of protectionism)

In order to maximise the efficiency of the single European railway area, we must first establish the characteristics of an efficient railway system. Broadly, these are the following:

- Competitive passenger fares;
- Competitive freight charges;
- Effective use of network capacity;
- Operational efficiencies for railway undertakings (efficient use of staff/resources);
- Incentives to maximise service quality and provision; and
- Incentives to reduce cost.

For these aims to be realised, the Infrastructure Manager must itself be an efficient organisation. A key element of this is cost control. In order to minimise access charges, the RBNE must ensure that the railway is maintained at the lowest cost (without compromising on outputs). This must not come at the expense of capacity provision, however. This shows the delicate nature of RBNE incentives – for instance, maximising network utilisation and maximising reliability can often be contradictory aims; incentivising the former can lead to a situation in which the RBNE is reluctant to grant new path requests; the latter, a cavalier attitude and over-confidence in the provision of new capacity. Thus an efficient RBNE must be able to both control costs and manage its own workload without becoming unduly risk-averse. This is most likely to occur when the core functions of the RBNE are undertaken by a single body with defined responsibilities.

If core functions are undertaken across multiple national organisations (as in Option 85), this will likely lead to inefficiencies in managing the interactions and a failure to capitalise on possible synergies across the route. If the RBNE is responsible for many functions other than the core functions (as in Option 5), is it less able to make the efficiency of the core functions its sole focus. Thus Options 57 and 63 are likely to result in the most efficient RBNE in this regard.

The efficiency of the railway is likely to be maximised when competition is greatest. Such competition takes different forms in different elements. For maintenance, outsourcing by means of a competitive tender enables the most efficient bidder to be selected. For passenger services, best practice in market competition elsewhere is a franchising system for primary operators, with open access operators alongside.

This approach relies mostly on competition for the market, rather than competition in the market (although open access operators do provide some competition in the market). This is optimum due to the difficulties of pricing paths when sold individually. For freight, competition is maximised with transparent and predictable access charges, so new entrants can enter on level terms with established operators.

Options 5 allows market pricing of freight track access, which would be detrimental to the aim of transparency of access charges. Options 57, 63 and 85 do not have this freedom. Protectionism is encouraged whenever capacity allocation is left to individual member states, as is the case in Option 85.

Options 57 and 63 are thus likely to be the most efficient, as their small organisation size will discourage monopolistic behaviours and their limited remit will allow an undivided focus on the efficiency of core functions.

With Option 57 and 63 being smaller organisations, this will discourage the likelihood of protectionism in respect to freight terminals, as well as nepotism and the access barriers to foreign operators. The smaller nature of their organisation will mean they focus on the core functions of such organisation.

Option 63's lack of any significant commercial freedom will allow the efficiency of the core functions to be its sole focus to a greater extent than Option 57. If the share structure of 57 were to be modified from that of RB Rail AS, that could lead to inefficiencies in decision-making, requiring the agreement of all three beneficiaries to make decisions. Option 63, with its simpler remit, would be a much slicker organisation, having clearly-defined tasks that it could undertake with a simple majority backing, and its relative lack of significant commercial freedom would allow the efficiency of the core tasks to be its sole focus.

### 2.3.1.7. Management of freight and passenger terminal and related railway infrastructure

The Union markets for rail freight services and international passenger transport services by rail have been opened to competition since 2007 and 2010 respectively, in accordance with Directive 2004/51/EC of the European Parliament and of the Council and Directive 2007/58/EC of the European Parliament and of the Council.

The success of Rail Baltica in delivering economic growth is strongly linked to its ability to facilitate growth in fully interoperable and commercially sustainable freight traffic. Key to this is the effective governance of freight terminals on the route.

In Europe, most rail networks have been managed by national governments until recent times, so terminals remain predominantly under state control, despite being operated in the most part by private (or quasi-private) operators. However, our benchmarking has identified that questions have been raised regarding the effectiveness of further public investment in terminals due to the difficulties of economically viable operation once the sites are built. According to the Transport Research Institute's 2013 study (co-financed by the European Regional Development Fund), *"developments driven by the public sector due to motivations of regional development can run the risk of oversupply"*.<sup>90</sup>

The same report states that the advantages of greater private sector involvement *"include increased efficiency and reduced cost to the public sector"*. A further report by Rickard Bergqvist of Gothenburg University suggests that, where a public actor wishes to monitor whether the terminal is achieving the goals for which it was funded, that may be achieved by granting a long lease on a 'peppercorn' rent.

This leaves the private operator free to invest as they see fit, whilst the Infrastructure Manager retains effective control in the event that anti-competitive practices are occurring, or the site is not being used. The report states that *"in the UK, the current model of long leases with few conditions makes management simpler for the public actors, meaning that they do not have the daily operational difficulties and entanglements that the Swedish actors experience [running the Swedish public terminals]"*.<sup>91</sup>

There are broadly four models for the ownership of terminals associated with the Rail Baltica route (Table 2-4):

<sup>90</sup> Transport Research Institute (2013) 'GreCOR WP4 project report' Governance Framework

<sup>91</sup> Bergqvist, R. and Monios, J. (2014) 'The role of contracts in achieving effective governance of intermodal terminals', *World Review of Intermodal Transportation Research*, Vol. 5, No. 1, pp.18-38

Table 2-4 - Ownership Model for Freight Terminals

Model	Market ownership	RBNE as landlord	RBNE provides managed service	RBNE as operator
RBNE involvement	Very low – terminals constructed on private land. RBNE provides connection to rail network only	Low – terminals constructed by RBNE or public sector and leased out to private sector operators, often at low rent	Medium – RBNE or public sector owns terminals and all associated infrastructure, including signalling, cranes, etc. Operator contracted via a competitive tender.	High – RBNE or public sector owns and operates all terminal infrastructure
Pro	Low commercial risk, as terminals constructed by private operators where there is demand.	Some supervisory control over terminal use, so anti-competitive practices can be prevented, and poor utilisation of terminals can be challenged.  RBNE/public sector takes no commercial risk for terminal operations, whilst retaining some control over the practices.	Increased public control of terminal operations, with the ability to specify what services should be offered and to choose between operators in the tendering process.  Ability to offer services from day one, speeding up the initial growth of freight operations.  Ability to pass commercial risk of maintenance onto private operator.	Increased public control of terminal operations  Ability to offer services from day one.
Con	No supervision of terminal operations <i>inter alia</i> .  Consequential risk of discriminatory practices.  No ability to encourage freight growth	Low rents provide little incentive for efficient use of terminals  Freight operations may take a while to establish, due to the initial outlay required to set up operations	Reduced private-sector innovation, leading to the risk of low efficiency  RBNE responsibilities no longer just the core functions, leading to risk of distraction.  RBNE/public sector takes commercial risk, providing a service without any guarantee of demand.	No private-sector innovation, leading to risk of low efficiency  RBNE less able to focus on RBNE core functions, risking successful delivery of the RBNE's core remit.  RBNE or public sector takes commercial risk for successful delivery of terminal operations.

There are benefits to having the RB RBNE or the national IMs operating the terminals, namely the increased control over activities and ability to facilitate investment and expansion. However, in our view, these are outweighed by the widespread benefits of opening up terminal operations to private-sector involvement using a hands-off landlord model, something which our earlier stakeholder engagement would indicate was supported by existing commercial operators.

This would allow the market to invest in freight terminals where it would be economically viable, whilst retaining the ability to keep the market in check and ensure that such terminals are being put to good use. This would also reduce the likelihood of anti-competitive behaviours arising due to a single entity having charge of all of the freight terminals and a point that was flagged as an existing concern by regional freight forwarders.

If any option other than the market ownership option is to be chosen, then there remains the question as to who should be the owner/operator of the terminals, in the case that a new RBNE entity exists. Under Option 57, the new RBNE entity would have commercial freedom to offer railway and non-railway services on land already allocated for railway use, so could feasibly act as a terminal operator.

Under Option 63, however, the RBNE entity could not offer non-railway services, in particular storage or ancillary terminal services. This means that, in practice, it could not operate the terminals, due to inability to offer key services such as storage. Clearly, Options 5 and 85 do not restrict the role of RBNE or the public sector (respectively), as in each case the RBNE has full commercial freedom.

Under the recommended options, the new RB RBNE would be responsible for maintenance across the Rail Baltica route, and thus it makes sense for it rather than the national IMs to be the owner of any terminals connected solely to the Rail Baltica route (unless the terminals were to be in private ownership). However, under the Options identified in the MCA as the most effective model for the route, RBNE would not have the commercial freedom to purchase extra land for further terminals beyond that which had already been allocated for railway use; any further terminals would have to be built and operated by the private sector. This is a commercial compromise reflecting how the MCA balances commercial risk and benefit which could be accrued by such activity in the open market.

If RBNE were thus to take on the operator role or to provide a managed service, it would bear commercial risk for the success of its own terminals, without the ability to compete on a level playing field with private terminal operators elsewhere, although for the avoidance of doubt, this should not preclude the RBNE from being ceded or granted further land in the future from national bodies for the purpose of further development (the exclusion being restricted to the commercial purchase of new land which would carry with it significant risks with regards to State Aid.)

For this reason, it is recommended that the RBNE take on the landlord role. We have also been unable to identify any precedent for a public sector, multi-state Infrastructure Manager running terminal services.

The role of landlord has significant advantages over the pure market-driven model. It would allow RBNE to ensure that terminal operations were not undertaken in an anti-competitive manner, and to ensure that any private operator made good use of the facilities.

Thus, it is the recommended ownership model for either of the recommended options. Having terminals operated privately encourages healthy competition between terminals, which will encourage efficiency, drive down costs, and reward innovation.

This recommendation is however caveated; while Atkins primary view remains that the best possible outcome in the long term for the route will be the development of healthy commercial engagement, the risk of facilities not being developed by third party commercial organisations remains a real one which could jeopardise the business case.

Numerous freight providers have stated their commitment to invest into Rail Baltica freight terminal facilities, though this can only be treated in principle at this stage. We therefore believe that RBNE should develop a contingency plan which allows them to step in as a backstop provider of services, commensurate with enabling the appropriate management of intermodal logistics services.

While early market engagement will prove essential to mitigate this risk, development of the contingency plan should also be done in advance, in order that if 3<sup>rd</sup> parties have not made the required investments to deliver services within 12 months of the line opening, RBNE can directly start operating elements of the facility, either directly or under outsourced service contracts.

This may require the advance purchase of some items for material handling e.g. cranes or gantries. If not required, these could either be free issued or the leases passed on to the site operators.

While some terminals on the route will be effectively completely 'new' and our recommendation is that in these instances RBNE acts as the sole landlord, far more instances will exist where RBNE will need to operate alongside other operators. In some cases, such as Muuga, this will be the case because RBNE will neither hold all the core competencies to operate those facilities, nor would such scope be close to the remit of a rail infrastructure manager. For others however, effective relationships will need to be established with other infrastructure managers, particularly at cross over points between the 1435 and 1520 network.

This will be driven both by natural breakpoints in signalling control and traffic management systems, but also be heavily influenced by commercial relationships. With c. 1/3 of freight traffic entering the Rail Baltica network from the 1520 network, the maturity of these relationships must be established early on, with both parties recognising the mutual advantage of working together.

The driver for this must be to ensure that the two networks operate effectively, with minimal delays or bottlenecks in transshipment, caused by poor alignment of handling and shipments. While we would expect common interface and working plans to be developed, with alignment of working plans, employee shifts and the such like through mutual agreement, ideally, we would see train schedules (inbound / outbound) being appropriately sequenced to optimise facility throughput.

At this stage, we do not have confidence that these relationships will naturally arise and therefore strongly recommend that a working group be established with those facility operators RBNE will need to interact with that seeks to establish collaborative working principles (in line with ISO 44001) and also to investigate whether mutual pain / gain contractual relationships should be introduced to optimise throughput.

**Recommendation:** RBNE to act as the landlord in the first instance, to establish joint contractual performance based relationships with the other Infrastructure Managers at shared facilities and to commence operations with a back up plan in case market investment in freight terminals does not materialise as anticipated.

## Passengers

For passengers, the situation is in some ways simpler. Stations ideally need to be managed by a single operator, due to the need for operational coordination and common safety management systems. For existing stations, this would result in the existing operators also taking responsibility for any new Rail Baltica specific infrastructure.

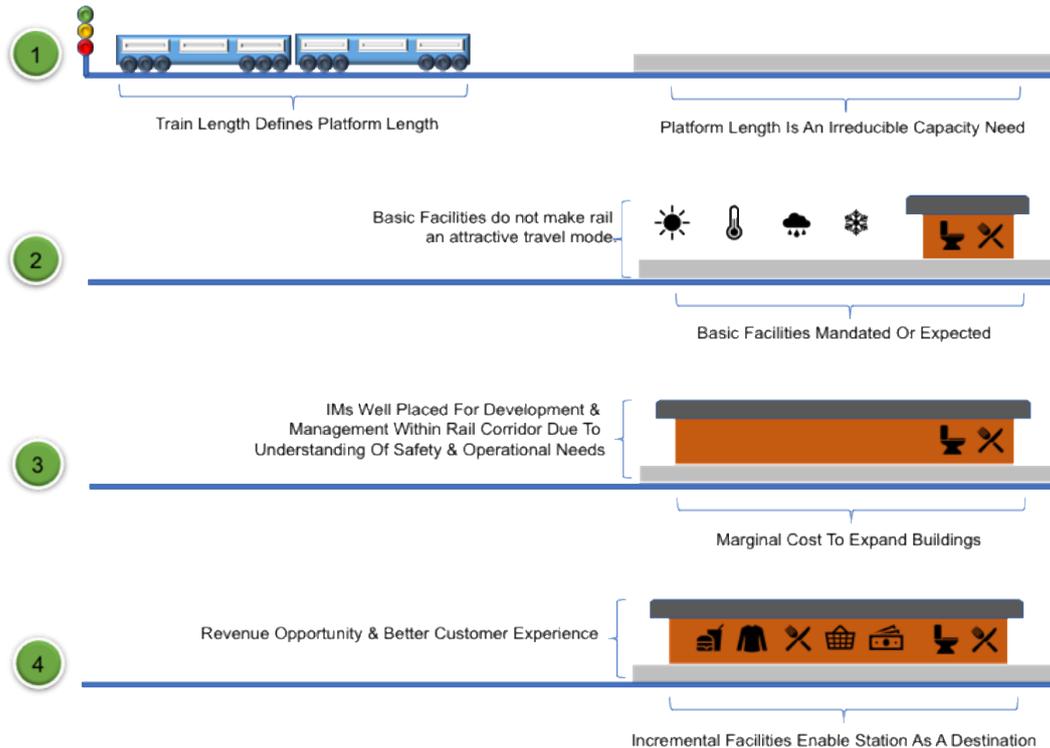
New stations (those where there is no incumbent infrastructure operator) could be managed by RBNE, by the primary Railway Undertaking operating passenger services, or by a third party. There are arguments that management by RBNE could incentivise best practice regarding dwell times (as it would be easy for station staff to communicate with Traffic Management teams), customer experience, and station development on the route – this therefore indicates that train despatch and control would benefit from RBNE control. ProRail noted at this point that RBNE could gain extra revenue from operating stations on the route.

However, any new stations are likely to be lightly used, at least at first, due to the low service frequencies. This means that any benefits in passenger information, dwell times, etc. are likely to be small. Thus, it is recommended that the primary Railway Undertaking operate the stations, in order that they are responsible for the experience of their own customers and can present a consistent brand to them. This customer experience can be extended by the Infrastructure Manager with regards to how stations are commercialised. There are some restrictions with regards to how this may take place.

Atkins recognises that from the perspective of stations which are likely to change fundamentally from their current usage profile (such as Ülemiste) there is also a genuine debate to be had as to whether or not those station assets should transfer over to RBNE, rather than continue to be operated by the existing national infrastructure managers. Such examples should be evaluated on a case by case basis to determine the relative benefits of each, particularly with regards to the benefits that could be accrued to passengers from any such change.

From a State Aid perspective, any station redesign or new construction cannot easily be taken into account with regards to creating deliberate commercial footprint, but where the intrinsic design of the station takes results in an irreducible footprint, it is reasonable for this to be exploited and commercialised by the Infrastructure Manager as shown below:-

**Figure 2-7 - Passenger Experience and the Commercialisation of Irreducible Station Footprint**



The development of station facilities should therefore be conducted as a ‘strategic landlord’ wherever possible, with RBNE controlling the property occupier portfolio in order to maximise the footfall traffic and consequent revenue benefits.

In stations where there is an existing railway station operated by an existing IM, the situation regarding control becomes more complex. Opportunities associated with the development of the station footprint in terms of encouraging commercial activity or even the commercialisation of features such as Wi-Fi services are likely to be exceptionally difficult, although it is manifest that the existing stations will benefit in terms of increased passenger footfall and hence a revenue up-tick within those facilities.

The existing infrastructure managers will therefore have (inter alia) an opportunity for increased rents to businesses on the station footprint and while it is not plausible to have this shared with the RBNE (to reduce the risk of subsidy being required), it should be recognised by national governments that the value associated with this activity will nonetheless be captured by them and consequently taken into account in the event that any subsidy becomes required.

Based upon our prior experience, we would normally expect such actions to be conducted by the national governments without regard to the local specifics of the scheme, but there may be some benefit in the case of shared stations to formalise this in order to drive behaviours between the Infrastructure Managers so that the overall customer experience in the station is optimised.

For example. If the RBNE were to deploy a customer wi-fi service, it would make sense for a service to be harmonised across all parties and the full station geographical footprint so that the experience was optimised. This could lead to joint commercial activity / tenders by both RBNE and the existing IMs – something that could provide additive benefits to both parties.

## 2.3.2. Technical & Operational Factors

### 2.3.2.1. Infrastructure maintenance, upgrade and renewal

#### Maintenance

The approach to maintenance of railway assets should in principle, be the same across Options 5, 57, 63 and 85, though the constraints on being able to achieve this will vary somewhat based upon the economics and freedom of each Option in terms of their ability to optimise outputs for the route – these are determined by the asset management strategy and approach, not by the maintenance activity per se, which will discharge the maintenance regime specified and which optimises the maintenance treatments used.

Railway Undertakings and the travelling public are not, nor should they be, interested in how maintenance is delivered, provided that the network is safe and delivers the performance expected.

The question for maintenance model for the RBNE is therefore based around which Option will be able to deliver the required maintenance specification for the best possible value.

In our Multi-Criteria Analysis, we recognised that as a single entity for the route, both options 5, 57 and 63 would both have a significant advantage over Option 85 in terms of being able to coordinate maintenance and renewals activity along the route, greatly reducing the risk of disruption, meaning that the impact of works would be reduced for both passenger and freight services, but we did not define the sub-options by which maintenance could be discharged.

Table 2-5 - Option Comparison - Infrastructure Maintenance Model

Infrastructure Maintenance		
Model	Pro	Con
Insourced	<p>An insourced maintenance model's focus is invariably to maintain the infrastructure efficiently without needing to seek cost-cutting initiatives to deliver shareholder value.</p> <p>As an integrated organisation, processes tend to become well defined, with good alignment and understanding of the required asset management treatments that are expected for the asset.</p> <p>There is no regular disruption associated with re-procurement, change of contracts and the associated risks in reorganisation of the supply chain.</p> <p>Workforce typically has pride in their work and a desire to make the network perform.</p> <p>Has the potential to create a strong unionised workforce which will enable harmonious introduction of changes to working practices over time, driving efficiency improvements.</p>	<p>Focus on cost performance can easily suffer in an insourced model and in the absence of an external benchmark or effective asset management strategies, maintenance costs can rapidly escalate due to 'gold-plating' of activities.</p> <p>Potentially creates a strong unionised workforce which unless managed effectively and fairly has the potential to cause significant disruption to route performance.</p> <p>Relatively difficult to shift into an outsourced model in the event that performance is weak.</p> <p>Innovations are not brought forward from the market.</p>
Outsourced	<p>In order to drive shareholder value, outsourced maintenance organisations typically have a strong focus on delivering the service specified for the lowest possible cost.</p> <p>Payment of Overhead and Profit to the supply chain often offset by working regimes and employment practice savings – e.g. differing pension regimes.</p> <p>Relatively easy to shift into an insourced model in the event that performance is weak.</p>	<p>Outsourced railway maintenance has had a mixed history. The focus on cost management has in many cases resulted in suppliers cutting corners, resulting in safety issues and in extreme cases, falsifying maintenance records. It is hard to have an end to end assurance regime for outsourced models, given the geographic spread and scope of works taken and Atkins does not believe that the national regulators are sufficiently resourced to perform this function effectively. It is right that maintenance contractors should support the development of their client's asset management strategy – link into AM harder.</p> <p>ProRail noted at this point that they have not experienced this as a risk, <i>"Since outsourcing and tendering maintenance, performance (including safety) has improved significantly and costs have gone down,"</i></p>
Hybrid	<p>A hybrid model could consist of some roles which require high levels of technical skills being outsourced e.g. signalling but with the majority of roles remaining in-house.</p>	

In the long term, an effective maintenance organisation will be critical to the effective operation of the Rail Baltica route, but with much of the strategic value determined by the underlying asset management organisation, either an outsourced or insourced solution could be pursued provided that RBNE could have high confidence in the technical skills, capabilities and competencies of the delivery partner.

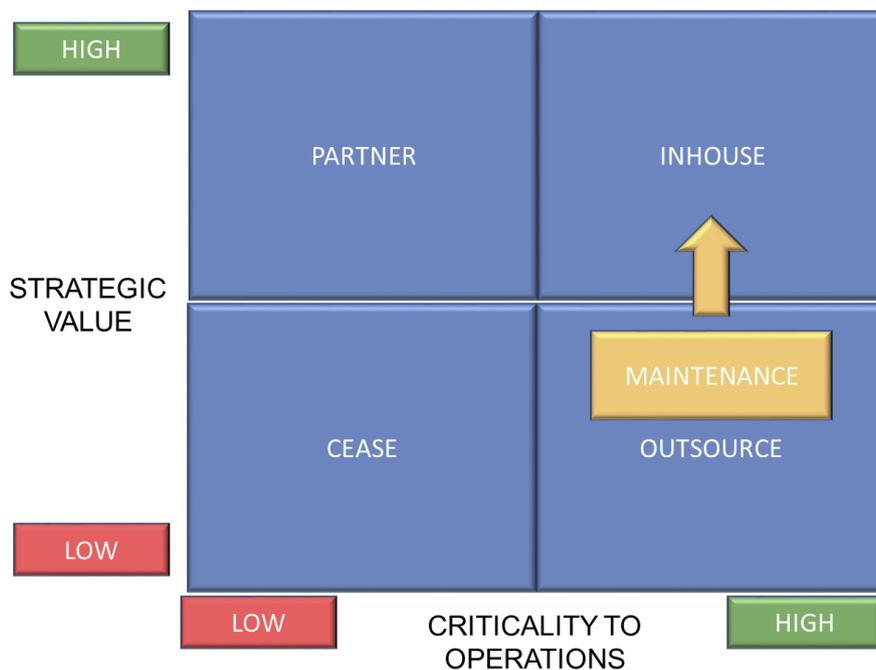
The position on what is best for RBNE is also likely to change over time; at the outset, the maintenance regime is not likely to be fully understood for a number of years after construction as the operation beds down.

- Algorithms from intelligent infrastructure operations need time to become effective based upon meta-data sets.
- The asset will not need a full maintenance regime for a number of years after construction – the role will be more focused on inspection.
- Liability for asset failures in the near term should be addressed by construction warranties and associated professional indemnities, meaning that restitution of issues by the supply chain should take precedence over maintenance intervention. ProRail noted at this point that their experience on the Netherlands High Speed Line in this area could lead to a recommendation that the entity responsible for procuring and delivering the line (RB Rail AS) should also become the entity responsible for maintaining the line.

The risk profile of the maintenance organisation being ineffective is therefore relatively low for the first number of years after construction (subject to appropriate transition and handover arrangements) and as a result, an outsourced model is, in the first instance appealing. This would reduce the commercial risk exposure for RBNE as a consequence of potentially hiring too many staff and reduce the pressure on training and recruitment.

Tendering for maintenance on the route would therefore demonstrate value for money and de-risk the initial period of operations, while not precluding later insourcing once the maintenance requirements have been stabilised and understood, as shown in Figure 2-8, below.

**Figure 2-8 - Make Vs. Buy - Maintenance**



While Atkins envisages a completely open tender (most likely structured as an offer across Estonia, Latvia and Lithuania or with separate packages for each), this presents an opportunity for the existing National Infrastructure Managers to build on their core synergies around existing skills, capabilities and competencies which were identified in the Multi-Criteria Analysis and which form the heart of the strong cost performance identified in Option 85.

This however, will not be an automatic outcome. The National IMs will have relatively limited amount of plant associated with 1435mm gauge assets, while lack of experience in new assets such as GSM-R and ERTMS will also prove a challenge with regards to optimising their cost base versus other experienced track maintenance delivery organisations from across Europe.

Notwithstanding this, if successful, under such circumstance, we could see a situation emerging where the day to day maintenance of the assets could continue by a national entity, providing strong political positives for the scheme, countered by an open and transparent picture regarding cost and performance due to the tender process if the market was able to show a better combination of cost and quality in delivering the outputs required by the Asset Management strategy.

Atkins therefore proposes that RBNE competitively tenders for its maintenance delivery in the first instance, based upon the provision of a defined service level agreement.

In line with Article 14 of Directive 2016/2370, *'Where those functions [maintenance and renewal] are outsourced to different entities, the infrastructure manager should nevertheless retain supervisory power and bear ultimate responsibility for their exercise'*, something that is reflected in our paper with regards to our recommendations on asset management strategy and a hybrid maintenance model.

## Renewals

Rail renewals are defined as the replacement of an asset with an equivalent asset (typically known as modern equivalent form replacement). This normally occurs when the asset has become life expired, this being either because the costs of maintaining the asset have been identified to be uneconomic or where there is an external driver, such as lack of OEM support for a product creating an unacceptable risk profile for the Infrastructure Manager.

The key difference between a renewal and an enhancement is that it does not confer any direct performance improvement on the network (such as line speed or tonnage), though will likely result in improved reliability.

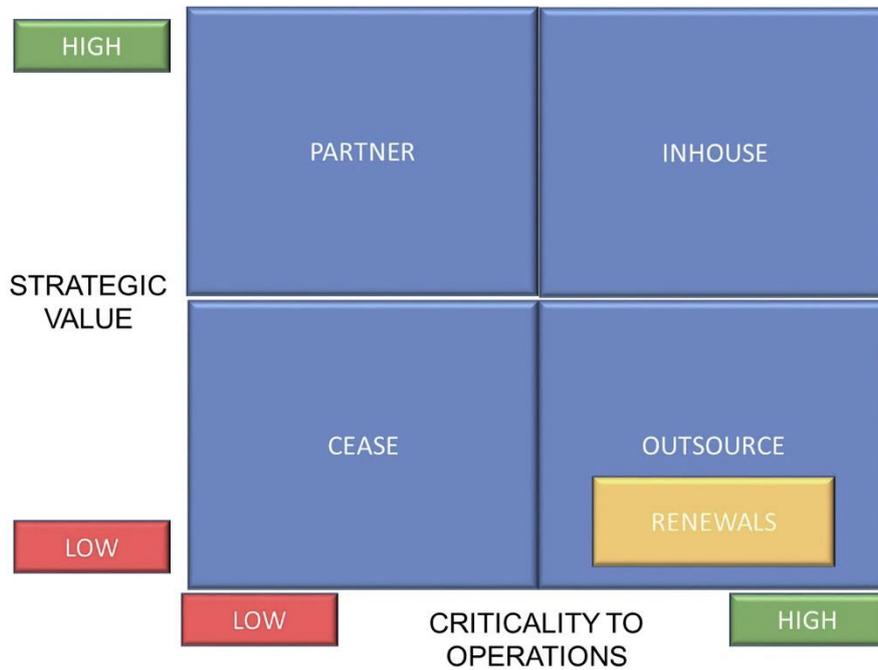
The line between maintenance and renewal can be heavily blurred, particularly with regards to heavy maintenance or life extension, where large numbers of specific components might be replaced. As such, some minor renewals, may fall within the competencies of the maintenance teams, though larger schemes typically require either skills or plant not normally held by maintenance.

The definition of renewal versus maintenance organisation and delivery is therefore one predominantly around economic balance. Use of maintenance teams can help balance issues around under-utilisation, driving productivity, though often this is not accompanied by transparent market testing and so can mask underlying inefficiencies in maintenance organisations rather than permit them to be addressed.

For Rail Baltica, under Options 5, 57 and 63, we would not anticipate that the size of the maintainer (whether insourced or outsourced) would have sufficient capacity to deliver major asset renewals based upon the size of the organisation and recognising that the workforce will be geographically distributed along the route. The implications for this are identified in Table 5 below.

Under Option 85, this would have potentially been an option for some minor renewals, due to the scale of the national Infrastructure Managers' workforces, though as previously stated, value for money would be complex to demonstrate in such circumstance.

**Figure 2-9 - Make Vs. Buy - Renewals**



When we look at the relationship of renewals activity to the core network, we find that while the works remain highly critical to operations, in that failure to renew the asset results in asset failure, the strategic value of delivering the assets renewal directly is very low, something that opens up the opportunity of both an insourced or outsourced model.

**Table 2-6 - Option Comparison - Renewal Model**

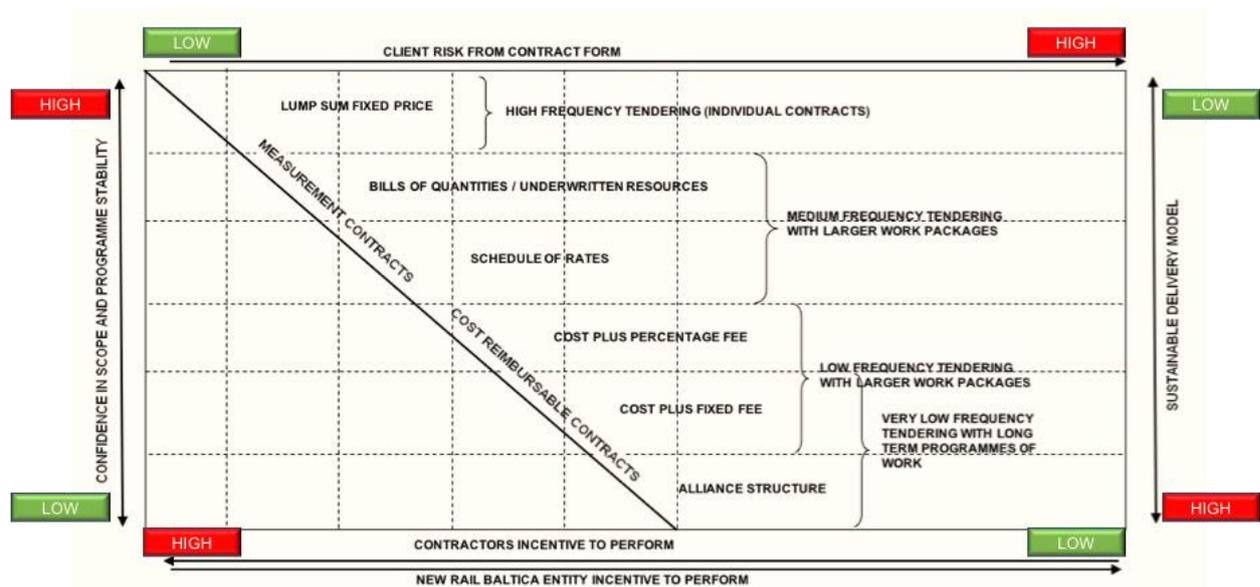
Infrastructure Renewal		
Model	Pro	Con
<b>Insourced</b>	<p>There are no positives identified with regards to an insourced renewals model for the RBNE whereby RBNE would deliver works on the ground.</p> <p>The scale of the network means that even if a team could be established which was geographically mobile and the cost disadvantages of this could be overcome the frequency of renewals on the Rail Baltica route by itself would be very unlikely to enable the development of a team with the core competencies required for effective renewals delivery.</p>	<p>Under Options 57 and 63, we do not expect the existing maintenance workforce to have sufficient resource to conduct anything but the most minor renewals (even if an insourced model was adopted at launch).</p> <p>The creation of a dedicated in house renewals team is therefore highly unlikely to be justifiable due to the geographic variability of work and associated cost overheads.</p>
<b>Outsourced</b>	<p>A completely outsourced model would mean that RBNE could operate effectively as procurement body for renewals to an asset management output specification.</p>	<p>Complete outsourcing could result in the development of an uninformed client.</p> <p>RBNE would have the ability to understand and specify the asset outputs required, but would not be in a position to appropriately cost these in advance of a procurement, nor would they likely have the competencies in house to manage the risks of the schemes, these including softer impacts such as the impact of schemes of lineside neighbours as well as more direct impacts such as the risk of project slippage on the timetable.</p>
<b>Hybrid</b>	<p>A hybrid model, whereby the RBNE would conduct the early planning and scoping of renewals, enabling strong cost estimate to be developed should enable the procurements to be properly structured delivering strong value for money. This combined with a modest programme management function should result in a model which would manage the supply chain to deliver the renewals on schedule and to the required standards.</p> <p>This could be delivered through either in-house project delivery organisation or a dedicated Project Management Office (itself potentially outsourced).</p>	<p>The potential downside of a hybrid model potentially relates to the ability to recruit and retain high quality staff, given that in the near term the scale and frequency of renewals is unlikely to prove to generate high volumes of work that will maintain profession interest.</p> <p>Linked to this, a hybrid model would also carry greater cost overhead than an outsourced model, resulting in a minor risk increase in the need for the core organisation to need a subsidy if the cost could not be capitalised onto new works.</p>

This coupled with the fact that renewals work banks tended to be highly cyclical means that resourcing the RBNE to meet this requirement will not be economic. We therefore believe that all renewals activity will therefore be outsourced and competitively tendered.

Given the geographic distribution and time-based nature of the renewals which will need to be procured, work will need to be done in optimising the contracting models used. As the assets will be relatively new, in order to elicit market interest, Atkins would recommend aggregating work packages into relatively large work packages which would enable the regional supply chain to start developing by giving them a workbank that will justify investment and training of personnel.

While this will need to be optimised based on specific category strategies, Figure 2-10 below indicates how Atkins believes that RBNE can develop a sustainable delivery model that starts to unlock broader benefits in terms of regional development of a local supply chain.

**Figure 2-10 - Renewals - Procurement Assessment**



**Enhancements (Upgrades)**

Rail Baltica will make a significant contribution to economic growth in the region, while the RBNE will need to work to help ensure that the identified social and economic benefits are delivered across the route as a whole, using this learning as a driver for further enhancements and new rail investment in the future.

At this stage it is not possible to predict what potential enhancements may arise for Rail Baltica and as such, it is not practicable to conduct a robust assessment of the benefits of either an insourced, outsourced or hybrid model for the development of network enhancements – at least with regards to delivery teams, but the network development will need to commence almost immediately. This means that at this point in time we need to think how the process will need to operate in the future.

Unlike renewals of the network, enhancement of the Rail Baltica route (where this is greater than ‘internal’ type enhancements such as line speed improvements on reliability) will need to have detailed engagement with the other National Infrastructure Managers in an open, collaborative and collegiate manner, whereby all parties are working together to unlock the best for each nation as well as for the route as whole.

While the current Rail Baltica project forms the backbone for growth across the three countries, future development of the line may include items such as interconnects onto the route or new stations that provide benefit to individual nations without any discernible benefit to the mega project.

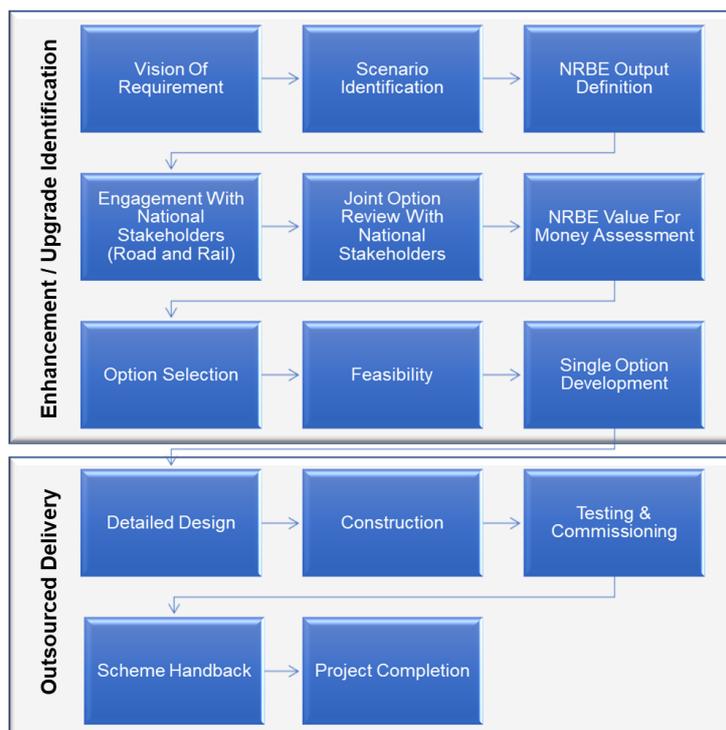
The RBNE must be in a position to support these from not just a technical and resource perspective, but also from a cultural position where they must wish to actively assist the National Infrastructure Managers in each country from deriving the best possible value from the project.

We therefore see three types of dialogue resulting in the development of enhancement schemes:-

- Approaches to RBNE from the national Infrastructure Managers to interconnect into the Rail Baltica Route, whereby the investment, revenue and risk will be taken by the national body. This will relate to activity where the enhancement effect is felt in one country.
- Approaches to the national Infrastructure Managers by the RBNE to develop further the Baltica Route, whereby the investment, revenue and risk will be taken by the RBNE, with such changes likely requiring further or new inter-governmental agreements to secure the required funding or financing. This is the primary development role for the RBNE in terms of enhancements and can be seen in Figure 9 below.
- The development or expansion of the Rail Baltica Route into new countries, under which circumstance we would anticipate that a new body, equivalent to RB Rail AS would likely to be formed in order to deliver the same, up to the point of project construction and completion, after which we would anticipate the RBNE to take over the management of the route.

With regards to the specific options, we note that there for Option 5, further enhancement of the network would be highly challenging due to the complex commercial agreements that would be in place with regards to many of the assets (telecoms / power etc.), that Options 57 and 63 would be equally well placed to develop the vision and high level option development for new enhancements (and indeed, with their whole route vision would be the best placed to do this), but that Option 85 would be the strongest Option with regards to unlocking further benefits in the national networks due to the lack of interface complexity for the National Infrastructure Managers.

**Figure 2-11 - Process Flow - Anticipated Responsibilities for Enhancement Delivery**



In all cases Atkins believes that the RBNE will not be involved in the direct delivery of enhancement schemes but would operate with a similar remit to its responsibilities in delivery of renewals activity, but with prior engagement relating to the development of the vision for the network.

Effective demand forecasting will be at the core of successful enhancement development and assessment for RBNE; the organisation must be resourced with individuals capable of understanding both the impact on demand for travel and freight traffic due to changes such as GDP, employment and population and other actions which will trigger changes in the region, such as government policies on the adoption of alternative technologies such as autonomous vehicles.

The competency required in this area cannot be overstated, as it enables strategic planning by the beneficiaries with regards to any risk of subsidy requirement, the development of franchise specifications, financial forecasts for the railway undertakings and the scheme appraisal.

What this assessment reveals is that for the future development of the Rail Baltica route and for the National Infrastructure managers to unlock further potential national benefits arising from the route, they will need to work together; assessments of potential enhancement will not be able to be delivered in isolation – at its simplest level, all parties must work together to ensure they are not chasing after the same schemes for development.

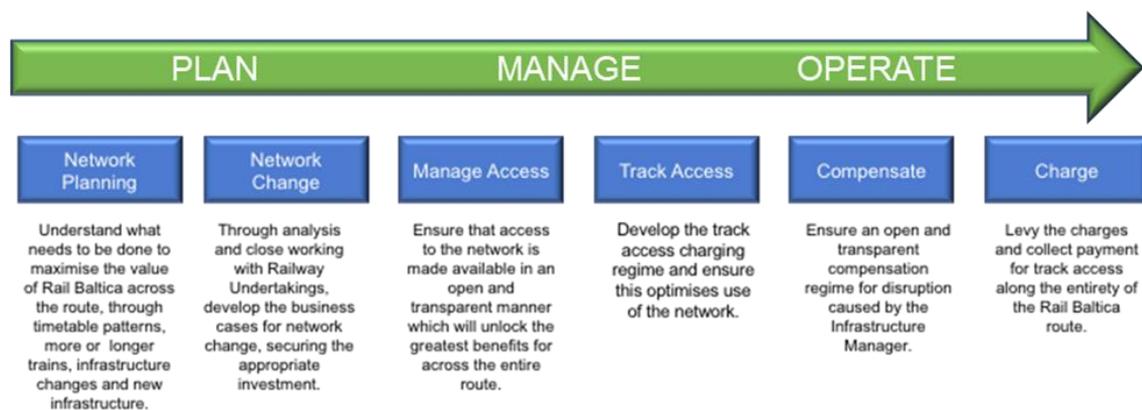
2.3.2.2. Capacity allocation and management (consider, propose and compare different models);

The criticality of effective capacity allocation and management is manifest and must be protected. *“Decision-making by infrastructure managers with respect to train path allocation and decision-making with respect to infrastructure charging are essential functions that are vital for ensuring equitable and non-discriminatory access to rail infrastructure. Stringent safeguards should be put in place to avoid any undue influence being brought to bear on decisions taken by the infrastructure manager relating to such functions. Those safeguards should be adapted to take into account the different governance structures of railway entities”<sup>92</sup>*. Failure to structure RBNE in light of this risks creating an entity which will be unable to meet the high standards of business ethics that this programme is seeking.

Context – System Operation

The process of capacity allocation and capacity management comes as part of a suite of processes that RBNE will be required to perform, as shown in Figure 10 below and is comprised of both a strategic and tactical approach to network management. Together, these unlock the most valuable asset that Rail Baltica has – train paths.

Figure 2-12 - Stages of Rail System Life Cycle For RBNE



To discharge these obligations effectively, the RBNE must be a source of high quality data for its beneficiaries, railway undertakings and the other national infrastructure managers in order to ensure that all parties can work together to ensure the effective long term development of the network.

We have designed the organisational structure to ensure that resource is available within the RBNE to support in house analytics to be provide to these stakeholders. This work will enable the planning of new train services, by providing advice to both a franchising process and open access operators and by specifying the service output requirements of any new infrastructure which is to be connected onto the core Rail Baltica route in the future.

In doing so, RBNE must work with Railway Undertakings to decide the best allocation of capacity and creates operational timetables that meet the needs of train operators, planning the development of this as a cohesive network considering the wider socio- economic impacts of investment decisions, and allocating access through a network-wide timetabling process.

<sup>92</sup> DIRECTIVE (EU) 2016/2370 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL

The nature and flexibility of how RBNE makes those wider socio-economic impact assessments cuts to the heart of the establishment of either Options 5, 57 or 63.

RB Rail AS has emphasised that they do not believe the current process of allocating capacity and the development of freight along the existing national rail networks has been optimal in either Estonia, Latvia or Lithuania. For example, much of the freight carried does not have the potential to develop further value add to the national economies (as it does not receive secondary or tertiary processing with the associated link into high value employment). Atkins recognises this to be a valid concern and is an item which should be addressed to ensure the long term success of the business case, which places strong emphasis on the development of secondary socio-economic benefits.

However, given the nature of a the Rail Baltica route, crossing the sovereign territory of three independent states, there is potential for significant conflict in such an approach and it would not be appropriate for the RBNE to act independently in a manner that while potentially beneficial to those nation states, could in principle result in an approach to socio-economic development which conflicts with or duplicates other measures taken at the nation state level.

This must remain with each nation state. Atkins therefore strongly recommends that each nation puts in place a 5-year framework of aspirations for the route, against which the RBNE must assess its choices for the development of the network, including capacity allocation. This should be done in a way that aligns with any national economic investment appraisal processes which RBNE's beneficiaries would likely wish to have considered. It is to be kept on an individual nation state basis to ensure no conflicting policies across the Baltic nations.

This will also necessitate that close, effective, collegiate working relationships be established with the national infrastructure managers as the operational boundaries of the majority of Railway Undertakings will not be confined to the Rail Baltica route. RBNE must ensure that in reducing the cross-boundary issues which would exist (in Option 85, versus Options 5, 57 and 63), it acts in a manner which promotes the free movement of goods, something that will remain contingent upon effective working relationships with the other national infrastructure managers, regardless of who owns or operates the multi—modal freight terminals on the route.

### Capacity Allocation

Capacity Allocation is part of a strategic long term Network Planning process designed to deliver the most effective and efficient use and development of the capacity available on the network, consistent with the funding available. While the development aspects will be defined under RBNEs approach to enhancement activity and reflected in Network Change, the key relationship here is that RBNE will be obligated to cooperate with its funders (the Beneficial Owner) and its customers (railway undertakings) to meet their capacity requirements. Both these elements are strategic in nature and are closely required to the ability of RBNE to hold the vision for future network development.

The key in capacity allocation is for the Infrastructure Manager to produce the most economically efficient timetable. Historically, this has been looked at in terms of what revenues would most be generated by the traffic type. It does not have to be the case for the Rail Baltica Route, where it should be possible to shape the allocation of capacity where this is constrained, based upon clear evaluation criteria for Track Access Charging methodology.

### Process For Capacity Allocation

There are a number of ways which capacity allocation can be determined for Rail Baltica.

In the first instance, during the early stage development of the railway, in conjunction with a structured, periodical timetabling process, it would seem sensible to permit a first come-first served approach with regards to ensuring that sufficient traffic comes to the network and which will support the business case. Thereafter, there are two likely options to define how capacity should be allocated in the future, once capacity constraints start to emerge on the network.

- Capacity can be allocated based on a ‘user may bear’ basis, ensuring that the highest potential revenue from track access charges are received by the Infrastructure Manager. This option would carry with it the lowest potential risk of the infrastructure manager needing a subsidy to be provided, though manifestly, would not eliminate this risk.
- Capacity could be allocated based upon a clear and transparent assessment process based around identifying whatever goods to be transported provide the greatest advantage to the economy as a whole. For instance, if two companies were competing for the same train path, the first for coal transport and the second for CKD vehicle imports, an assessment could be made regarding how those products were treated. For instance, if the coal was direct pass-through for export, with no further handling, versus CKD products which would bring together associated assembly and value add for the economy, this could be considered in awarding the train paths.

Option 2 should have further legal examination to understand to what degree this would be feasible; while there is unlikely to be an issue from the perspective of direct discrimination to the railway undertakings bidding for the path – provided clear, open and transparent assessment processes exist – there is an undoubted risk with regards to secondary state aid, in that in the event that track access below the cost of operation to the RBNE would carry with it the effective transfer of a subsidy to the end user. We believe that this could be mitigated in advance by having a minimal tariff published with regards to track access, with this process only applying over and above this point. These options are considered in detail in our assessment of track access.

Both these items will need to be effectively tied into understanding how the RBNE will be incentivised to produce the timetable; a balance will need to be found which encourages RBNE to maintain and improve capacity on the network while balancing an effective maintenance regime.

#### Capacity Allocation - Stakeholder Feedback

During consultation, it was commented (without evidence being provided) that a significant issue existed with regards to state owned freight operators reserving train paths, but without these being used thereafter, resulting in lost opportunity for 3<sup>rd</sup> parties and other logistics operators being squeezed out of the market.

While ProRail has recommended that RBNE uses the established Rail Freight Corridor processes to manage such issues, the level of concern that was expressed, means that Atkins believes a very simple process will resolve this issue relative ease.

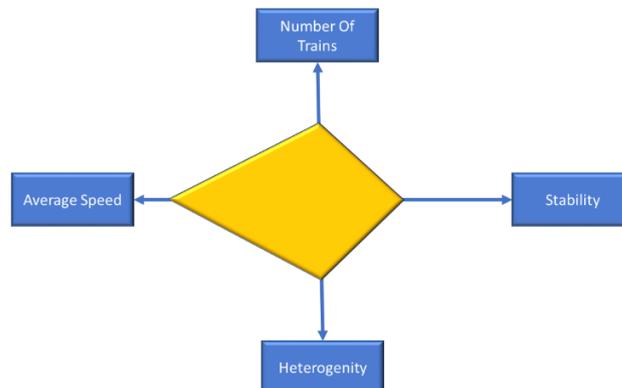
For Rail Baltica, we would therefore propose that the RBNE operates a process of ‘Use it or lose it’ with regards to train paths, whereby if a Railway Undertaking fails to make use of paths it has agreed to take, then after a predetermined threshold is reached, these are released for the market to bid for, with the delinquent Railway Undertaking prohibited for reacquiring the train path if a new bidder is identified.

## Capacity Management

The methodologies, systems and processes used to determine and allocate capacity on rail networks and reflects an understanding of both the number of trains, stability, average speeds and heterogeneity of the network traffic as shown in Figure 2-13 which reflects the balancing factors identified by the UIC.

The day to day methodology for this is well understood, will be covered by the operational plan and for the end infrastructure manager, by the systems and processes which are put in place to manage the network

**Figure 2-13 - The Balance of Railway Capacity<sup>93</sup>**



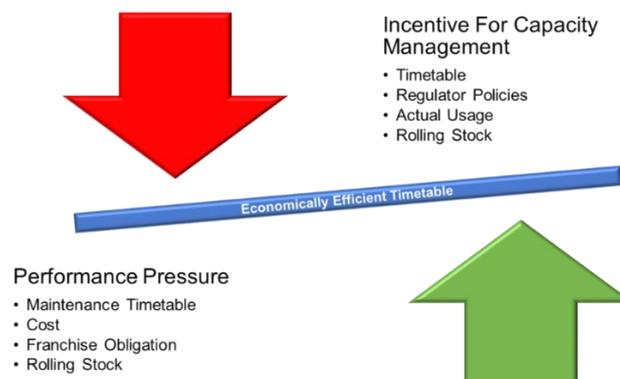
This infrastructure manager study is however concerned with capacity management not just because of the elements of efficiency that will come from the inherent design of capacity (for example, network design under Option 85 would implicitly come with different sectional break points being required to reflect physical borders), but also with the ability to manage capacity in an optimal manner.

This comes within three areas: -

- Capacity Management under perturbation.
- Network Management to minimise the risk to capacity due to delays
- The ability and incentives to optimise the timetable to ensure zero defects.

While there are high level business drivers that influence the culture and behaviour of the infrastructure manager with regards to effective capacity management (See Figure 2-14 below), the different elements of effective capacity management are predominantly determined by the structural design of the network.

**Figure 2-14 - Capacity Management Balancing**



<sup>93</sup> UIC Leaflet, 406, Capacity, 2004

The structural design of the network includes elements such as optimisation of track sections, radio propagation and planning for GSM-R handover etc., items that can be optimised in Options 5,57 and 63, but not in Option 85 due to artificial break points being created at national boundaries).

Capacity Management refers to the ability of the RNBE to optimise the defined capacity of the network in an optimal manner, ensuring that the available resource is used effectively. This is influenced by a number of factors that can be classified as either structural or variable (See Figure 2-15);

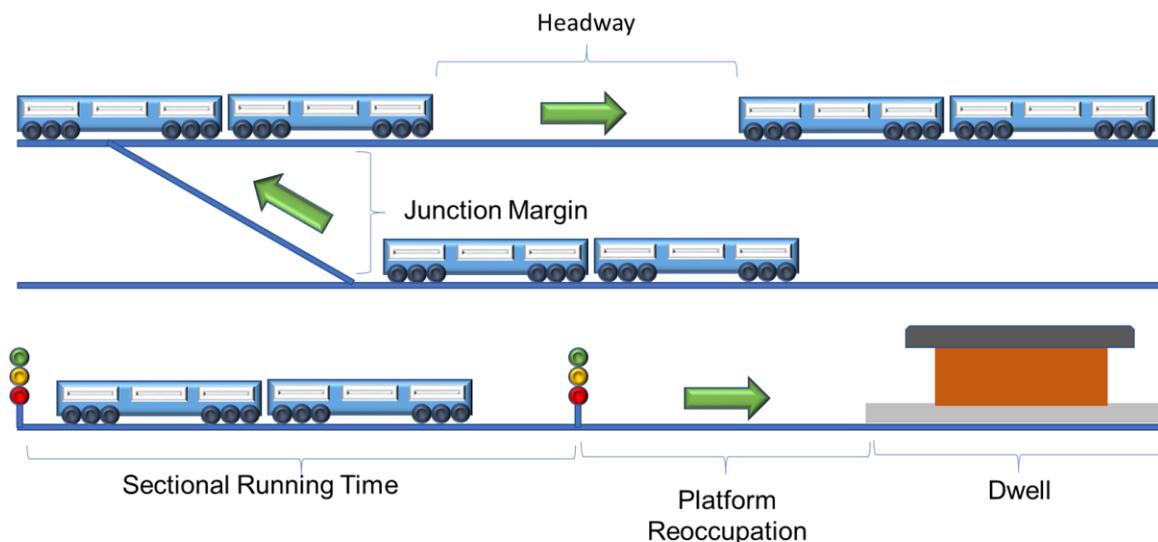
### Structural Factors

- Headway – the separation time between trains travelling in the same direction, influenced by a range of factors including the mass, speed and braking capability of the vehicle / wagons and other infrastructure characteristics.
- Sectional Running Time – the time allowed in a schedule for a train to travel between two points
- Junction Margin – The time required for two trains performing conflicting moves at a junction

### Variable Factors

- Platform Reoccupation – The shortest time from wheel start to when stop in a section for a train to re-occupy a platform vacated by another train.
- Dwell Time – the amount of time a train needs to spend at a platform or siding.

Figure 2-15 - Capacity Management



Structural factors are often predetermined based upon the initial network design, associated systems and the products approved for use on the network, items which cannot be influenced on a day to day basis and which are this fundamentally not shaped by the design of the RBNE (with the exception of Option 85, where we would expect potential differences in interpretation of headway and junction margin based upon different national interpretations of safety margins).

Variable factors are items which can be influenced by the infrastructure manager on a day to day basis, provided that their remit extends to operations in the station.

Platform Reoccupation is influenced by a range of micro variables, from the speed of the despatch of the train in front, to the communication to the train driver via the signalling that the preceding train was despatched successfully and the platform is clear and critically, the effectiveness of the station staff to manage ingress and egress from the train, including ensuring that passengers with restricted mobility can safely gain access in a manner that does not impact the overall timetable.

Because of this, we see clear advantage (where this would not conflict with majority operation of stations by the National Infrastructure Manager) for the RBNE to manage stations as it would ensure a clear line of accountability for route performance and limit the potential for disputes.

This would mean that the RBNE should have dedicated staff at each station.

## Cross-border interoperability, technical compatibility and cross acceptance

### Cross Border Interoperability

Interoperability establishes a common European verification and authorisation process for placing new, upgraded or renewed infrastructure or rolling stock in service; and provides for Technical Standards for Interoperability to be applied across the trans-European rail system and will apply in full to the Rail Baltica route.

The purpose of interoperability is to open rail markets to new operators, simplify services that cross borders, and make railways on the trans-European rail system technically compatible, which should reduce network costs across Europe and are governed by Directive 2016/797/EC – all models will effectively have to operate under this framework.

As such, with regards to Cross Border Interoperability, Options 5, 57 and 63 all offer a strong basic platform due to the inherent coordination that will be provided, but for this to be effective we need to understand what this would mean in practice and gain the endorsement from the appropriate safety regulators.

### Workforce Management

The creation of a genuine cross border railway opens up the possibility to harmonise working hours for Railway Undertakings through the creation of a code of practice for Railway Undertakings operating on the route and creating best practice in terms of fatigue management and hence safety, moving beyond the standards which are normally applied to cross border railways.

While we do not anticipate that RBNE will have its own train drivers, we can look to see how Rail Baltica could intend to work beyond Directive 2005/47/EC in terms of its leadership 'Holding the Vision' for the rail industry; Safety performance is currently poor in all the Baltic states. "Directive 2005/47/EC - mobile workers in cross-border railway services of 18 July 2005 on the Agreement between the Community of European Railways (CER) and the European Transport Workers' Federation (ETF) on certain aspects of the working conditions of mobile workers engaged in interoperable cross-border services in the railway sector" looks at certain aspects of the working conditions of mobile workers engaged in interoperable cross-border services and applies to ensure appropriate rest is achieved.

We believe that best practice could be adopted – for example see the recommended position proposed by ASLEF Trade Union below (Associated Society of Locomotive Engineers and Firemen) – as part of a charter for crews operating on engineering trains, whose contracts would be heavily influenced by RBNE, a positive 'beach head' for items such as fatigue management could be developed, building positive publicity for RBNE about the creation of a best-in-class safety culture and the establishment of positive relations with trade union bodies in the region.

**Table 2-7 - Workforce Management under Directive 2005/47/EC and ASLEF Best Practice**

Directive 2005/47/EC	ASLEF Best Practice
<p>Daily rest at home is at least 12 consecutive hours per 24-hour period but it can be reduced to a minimum of nine hours once every seven-day period. Maximum driving time is:</p> <ul style="list-style-type: none"> <li>• nine hours in the day,</li> <li>• eight hours during night shifts, and</li> <li>• 80 hours in a 14-day period.</li> </ul> <p>The minimum daily rest away from home is eight consecutive hours per 24-hour period and must be followed by a daily rest at home.</p> <p>Weekly rest period is 24 hours, plus the 12 hours' daily rest period. Workers should have 104 rest periods of 24 hours each year, of which the number of double rest periods are also set.</p>	<p>Length of daily working time; Maximum in a 24 hour period, ten, when worked during the period between 0600 and 2300; or eight, when worked during night time.</p> <p>Length of weekly working time 44 hours maximum for each seven day period.</p> <p>35 hours maximum per week on average over a 52-week period, save for any excluded days in that period. In exceptional circumstances, this may be increased to twelve.</p> <p>A train driver's minimum period for a turn of duty shall be six hours.</p>

While it might seem unusual to consider adopting the working practices better than the legal minimum, Atkins believes that (subject to cost evaluation), this could offer some advantages for the infrastructure manager, facilitating the use of tools such as stochastic network analysis using AI tools to optimise performance and throughput by providing a common set of inputs – this is where Rail Baltica could genuinely innovate, by creating a greenfield platform of contracts and standards that lend themselves to data driven management.

### Operational Language

Directive 2016/2370 recognises that the existing language requirements on train drivers can be unnecessarily onerous; the requirements for a B1 level of language competency in each country imposing a significant issue. This presents a unique challenge for Rail Baltica, where much of the business case is built around the creation of an effective operation for freight and where the performance of the line (speed / distance) means that we should expect a requirement for individual drivers to travel the entire length of the line in a single shift.

The directive also confirms that *'Drivers who have to communicate with the infrastructure manager on critical safety issues must have language skills in at least one of the languages indicated by the infrastructure manager concerned. Their language skills must be such that they can communicate actively and effectively in routine, degraded and emergency situations. They must be able to use the messages and communication method specified in the "Operations and traffic management" TSI.'*

Working through best practice adoption such as developing glossaries of key commands and issues, we believe that it will be imperative for RBNE to adopt English as one of the operational languages for the route, ensuing the language is aligned with the Operation Plan for Rail Baltica. Notwithstanding this, the EC is currently conducting a study on *'Revision of language requirements for train drivers to allow pilots exploring alternative options'*<sup>94</sup>. This has been generally welcomed and while EIM has commented, inter alia that 'in case of operational disturbances and alternative routes, the language skills alone are not enough. The rolling stock must also be compatible to the new route, the train driver must have the necessary authorisation for the network regulation and the associated signalling

<sup>94</sup> [https://ec.europa.eu/info/law/better-regulation/initiatives/ares-2018-3324843/feedback\\_fi?p\\_id=255973](https://ec.europa.eu/info/law/better-regulation/initiatives/ares-2018-3324843/feedback_fi?p_id=255973)

rules.', with the lack of diversionary routes for traffic on the network, this is not deemed a material issue for the RBNE.

In all cases, Options 5, 57 and 63 would have a clear advantage over Option 85 in unlocking this, given the reduced complexity of developing processes, but given the level of progress being made in this area, it would be sensible for the outcome of the proposed pilot studies currently being undertaken to be assessed before processes are developed in order to ensure that RBNE stays aligned to developments across other Ten-T networks.

The strength of Options 5, 57 and 63 in introducing a common operational language is however currently reversed when the Emergency Planning is considered.

**Memo:** The Commission Expert Group on the Technical Pillar of the 4th Railway Package has issued a draft Working document (not yet published), dated 21/09/18 which seeks to amend Annex VI to Directive 2007/59/EC of the European Parliament and of the Council on the certification of train drivers operating locomotives and trains on the railway system in the Community. This document recommends that *"In order to obtain reliable results on the effectiveness of the alternative options, it is necessary to test the alternative means in day-to-day operations. Therefore, the impact of those alternative options should be examined under real conditions in the framework of pilot projects conducted in two phases. In the first phase, infrastructure managers and railway undertakings should carry out pilot projects with train drivers fulfilling the requirements under point 8 of Annex VI to Directive 2007/59/EC and using alternative means. If in the first phase those pilot projects prove that the alternative means effectively complement the language skills of the driver, then in the second phase the pilot projects should be carried out with train drivers having a lower level of language skills than those required in point 8 of the Annex VI to Directive 2007/59/EC and using the alternative means proved effective in the first phase.*

*A derogation should be requested jointly by the railway undertaking and infrastructure manager to the Commission for this purpose."* RBNE should therefore make appropriate provision for the development and testing of different options to ensure the optimal outcome is achieved. This will require coordination and consultation across multiple Railway Undertakings to ensure that a representative position is understood.

## Emergency Planning

Both Options 57 and 63 present a slightly higher risk profile with regards to emergency planning than Option 85. Existing infrastructure managers will have processes established and in place with the emergency services, while the greater scale of their networks means that statistically they will have and continue to have more experience in dealing with emergency situations. To mitigate this, the RBNE in both Option 57 and 63 will need to identify, adopt and implement an effective emergency management planning regime.

Global best practice today is found in the United States. The ANSI/EMAP 4-2016 Emergency Management Standard by EMAP is a set of 64 standards which lead to accreditation (ANSI's Parent Organisation is ISO (the International Organization for Standardization)). Based on the principles in this standard, we have mapped their key principles onto the RBNE as shown in Figure 2-16 below. These will need to be developed in line with a detailed understanding of the particular risk profile and challenges which will be presented by a high-speed line and particular advice should be taken in this area

**Figure 2-16 - New RB Entity Process to be Established**



Close Alignment With National Infrastructure Managers And Emergency Services Needed

One of the key learnings that needs to be taken forward is that Emergency Planning will need to take place in conjunction with the other national Infrastructure Managers; this is not an activity for RBNE to undertake in isolation and the principles of common resource management, mutual aid and common public communications must be established.

Additionally, as it will be stated in the Rail Baltica Operational Plan, the Emergency management needs to ensure that there is no doubling of resources between national emergency services and ensure that railway emergencies are handled by local and national emergency service of each country. This will ensure efficiency.

## Cross Acceptance

Cross-acceptance of rail vehicles by mutual agreement between member states is encouraged by Directive EU2016/797.

Options 5, 57 and 63 would greatly reduce the complexity and challenges around cross acceptance that would exist under Option 85, provided that vehicles do not thereafter need to migrate onto the national network (for example, in the situation of variable gauge rolling stock); normal national approval procedures, the technical compatibility of railway vehicle and infrastructure, plus network knowledge, all of which are a major impediment to market entry and competition will be greatly improved through the creation of the RBNE which would provide a Single Point Of Contact for

assessment and approval versus the time and cost of having to approach three separate national infrastructure managers.

Despite this, over time it is entirely possible that the 1435 network will get expanded by the national infrastructure managers. We therefore believe that from the outset, that there needs to be a close working relationship established between the RBNE and the national infrastructure managers to ensure that cross acceptance from the Rail Baltica route onto the national networks is simplified as far as is possible. This should all be aligned to the Rail Baltica Operational Plan.

**Memo:** New processes are expected to be added to Appendix D1 – OPE TSI that will affect directly the ‘Route Compatibility’ process under Article 23, 2016/797 ‘Checks before the use of authorised vehicles’. This new process gives to the RU all the responsibility when checking if the already authorised vehicle (as defined under Article 21) is compatible with the route.

### 2.3.3. Commercial Factors

#### 2.3.3.1. Determination and management of Track Access Charges (TAC)

Effective Track Access charging is at the heart of ensuring that the RBNE stands the best possible chance of being able to operate without subsidies. This is particularly the case with regards to the development of freights services on the network, these being intrinsic to the success of the entire business case.

It is reasonable to anticipate that transporting bulk commodities across either the whole or sections of the Rail Baltica route will be an attractive commercial proposition for a range of distances, but to unlock this, a balance will have to be struck, which reflects the speed and performance the new railway will operate, against the alternative traffic paths offered on the 1520 network as well as the potential for goods to be moved by other modes such as road or coastal shipping.

EU Regulation 2015/909 defines ‘*the modalities for the calculation of the cost that is directly incurred as a result of operating the train service*’. This is designed, so that ‘Member States should have the opportunity to set direct costs at the level of costs of efficient service provision’ and as consequence encourage not just appropriate track access charges, but also behaviours by Railway Undertakings that encourage long term efficient use of the fixed asset. It also establishes a number of key principles for Rail Baltica;

1. Setting the track access charge at the costs directly incurred by the train service should not set out to cause that the infrastructure manager to experience either a net financial loss or a net financial gain as a result of operation of the train service.
2. The infrastructure manager should not be allowed to recover the cost of investment in an asset where it is not obliged to repay that cost.
3. The infrastructure manager should be allowed to include in the calculation of its direct costs only costs that it can objectively and robustly demonstrate that they are triggered directly by the operation of the train service.

Figure 2-17 - Core Elements of Track Access Charging for Rail Baltica

Charges	Freight Services	Passenger Services (Public Service Obligation)	Passenger Services (Open Access)	Definition
Variable Usage	See Sub Methodology	EURO PER TRAIN KM	EURO PER TRAIN KM	The purpose of a Variable Usage charge is to recover NRBEs operating, maintenance and renewal costs that vary with traffic. In economic terms, it reflects the short run marginal cost.
Fixed Track Access	DOES NOT APPLY	EURO PER TRAIN KM	May not be applied. EURO PER TRAIN KM	The purpose of a fixed track access charge will be to recover NRBEs remaining funding requirements after all other income streams are taken into account, for example, revenues from intermodal terminal management or stations, plus and subsidy that is provided. The decision on whether or not Open Access Operators will be charged elements of fixed track access charges will depend upon the profitability and demand levels associated with the franchised passenger services. In the event that the franchises are only predicted to be marginally profitable, providing a highly competitive basis for Open Access Operators could jeopardise the primary service.
Electrification Asset	May not apply to all trains.	EURO PER TRAIN KM	EURO PER TRAIN KM	Electrification Asset charges will recover the variable maintenance and renewal costs associated with the overhead line assets. The charge will need to be calculated based upon the variability of electrification costs and the wear on the asset which is incurred. As we would expect the majority of trains on the route to be electrified, it may be appropriate to have this as a discount to the core rate for non-use, rather than as a discrete additional charge.
Electricity Costs	May not apply to all trains. EURO PER TONNE MILE TO REFLECT POWER DRAW	ON TRAIN METERING (ACTUAL COST)	ON TRAIN METERING (ACTUAL COST)	All railway undertakings will need to pay to cover the costs of electricity for traction, with this varying due to the on the price of electricity, the amount of electricity used by each train. While the actual cost of power could vary nationally, dependent upon how power is procured, though for pricing purposes, it would be sensible for the NRBE to hold this risk. Pricing may be varied by time of day in order to encourage freight paths to be optimised.
Coal Transport	May not apply to all trains. CHARGE PER KM FOR COAL	DOES NOT APPLY	DOES NOT APPLY	This charge will look to recover the cost impact of coal spillage on the network based upon the the cost of clean-up, delay minutes and reduced asset life for both points and plain line. The potential risk of coal transport on a high speed mixed used network is material and needs to be accounted for.

The fixed track access charge could be paid either directly by the franchise operator to the RBNE or by the Beneficial Owner(s) to RBNE, given that the RBNE will not be letting the franchised service.

It may be that there is a need to develop a Freight Specific Charge associated with the Rail Baltica route, in the event that significant spur lines are required into the intermodal terminals, the costs of which it would be inappropriate to transfer to passenger services. An alternative to this would be to include these costs as part of a landlord management fee associated with the intermodal freight terminal.

Within the variable track access charge for freight, there are a number of different potential charging models, these being shown in Figure 15 and reflecting either Train Km, Grosse Tonne Km and Wear Based. The positives and negatives are shown below in figure 15; wear based is undoubtedly best in class, though not yet widely in place throughout Europe and is likely to bring relatively small gains for the route versus a gross tonne km approach in the near term.

**Figure 2-18 - Freight Service Sub Methodology**

Billing per train km is the simplest method of charging for track access and is common across Europe. It would facilitate ready calculation of logistics costs for freight operators who would be using the Rail Baltica corridor for part of their freight movement.

Charging for track access on a gross tonne km is a common, well understood model across Europe, which can be adjusted to reflect track wear. There may be some indirect benefit for Rail Baltica route under this model with regards to the nature of the products that are shipped on the network.

Track friendly train technology, such as steerable bogies, or hydraulic systems which reduce force between wheel and rail reduce the long term running costs of the rail



The simplistic nature of charging per train km is generally outweighed by the lack of incentive for Railway Undertakings to invest in rolling stock that protects the asset, resulting in a long term risk of discrepancy between the revenues from track access charges and the potential risk of subsidy requirement increasing.

Gross Tonne Km charging, while more sophisticated than direct train KM and reducing the risk of a discrepancy arising in revenue and costs, still does not encourage the Railway Undertakings to invest in rolling stock that will lower the whole life cost of the asset.

Given the high speed nature of Rail Baltica and the associated track alignment, the benefits of these are somewhat reduced versus the impact on railways with heavy curvature and / or high numbers of points.

However, RB Rail AS has also expressed a concern about the nature of the freight which is carried on the national networks, in that many of the goods moved tend to be primary and consequentially have very little indirect benefit to the economies of Estonia, Latvia and Lithuania due to the lack of added value for these products (through transit does not encourage secondary or tertiary business development associated with processing or manufacturing).

While Atkins would not normally recognise that an Infrastructure Manager would be concerned with the types of product carried (this normally being influenced by macro-economic government policies), we have nonetheless looked to understand how each sub model would align with this aspiration.

When we map all product types that are likely to be carried on the network, we can see that these can be broadly grouped into primary, processed and manufactured items, to be moved in three different train consists of bulk wagons, processed and manufactured.

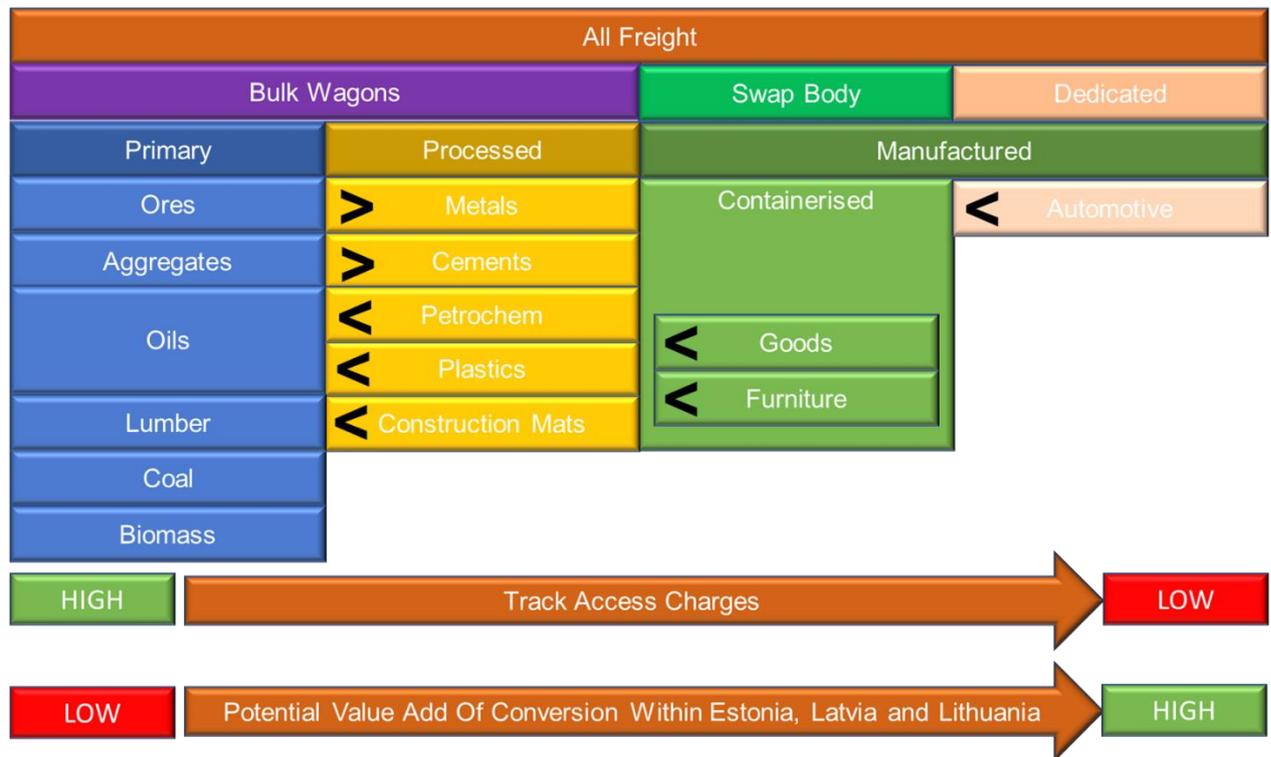
We have made a high-level review of the densities of the products carried and identified that broadly, more processed and manufactured products will have a lower density and therefore a lower tonne km charge than primary km, reflecting the fact that in like for like wagons, both the incremental wear and lower power draw required to move each wagon will justify this.

Versus a model based around straight train Km, a gross tonne km model therefore presents not just a better model for the RBNE, but also will make it less expensive for more desirable products to be moved by rail. This would appear positive. However, within the limited scope of this review section, the actual real-world effect of this would appear to be highly limited.

Atkins has not identified a direct way of structuring track access charges so that it would become more attractive for processing of primary materials for transfer on the route and that a risk is also evident in that even if this could be constructed, we need to recognise that one of the great

advantages of the railway is the manner in which it can successfully remove those heavy, primary products from road networks.

**Figure 2-19 - Assessment of Product Grouping by Train Unit Type and Density for Pricing**



'> Means that density is higher after processing or manufacturing

'< Means that density is lower after processing or manufacturing

We therefore believe, for freight, track access charges based on Gross kg per train km, in light of the following factors, to be the most appropriate charging mechanism for the route:-

- In the near term, the primary focus for the RBNE must be to drive traffic onto the network.
- Railway Undertakings will adopt the new network faster if they are not driven to buy new wagons.
- Relatively straight track means minimal benefit for driving Railway Undertakings to deploy new wagons.
- A charge per Gross kg is common and well understood by the freight industry.
- A charge per Gross kg aligns somewhat to the aspirations of RB Rail AS, though national governments would need to put in place policies to exploit this element of the pricing mechanism.
- Pricing per Gross kg is demonstrably non-discriminatory.

**Further track access charging elements**

In principle, further elements can be brought to bear and included in track access charges, though we have not determined these to be applicable. For example:-

1. **ETCS:** "The infrastructure charges for the use of railway corridors which are specified in Commission Decision 2009/561/EC shall be differentiated to give incentives to equip trains with

*the ETCS compliant with the version adopted by the Commission Decision 2008/386/EC and successive versions. Such differentiation shall not result in any overall change in revenue for the infrastructure manager.” - this is not deemed to apply to the Rail Baltica route as all trains will be required to be ETCS level 2 compliant to operate on the network.*

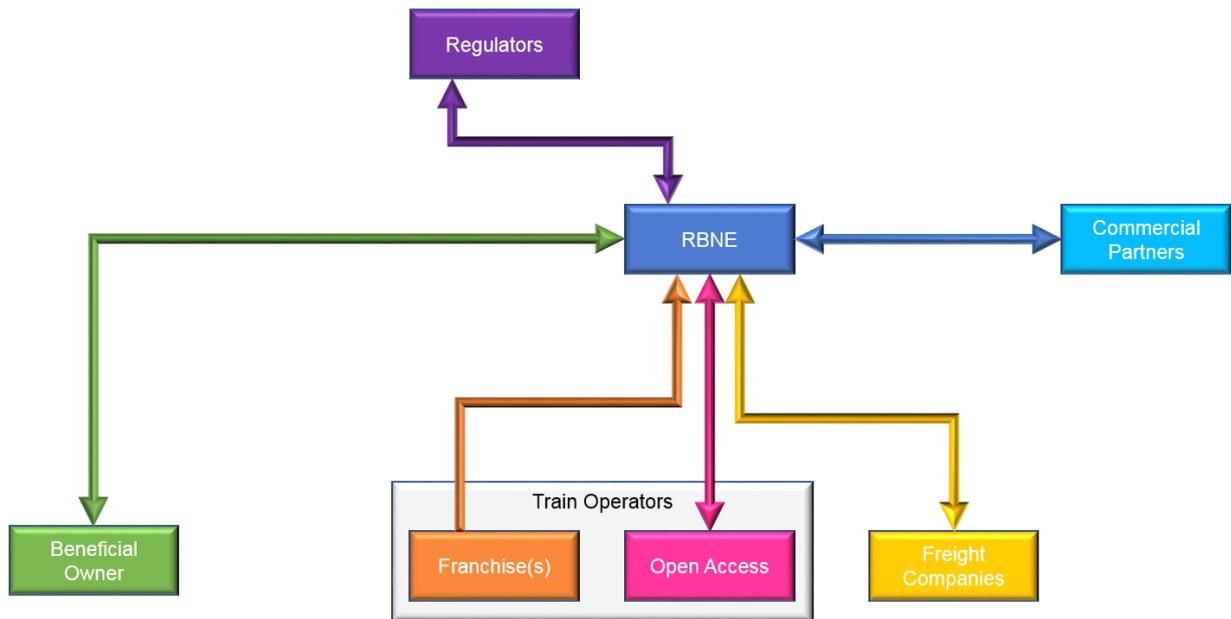
2. **Enhancements:** *“The infrastructure manager may set or continue to set higher charges on the basis of the long-term costs of such projects (enhancements) if they increase efficiency or cost-effectiveness or both and could not otherwise be or have been undertaken. Such a charging arrangement may also incorporate agreements on the sharing of the risk associated with new investments.” - as at the point of service commencement, it is highly unlikely that any further development of the network will have been identified for development, Atkins believes it would not be appropriate to include a charge on this basis.*
3. **Gauge Related:** *“For the carriage of goods from and to third countries operated on a network whose track gauge is different from the main rail network within the Union, infrastructure managers may set higher charges in order to obtain full costs recovery of the costs incurred.” – this is not deemed to apply to the Rail Baltica route as the route itself will not enter third countries whose track gauge will be different from that in the European Union.*

**Noise Related:** ProRail proposed a further alternative track access charging element to be noise related. Given the need to achieve the business case in the near term and the fact that low-noise rail wagons often require new investment, Atkins would not recommend that this is used as an element for the Rail Baltica scheme unless particular concern arises as part of the design process.

2.3.3.2. Model of engagement with railway infrastructure users/operators (including railway undertakings)

The RBNE will need to engage with a wide range of stakeholders, far broader than just railway infrastructure users and operators, but will have only limited interaction with the travelling public. We have mapped the primary relationships (Figure 2-20) for the RBNE and described how we see these working.

Figure 2-20 - Relationship Diagram for RBNE



\*Freight Companies may also include Freight Logistics Companies & Brokers.

Beneficial Owner(s) Relationship

As a steady state infrastructure manager, the RBNE will need a relationship with the Beneficial Owner(s). The primary purpose of this group will be to agree the level of any subsidy which may be required by the RBNE, confirm, prior to regulatory approval agreement that the beneficiaries agree with development of specific lines of commercial activity where these would present potential risk to the effective operation of the RBNE.

The Beneficial Owner(s) will not be able to instruct RBNE on any issue with regards to the management of the route, though will have full access to information produced by the regulators in order to determine whether any funding requirements are justified, fair and proportionate.

Regulatory Relationships (Safety)

Atkins believes that for Options 5, 57 and 63 to work, a common approach to safety will need to be established across the route. This will need to take into account the following Common Safety Methods as part of the development of a Safety Management System.

- CSM1078/2012 ('Monitoring')
- CSM402/2013 ('Risk Evaluation and Assessment')

- CSM 2018/762 ('Safety Management Systems')
- CSM 2018/761 ('Supervision;')

Taking these standards into account, we therefore see that RBNE will engage with a single body that represents the safety regulators of Estonia, Latvia and Lithuania. A model similar to the one identified as being in use for the Channel Tunnel Rail Link in our earlier benchmarking report would seem to be an effective position.

Without a common approach to safety for the route and common interpretation on how assets should be treated and maintained to ensure a safe railway, there would be a major risk of disconnect across the three countries and consequent increase in complexity and cost.

This approach was generally supported by all three national regulators when consulted, all of whom recognised that there would be benefit in the creation of any entity that created competition versus the existing national infrastructure managers by permitting performance benchmarking.

Atkins notes that with the addition of a second infrastructure manager there will be a consequential increase in administrative burden and cost for all regulators and that this will need to be funded for this model to succeed. The level of this cost burden has not been identified by this study but is not likely to prove material in the overall context of the scheme.

### Regulatory Relationships (Economic)

Atkins believes that for Options 5, 57 and 63, economic regulators will have a slightly more complex reporting and analysis task than would be the case under Option 85. There will be an obligation to report on the levels of performance and service, as well as value for money for both passenger and freight services, with this obligation becoming more rigorous in the event that subsidy becomes required.

Given the relationship which each national regulator will have with its government and the potential obligation for funding, we anticipate that there may be a requirement for 1x1 relationships to exist between the RBNE and the national economic regulators, although we also anticipate that a coordinated approach between the regulators would be required for the purpose of managing Track Access Charging.

This would require further headcount in RBNE to support the multiple touchpoints, something that has not been costed in this model. In addition to this, the role of the ENRRB (European Network of Rail Regulatory Bodies) should be considered to facilitate and co-ordinate decision making on the same.

### Train Operator Relationships

While in the first instance the RBNE will have at least one franchise for railway operations, the expectation must be that it will work openly, actively and fairly to support the development of further Open Access Operators. To do this, it should make it as easy as possible for third parties to start this process, to understand the risks, costs and opportunities.

This aligns with Article 27 of Directive 2016/2370, which states that *'The assessment process should take into account the need to provide all market players with sufficient legal certainty to develop their activities. The procedure should be as simple, as efficient and as transparent as possible as well as being coherent with the process for the allocation of infrastructure capacity.'*

The RBNE will need to publish a network code which will detail the common rules that apply to the route and all parties who are seeking track access, showing how changes to the network will be

controlled. This must detail, inter alia the procedures about how the performance of the railway is measured and how access rights are used to help construct the timetable and a method of dispute resolution, but further to this, RBNE should adopt best practices such as: -

- The creation of contract templates showing standard provisions – made available on the internet.
- Transparency with regards to how relationships are governed.
- Up front visibility on track access charging.
- Clarity on the functioning of delay attribution processes and compensation payments for disruption.

Over time, it may be that the RBNE wishes to develop close working relationships with the franchise operator in order to improve customer services. While separation of track and train must remain absolute, it is entirely feasible for deep alliances to be formed.

Careful consideration would however need to be given with regards to either existing or potential open access operators, though this is enabled under Article 21 of the Directive 2016/2370, which clearly states that *‘In order to achieve efficient network management and an efficient use of infrastructure, better coordination between infrastructure managers and railway undertakings should be ensured through the use of appropriate coordination mechanisms.’*

Under such circumstances, both RBNE and the franchise operator would remain separate legal entities and accountable for their own discrete spheres of interest, but improved working could be created in areas such as station management or the planning of engineering works.

### Freight Companies

Establishing a successful relationship with freight companies will be absolutely critical to the successful establishment of an infrastructure manager and subsequent utilisation of the route.

This will be built upon both how effectively the RBNE can meet the strategic aims of freight companies in its initial design and also in how it manages to interact and provide services.

From a strategic perspective, we therefore have considered how each option can support the key priorities being sought by the European Rail Freight Association, which has a number of priorities they are seeking to have implemented across Europe. These are as follows:-

1. Road charging
2. Single operational language
3. Facilitating Combined Transport operations
4. Profile Gauge
5. Rail Master Plan

Details of how well each model will be able to address these objectives is shown in the table below:-

**Table 2-8 - Alignment of Options With ERFA Objections**

ERFA Objectives		Option5	Option 57	Option 63	Option 85
Road Charging	EFRA is seeking for road charging to be introduced to reflect the true costs of road transport versus rail.	No Option is in a position to influence this outcome			
Single Operational Language	<p>Railway undertakings are in competition with road hauliers for customers whose drivers do not face the same language requirements. The language requirements of drivers must be simplified to a level that guarantees the safety of the rail system, while ensuring that the costs involved do not undermine rail's business model and the adoption of a single operational language for rail (English), must quickly go ahead.</p> <p>An urgent solution must also be found to simplify language requirements in the short-term for cross-border operations. Here the language requirement should be reversed to the traffic controllers.</p>	Can be effectively mandated as part of the design of the organisation.	Can be effectively mandated as part of the design of the organisation.	Can be effectively mandated as part of the design of the organisation.	No incentive to implement a single operational language.
Facilitating Combined Transport Operations	<p>Current EU rules to support intermodal transport operations and a shift away from pure road transport are sporadically applied across European countries, undermining combined transport's potential to make further gains on the pure road competition.</p> <p>To increase the attractiveness of this transportation service it is essential to extend support measures to national intermodal operations and to accelerate investment into transshipment terminals.</p>	Would compete in marketplace and risk distorting the same.	Options allow for development of healthy intermodal services.	Options allow for development of healthy intermodal services.	No ability to provide a cohesive route level response.
Profile Gauge	Today's unsatisfactory information availability on structure gauge restricts the optimal use of rail infrastructure as it does not always reflect the most accurate recording of the structure gauge or... evaluate compatibility. Current measurements also often involve significant safety margins. Railway undertakings should have a right of access to measured data or alternatively to measure the structure gauge and to validate the calculations in collaboration with the infrastructure manager.	Feasible for all options based upon new record provision.	Feasible for all options based upon new record provision.	Feasible for all options based upon new record provision.	Feasible for all options based upon new record provision.
Rail Master Plan	It is essential that national governments support their rail freight sector with a concrete plan for investment in infrastructure, reductions in track access charges that allow for rail freight to be competitive with the lower costs for road transport and in developing international rail freight operations running on their networks.	National view more complex.	National view more complex.	National view more complex.	National view simpler.

## Commercial Partners

The development of effective relationships with commercial partners who will work with the RBNE to exploit the railway assets for commercial purposes will help reduce the risk of subsidy. This however is a highly complex area and how RBNE engages in the marketplace will be critical from a reputational perspective.

This means that in the near term it is reasonable for there to be oversight of how commercial development takes place. We would expect this oversight to relax over time and for both Options 57 and 63, new commercial activities to become primarily controlled through regulatory engagement rather than decision by the beneficiaries.

At the commencement of the RBNE, there will not be a need for another business plan and beneficiary approval because the Rail Baltica business plan that is currently in development, will also cover the 10 year operational phase, including annual updates.

Given the high profile of the RBNE, transparency of its operations will be key. The new entity should retain a record of all communications made with customers during any individual month, detailing the nature of the contact. The new entity should summarise the entertainment costs incurred by any and all members of the new entity, detailing the nature of the entertainment, date, time and customer / target customer on a monthly basis, with appropriately anonymised data being published.

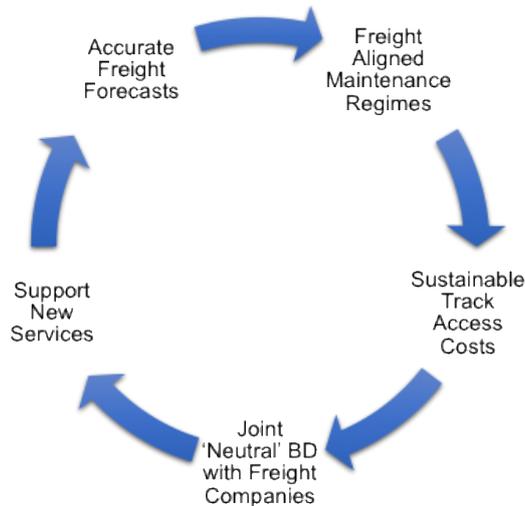
The new entity should inform the Beneficiaries prior to any meeting which the Chief Executive of the new entity believes could result in contract discussions with a significant value (e.g. in the region of €50m or above).

2.3.3.3. Rail Baltica business development and commercialization (freight and passenger) (consider, propose and compare different approaches);

Commercialisation of Freight Services

While the RBNE will not be operating freight services directly, it does have a key role with regards to ensuring the effective commercialisation of freight services on the route and can create a virtuous circle in encouraging businesses to move from road to rail. This can be done without favour to individual freight companies.

Figure 2-21 - Virtuous Circle of Freight Industry Support



Given the strong feedback from stakeholders about their willingness to invest in the Rail Baltica route, the RBNE must have a clear focus to attract private investment to increase freight traffic levels and grow income (for itself through higher track access revenues).

To do this, it will need to build confidence in the marketplace. By having maintenance regimes that clearly show that freight paths will not be penalised, by pricing track access as detailed in a manner that drives the right traffic onto the network in a manner. In addition to operating effectively as a neutral landlord, there is nothing to stop the RBNE from conducting business development alongside all freight operators to help persuade their customers of the efficacy and network performance of the new line.

Linked to this, a strong focus on private investment could also extend to engaging with major companies (e.g. IKEA) to identify what network changes or support services (including network enhancements) would need to be deployed in order to build the network, using this information to help improve future freight forecasting. In all circumstances however, the RBNE would need to ensure that appropriate information barriers were put in place between the differing freight entities as well as to ensure that support was given to all freight carriers equally.

Commercialisation of Passenger Services

As the RBNE will not be operating passenger services and will have to maintain a neutral position with regards to the development of the network, including facilitating the growth of open access operations, the commercialisation of passenger services does not strictly apply under any of the Options (5, 57 or 63) – even in the case of Option 85, this would remain the same, due to the required separation of track and train.

What RBNE can do however is create an environment and structure that enables the following:-

- Effective franchising through the creation of accurate passenger forecasts

- Development of enhancement schemes which will bring more people to use the railway.
- Supporting the creation of a journey experience.
- Ensuring that the delay dispute resolution experience is effective, so that the end customer is compensated quickly.

#### 2.3.3.4. Development and provision of additional value-added services by the infrastructure manager

For the purposes of this report, commercialisation of additional value-added services is defined as:

- introducing new products or services to the general market for profit; or
- developing or seeking to develop services which are intended to be offered directly to the general market for profit; or
- developing, organising or managing services for sale to the general public

#### Permitted Activity & Value-Added Services

Any commercialisation activities which RBNE wishes to enter into must be subject to both beneficiary and regulatory approval so that there is no unacceptable level of risk incurred which might impact the performance and delivery of the core functions; The measure of success for the Rail Baltica route must in the first instance be the effective operation of the route, providing the right service at the right time, for the right cost to its users.

The range of commercial options which we believe should be covered by the RBNE at inception (broken down by option) are shown in Table 2-9 below.

**Table 2-9 - Commercial Flexibility Proposed by Option**

Area	Subtext	Option 5	Option 57	Option 63	Option 85
Railway Services	Station Property Development	Green	Green	Green	Red
Railway Services	Station Property Management	Green	Green	Green	Red
Railway Services	Station Concessions	Green	Green	Green	Red
Railway Services	Station Wi-Fi	Green	Green	Green	Red
Railway Services	Station Sponsorship (Branding)	Green	Green	Green	Red
Commercial	Sale and development of air rights.	Green	Green	Green	Red
Commercial	Pollination Vector Provision	Green	Green	Green	Red
Railway Services	Train Maintenance	Green	Green	Green	Red
Railway Services	Train Cleaning	Green	Green	Green	Red
Railway Services	Intermodal terminal operation	Green	Green	Green	Red
Commercial	Wayleaves (Telecoms)	Green	Green	Red	Red
Commercial	Wayleaves (Power)	Green	Green	Red	Red
Commercial	Wayleaves (Other) e.g. Water / Gas	Green	Green	Red	Red
Commercial	Grid Resilience (Backup Generation)	Green	Green	Red	Red
Commercial	Telecoms (Dark Fibre)	Green	Green	Red	Red
Commercial	Telecoms (Optical Wavelengths)	Green	Red	Red	Red
Commercial	Telecoms (IP Managed Service)	Green	Red	Red	Red
Commercial	Telecoms (Service Provider)	Green	Red	Red	Red
Commercial	Asset Reuse / Flood Defence	Green	Red	Red	Red
Commercial	Power Load Management	Green	Red	Red	Red
Commercial	Power Demand Reduction	Green	Red	Red	Red
Commercial	Power Balancing Services	Green	Red	Red	Red
Commercial	Power Generation	Green	Red	Red	Red
Commercial	Trackside Mobile Communications	Green	Red	Red	Red
Commercial	Mobile Ticketing and Apps	Green	Red	Red	Red

Unlike Option 5, which permits (subject to regulatory consent) any and all commercial activity, Options 57 and 63 are relatively modest in terms of the commercialisation of the infrastructure manager, this being a reflection in the Multi-Criteria Analysis that a relatively traditional infrastructure manager, with a strong focus on discharging the core functions was the best solution for the route.

This relatively limited commercialisation options means that the organisation aligns well with the core function of delivering an effective railway, without the risk of commercialisation distracting from delivery performance, but keeping this open for the future as the business establishes itself.

As such, over time, we would however anticipate that subject to beneficiary and regulatory approval, these other opportunities would gradually be opened up. Details of the types of permitted business at launch are shown on table 10 below, along with indicates of future scope development.

Rather than have this occur on a case by case basis, we would advocate that the regulatory bodies develop a framework for permitted activity by RBNE so that it can act with an appropriate commercial mindset.

These include items such as those in Table 2-10.

**Table 2-10 - Potential Further Value-Added Services**

Opportunity	What Would Take Place	Impact Analysis
<b>Way-leaves</b>	The Rail Baltica route will be a valuable asset to both distribution and transmission companies in the energy sector as well as for telecoms companies looking to lay new fibre optic cables	Granting wayleaves will likely unlock modest revenues but with very low commercial and operational risk. (Included at launch).
<b>Station Branding</b>	Station branding rights could be sold to commercial enterprises.	There is zero operational risk, but this could impact on the development of a brand identity. The sale of branding rights for a 3 year period of Madrid's Sol station to Vodafone generated EUR1m per annum income, ending in 2016.
<b>Fibre Optic Monetisation</b>	An Indefeasible Right Of Use (or several) could be sold for access to defined optical capacity on RBNEs telecoms network, operating as a managed service.	The business impact could be minimised by structuring the IRU rights to scale over time, for example, for the first few years only permitting access to a managed service in the optical core network and then allowing rights over other elements of new network build to phase in over time. This would balance the capability of the business to deliver successfully with the commercial opportunity to ultimately fully exploit a national network.  Structuring the deal intelligently could result in the sale of the Indefeasible Right Of Use with associated public service obligations, either on a universal service obligation, or on a specific basis to provide connectivity for government in areas where there is currently poor provision, the latter being more likely based upon the potential revenue to be generated from the sale.

		While outside the Scope of Options 57 and 63 as analysed, this remains a relatively attractive option as it could be delivered relatively quickly (c.12-18 months after go live and would have a relatively low level of state aid complexity.
<b>Energy trading strategy</b>	RBNE will procure electricity on behalf of the railway undertakings and will be a significant purchaser in this field. Over time, a more active participation in the energy markets with more sophisticated procurement and trading strategies could yield significant savings subject to the appetite of the beneficiaries for the same	High risk, outside the core competencies of a traditional infrastructure manager, carries the potential for significant losses.  Highly complex from a regulatory perspective.
<b>Use of existing power infrastructure</b>	RBNE could release spare electrical distribution capacity on the route, giving support services to other distribution network operators under Joint Ventures.	Potential national benefits on grid resilience, but very hard to commercialise and the business case would require detailed investigation.
<b>Distribution Partnerships</b>	RBNE will have a multi-national footprint, large land ownership and will pass through major cities. In partnership with an existing business it could help provide services to heavy industrial users.	This is effectively a partnership option looking at the provision of wayleaves and is a feasible proposition under both Options 57 and 63 which would likely bring more financial benefit than the straight forward sale of wayleave rights.
<b>Pollination Vectors</b>	The railway corridor could be planted with appropriate flowers and plants which encourage the development of pollination vectors, improving crop productivity – as a low risk activity, this can be recommended for inclusion in the initial commercial offers to be made by the RBNE.	This is a process well established in the USA for infrastructure managers <sup>95</sup> , but is only starting to be introduced into Europe as part of net-biodiversity positive schemes.  Dependent upon the type of crops grown along the route, this could be a positive scheme, though commercialisation of the same is difficult. In the first instance, alternative sources for funding such a broad value add approach might better be sought.

As these opportunities evolve, it would be sensible to develop commercial opportunities that can continue to support the core function of the RBNE, rather than just focus on straight forward commercialisation.

For example, in the context of supporting the mobility of passengers with special needs for assistance, building on the introduction of WiFi on passenger trains and WiFi in RBNE stations give an opportunity to provide innovative customer solutions; Software applications can be developed and sold, enabling travellers to passively trigger geofencing alerts and bringing them discrete assistance. Such technologies could then be sold to other IMs or similar operators such as airports.

<sup>95</sup> <http://www.startribune.com/mndot-promoting-i-35-as-the-monarch-highway/383697531/>

## Legal Structures – Management of Other Commercial Activity

While Option 57 and 63 have a low level of commercialisation and as such there is a very low risk associated with state aid and competition law, given the theoretical commercial potential for the network, it is not unreasonable to assume that the management team of the new entity will seek to exploit this at some point in the future.

This would mean setting up structures to meet more rigorous tests with regards to state aid in particular, either through the creation of a subsidiary (a daughter company) or an affiliate (a sister company). With regards to external commercial risk flowing back to the Beneficial Owner (via RBNE), the level to which this can be mitigated will depend upon the associated commercial structures that are put in place.

As stated, for the level of commercial activity being adopted in Options 57 and 63, we do not believe that there is the need to put in place anything greater than a Commercial Business Unit under RNBE, although as the business evolves over time, it may be appropriate to look at other models so as to reduce the risk of breaching state aid guidelines and to demonstrate clear separation between the roles of the Infrastructure Manager and commercial activities. These are shown below for information only at this stage:-

### Structures Required For Effective Asset Commercialisation

Figure 2-22 – Structures required or effective asset commercialisation

HIGHER STATE AID RISK LOWER				
Commercial Business Unit	Commercial Subsidiary with IRU	RBNE Commercial Affiliate With IRU	Commercial Subsidiary	RBNE Commercial Affiliate
No separate legal entity.	RBNE establishes a private limited company as a wholly owned subsidiary.	Affiliate company is established by the Beneficiary (holding structure likely needed)	RBNE establishes a private limited company as a wholly owned subsidiary.	Affiliate company is established by the Beneficiary (holding structure likely needed)
Assets, Liabilities and contracts remain with RBNE and consequently with the Beneficial Owners who own the assets.	Separate board established for new company to manage commercial activity.	Separate board established for new company to manage commercial activity.	Separate board established for new company to manage commercial activity.	Separate board established for new company to manage commercial activity.
Divisional Accounts recording transactions between RBNE and Commercial Business Unit Required	Indefeasible Right of Use Granted to subsidiary, with Liabilities and Contracts transferred to new entity.	Physical Assets, Liabilities and Contracts remain in place	Assets, Liabilities and Contracts transferred to new entity.	Assets, Liabilities and Contracts transferred to new entity
	Arrangements established to provide services into RBNE from Commercial Entity and to other businesses.	New company is granted an indefeasible right of use (IRU) over non operational railway assets.	Arrangements established to provide services into RBNE from Commercial Entity and to other businesses.	Arrangements established to provide services into RBNE from Commercial Entity and to other businesses.
		Arrangements established to provide services into RBNE from Commercial Entity and to other businesses.		
RECOMMENDED FOR OPTIONS 57,63	POTENTIAL FUTURE REQUIREMENT IF COMMERCIAL ACTIVITY GROWS OVER TIME BEYOND 57,63	POTENTIAL FUTURE REQUIREMENT IF COMMERCIAL ACTIVITY GROWS OVER TIME BEYOND 57,63	UNLIKELY TO BE DELIVERABLE DUE TO ASSET TRANSFER IMPLICATIONS (OPTION 5)	UNLIKELY TO BE DELIVERABLE DUE TO ASSET TRANSFER IMPLICATIONS (OPTION 5)
HIGHER BUSINESS CONTROL LOWER				

If this occurs, to demonstrate that the RBNE remains State Aid compliant, not cross subsidised from Rail Baltica’s core funding and that the commercial activities proposed have the potential to be an investible proposition for a rational investor, it is likely that separate legal entities will need to be created, giving clear separation of functions and financial modelling prepared divided into two distinct financial models, covering both a State aid Model and a Rational Investor Model.

- A State aid Model is needed to inform the transfer prices for a commercialised sister entity i.e. the prices that the RBNE would charge its sister entity for commercialised products.
- The Rational Investor financial model is needed to inform the volumes of “sales” made by a commercial sister entity as well as the pricing to the commercial marketplace.
- Clear information barriers would need to be established between the different entities.

These two models would need to be used to help inform the transfer prices for products to be sold (in between the different entities). This is a complex potential outcome and has not been modelled as part of this study, noting that we would not anticipate it being a likely development for 5-10 years.

It is notable that in under Option 5, as an even more extreme commercial model involving the sale of the asset base to 3rd parties, these requirements would not exist as RBNE would merely become a purchaser of services.

Work would need to be done to create a standard set of terms and conditions to address key contract risks, examples of which are likely to include (Table 2-11):-

**Table 2-11 - Key Contract Risks Examples**

Risks	Explanation
<b>Unlimited Liability</b>	If there was no cap on RBNE’s sister entity’s liability it could <i>theoretically</i> result in the company being sued for more than its net worth. All contracts entered into by the sister entity should therefore be capped. This will moderate some commercial behaviours.
<b>Collateral Warranties</b>	The purpose of a collateral warranty is to create legal relationships, particularly duties, which would not otherwise exist with third parties that are not party to the agreement with the client. Thus, it could place responsibilities on the RBNE entity for reports produced but which others rely on to make decisions.
<b>Consequential Losses</b>	In this context, this is where the potential liability to the client is greater than the cost of having to re-perform the work, or of having to refund sums paid by the client, or having to forego payment for some of all of the work. A sister entity could not be permitted to sign contracts with consequential losses due to the risk that this would present to RBNE.

### Financing of Commercial Activity

For commercial activity, the new entity will need to manage cashflow and timing issues whilst also having access to headroom and potentially to working capital. While beyond the direct scope of this document, work will need to be done to understand how liquidity will be provided. Separate bank accounts will also be needed to capture revenues associated with the commercial activity.

Under these options, the number of new assets which will be created post construction is likely to be small, but these will need to be added to the regulated asset base associated with each sovereign territory and therefore processes for asset investment and ownership will need to be created.

## Land Disposal and Use

Under Option 5, 57 or 63, the new entity will not be permitted to dispose of any land as ownership of the land will be retained by the individual nation states. RBNE will obviously need to receive an indefeasible right of use for the corridor, including permission to exploit the corridor for permitted business to be agreed under its terms of reference with the Asset Owners. Clause 2 of Article 7, Ownership of Land and Infrastructure of the Intergovernmental Agreement which states that the parties agree that land and infrastructure shall be made available for use by the nominated infrastructure manager (s).

### WP6.2: Other critical factors to be taken into account

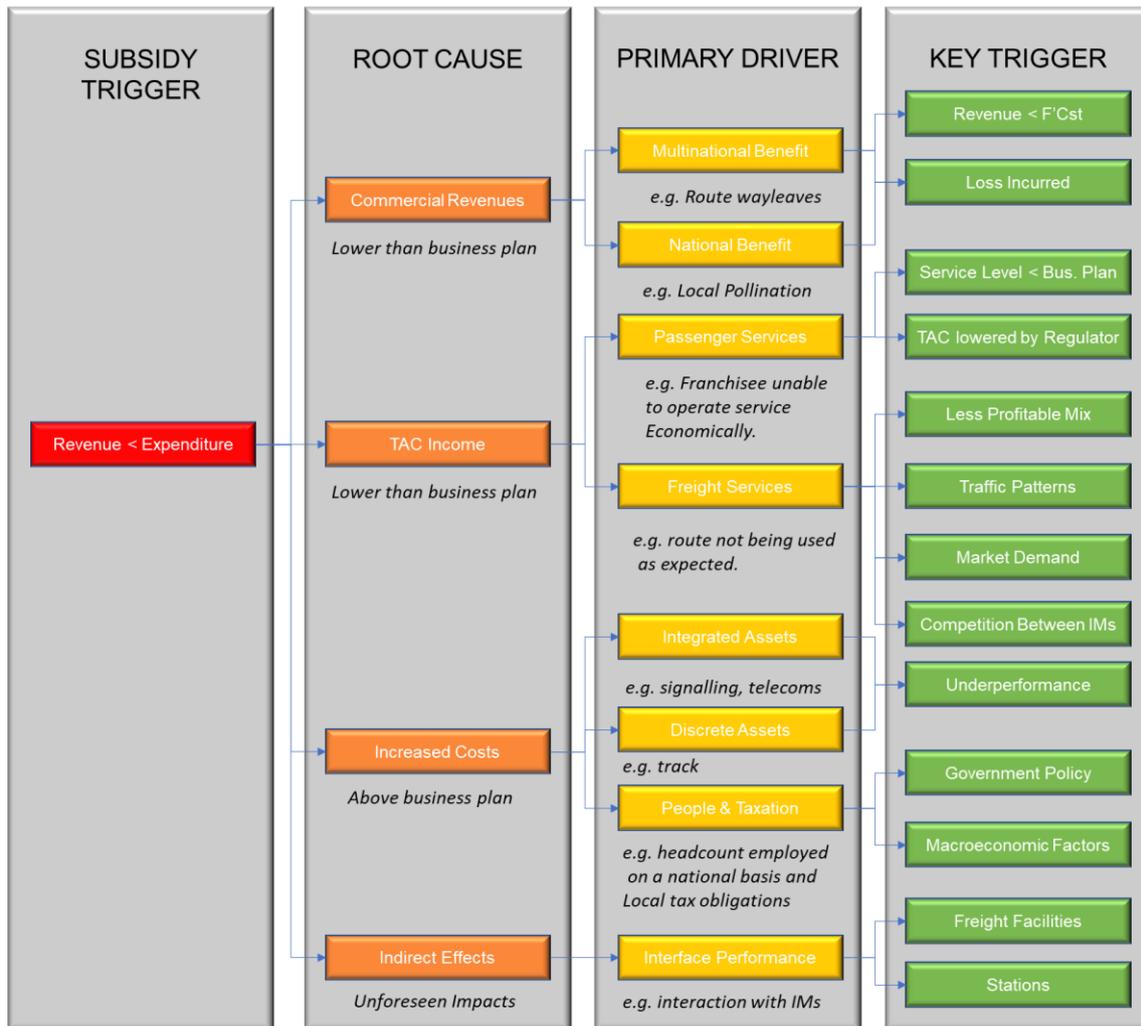
See Appendix on Stakeholder Engagement for input engagement

### WP6.2: The Subsidy Challenge – The Impact Of Varying Utilisation and Profitability

Subsidy for the Rail Baltica route may be required in two different levels, that of potential subsidy for the passenger (franchised services) and for that of RBNE alone. These, to some degree are interwoven, being linked both to the levels of service that is likely to be mandated and the commercial appetite for services to be operated on the route. This study is however focused on the infrastructure manager and therefore, we are not considering the impact of passenger services themselves requiring subsidy, but rather, just the consequence which will result in a subsidy requirement.

This section therefore seeks to explain how Atkins believes that any subsidy requirement should be apportioned between the national governments, working to minimise the stated position that there should be no cross subsidy between nations. This is a complex area with multiple factors likely to interact and the root causes will ultimately have to decide how each nation provides subsidy to RBNE in the event that this is required. These are shown below:-

Figure 2-23 - Subsidy Triggers and Causal Factors



The core requirement for a subsidy will be where revenues for RBNE are less than expenditures, this being driven by a range of different factors, each of which RBNE will have greater or lesser degrees of control of.

Our baseline assumption is that all track access charges will be accrued centrally, without regard to national boundaries and that the RBNE will be able to use these as required to run the business.

The core business, and the majority of its income is expected to come from Track Access Charges, both from passenger services and freight. In the case of passenger services, there are a number of factors which could impact revenues. The Service Levels agreed upon completion of the competition could be lower than in the business plan, with this resulting in an immediate shortfall in predicted revenues, or this could be reduced in the event that the passenger service does not achieve the passenger volume forecasts predicted in their tender, potentially with an associated or discrete reduction of Track Access Charges by the Regulator.

Neither of these factors would be controllable by RBNE, though it would be natural for the beneficiaries to request that RBNE looks for efficiencies elsewhere – a subsidy would however be a likely outcome, linked as it is directly to service obligations being imposed by the national governments.

In such a situation, there are in effect only three options open to how the subsidy is calculated.

- **Proportionate** – an equal share of the lost revenue is apportioned between all the parties whose countries have had the service levels reduced relative to the business plan, effectively topping up the missing Track Access Charge revenues. This would protect RBNE at a business plan level.

- **Actual Cost Delta** – while the shortfall in revenue from Track Access Charges may be real, there may be other revenues that to some degree mitigate this effect (reflecting the fact that the RBNE should not be compensated in the event if it is able to mitigate such effects, though the management team should manifestly be incentivised for performing in such a manner). This would protect RBNE at an operational performance level. This should be distributed based upon the countries impacted by the reduced service levels.
- **Passenger Cost** – the delta in revenue could be apportioned based upon a per passenger kilometre baseline in each territory, balancing the effective GVA benefit for travel each country would be receiving.

Atkins would recommend that for all options, the approach to reconciliation is kept as simple as possible, in order to stop the review process becoming overly complex and potentially contentious (actual cost delta being intrinsically difficult to unpick from all the other factors likely to be applying). We would therefore recommend a proportionate approach be adopted with regards to the risk of passenger related TAC subsidies. This would increase operating capital for RBNE (all other factors performing), though potentially dividends could also be released in the long term if this was continued.

For freight services, while the end consequence of insufficient track access revenue has the same consequence for RBNE, the drivers for this and hence the equitable position to allocate the subsidy payments across the nations may vary.

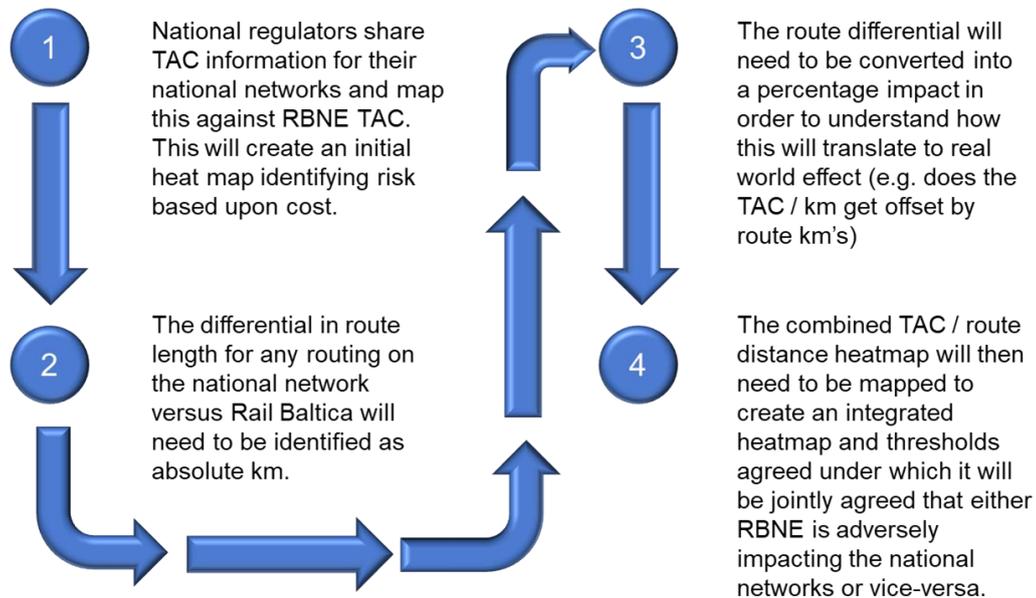
- **Market Demand** – this would be where freight volumes across the route fail to materialise, with no discernible pattern or causal factor across the route. In this circumstance, Atkins would again propose that a Proportionate approach to any required subsidy be required.
- **Less Profitable Mix** – this would be where the revenues associated with the mix of products and associated impact on Track Access Charges per tonne km are materially different from the business plan. This is a highly complex area as it can be distorted by Government policy. For example, if a nation decided to subsidise facilities which processed aggregates on the route, driving up demand early in the lifecycle of RBNE, this could distort the mix such that lower value product is transported according to the proposed methodology. Such items would be difficult to disaggregate unless a business case baseline was referenced and could not be precluded from occurring. Under such circumstance, it would be again recommended that a Proportionate approach be adopted.
- **Traffic Patterns** – in the event that traffic patterns materially alter in terms of geographical distributions, this may or may not impact the track access revenues; multiple smaller journeys in lieu of longer journeys could increase network utilisation, potentially impacting longer train path availability. Failure to recognise this would be a consequence of RBNE failing to manage path allocation appropriately in a constrained environment and therefore should be a common risk to all parties, given the creation of a single entity. The risk for this however is deemed to be low.
- **Competition Between IMs and RBNE** – this would be where competition to the train paths offered by the RBNE results in a material reduction in the traffic on the route and a consequent shortfall in freight track access payments. In the round, competition between the IMs should be positive, in that it will encourage both parties to try to create efficient operations for their customers. Atkins sees two potential scenarios however arising as a consequence;
  - (a) long distance services which cross more than one national boundary are resulting in the loss of revenue or;
  - (b) local services within national boundaries are resulting in the loss of potential revenue.

Under (a), we believe that it would be a regulatory responsibility to assess whether or not this position, if remedied would have greater economic benefit to the nations along the route through adjusting the track access prices on the other train paths (the 1520 network).

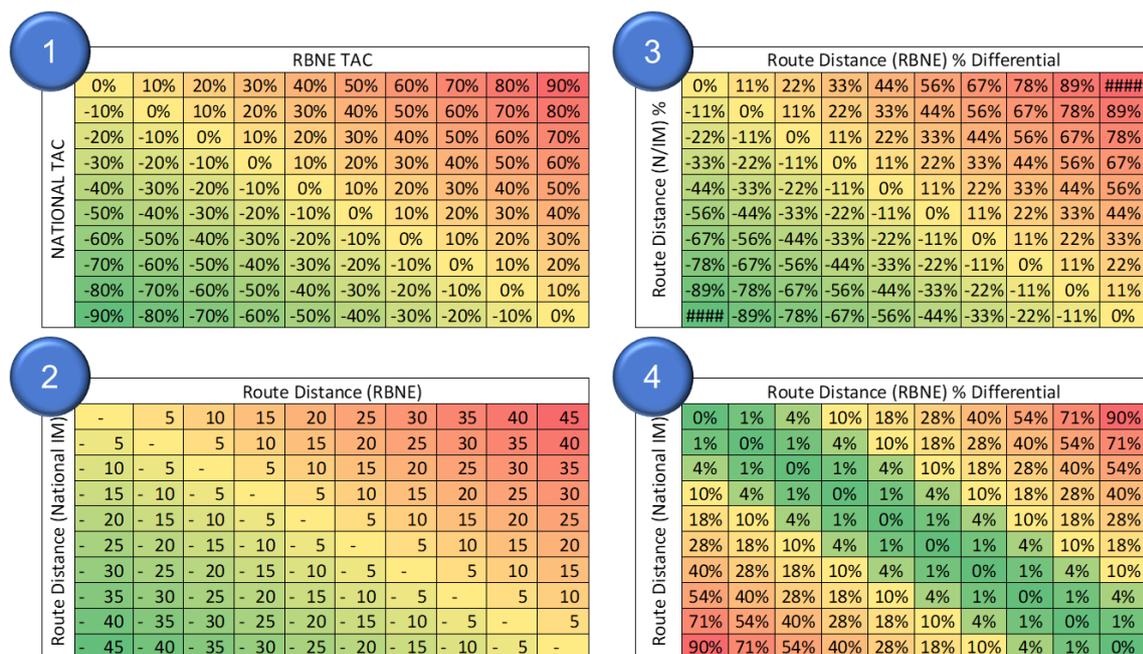
This would effectively rebalance the risk, although there would be a consequential risk of a joint regulatory review proposing an outcome which thereafter altered the track access charging in a manner which would drive traffic from 1425 to 1520 networks, meaning that a subsidy requirement would become clearly established. In this circumstance, Proportionate subsidy could be applied.

With regards to (b), a regulatory remit would not be feasible as the regulation of the Rail Baltica route (under common regulation) could not be compared under a single regulator who would be concerned with the economic regulation and benefit of the national interest.

While the optimal position with regards to minimising risk of cross subsidy in this area will need significant extra work as part of a regulatory workstream, in principle, Atkins believes that it will be possible to develop a formulaic process which will enable all stakeholders to be confident that any natural variations in TAC will not distort the underlying economic assumptions of the route. The initial steps taken deliver this will likely need to be as follows:-



This process should produce clear, transparent reference dabbles as shown below that can also be helped to enable the market make business decisions and drive a focus on route performance and competition if alternative freight routing exists within national boundaries.



With regards to increased costs, there are three key potential drivers which can influence the risk of subsidy being required by an individual party in the event of underperformance by RB Rail AS, these

relate to the nature of the assets, whether they are integrated in nature (e.g. signalling or electrification, where these have extensive common costs that cannot easily be disaggregated), where these are discrete in nature (e.g. track and where these can be readily associated with the geographic boundaries and potentially contracts) or where these relate to people and taxation.

- With regards to those assets that are common across the network and for which cost elements cannot be easily disaggregated, a formula should be developed that limits the potential contribution of each of the nation states to ensure they only contribute in a proportionate manner to the cost overruns.
- With regards to those assets that may have their costs disaggregated on a national level, it may be possible to limit any cost overruns to be transparently aligned with geographic boundaries, dependent upon contracting structures, but this is likely to be complex and add overhead not accounted for in the headcount identified for this study. We would therefore also recommend that a similarly proportionate approach be used.
- Atkins believes that from an initial business plan baseline, in the event that any of the nation states increases their taxation levels, either for individuals, or on a business level, that the RBNE should be held harmless by way of an escalation mechanism. This will effectively prevent cross subsidy.

Indirect Effects may arise where the business case is frustrated due to the unforeseen consequences of business interactions, most likely between RBNE and other national infrastructure managers around both freight facilities and stations, where parties are not motivated in practical terms to support the efficient operation of the RBNE due to conflicts in objective alignment, local incentives or commercial issues. For each of the freight terminals therefore, we would strongly recommend that both RBNE and the national IMs, where interacting, have at a minimum a joint pain/gain incentivisation contract put in place, with common Key Performance Indicators, in order to help ensure effective management of freight between the 1435 and 1520 networks.

## 3. WP7 Identification and Description of the Optimum Model

### 3.1. WP7.1 The identification and Proposal of the optimum model of infrastructure management for Rail Baltica

Atkins proposes the optimum infrastructure management model for RBNE to be Option 57, the functions of which are expanded on below. This is a balanced professional assessment based upon a structure that captures the key points from the MCA which emphasised the importance of an organisation with a laser like focus on the delivery of the core or essential functions of an IM, but with flexibility for commercialisation.

The model, through the use of outsourcing and hybrid models for staffing also presents the potential model for the introduction of cost benefits from Option 85 into Options 57 and 63. Atkins believes that such an approach could help start to build the collegiate relationships with the other national infrastructure managers in the region that will help to bring benefit to each nation in terms of potential synergies with the 1520 network, while maintaining healthy competition in the region – something that all national regulators saw as being a key positive in the creation of another infrastructure manager.

The MCA revealed that Options 57 and 63 performed broadly similarly, with the enhanced commercial freedom under Option 57 being the primary differentiator between the two models.

In the real world, we would not expect that the theoretical increased level of risk from the incremental commercialisation further assets to have a material effect given the similarity between the two models if managed properly.

For example, the ability to sell optical wavelengths in the telecoms network reduces the RBNEs ability to replace fibre optic cable freely when required for railway purposes.

This minor dilution of focus on the core assets means that Option 57 would likely be slightly worse at Asset Management, as well as being slightly harder to regulate. However, this is offset by gains related to the enhanced commercial opportunities related to the new line.

As a consequence, RBNE can be described as *‘an infrastructure manager strongly focused on the core functions of the railway, acting as the landlord for the intermodal terminals on the route, working in a highly ethical and transparent framework, structured to present the best chance of success at delivering the business case, but a governance regime that will allow commercial freedom to grow as the organisation matures.*

## 3.2. WP7.2: Description of the proposed optimum infrastructure management model

### Overview

The RBNE shall be responsible for providing and charging for track access, including capacity allocation and traffic management across the entirety of the Rail Baltica route.

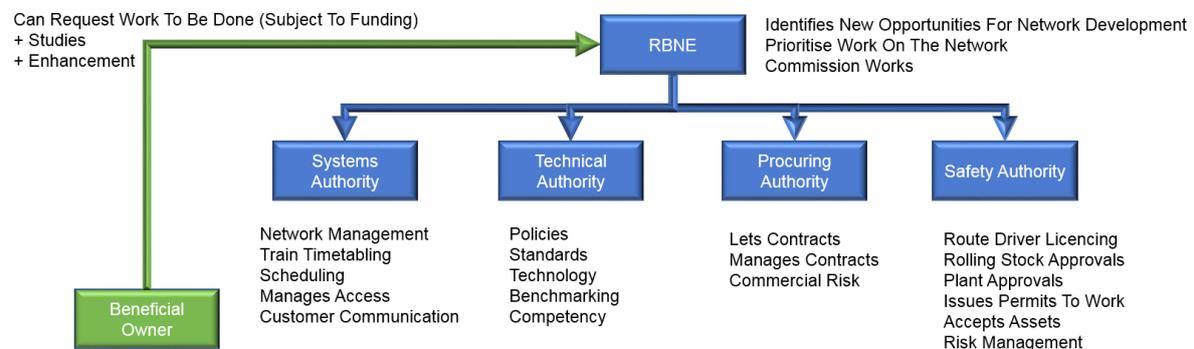
In order to provide access, RBNE must be the competent authority for maintenance, renewals and enhancements related to the route (even if construction is outsourced), network safety, as well as managing day-to-day access. Options 57 and 63 also involve RBNE acting as the Vision Author (setting out the strategy for Rail Baltica) and the International Rail Relations Lead (responsible for strategic (as opposed to day-to-day) commercial negotiations with other countries).

These functions are broken down into four areas, as shown in the diagram below. Each of these areas is described in detail below. In addition to this, the RBNE will undertake the landlord function at each of the intermodal terminals on the route.

### Institutional Model

Figure 3-1 shows the core functions which will be discharged under Option 57 with regards to the operational railway. Moreover, studies being requested refers to the Beneficial Owner(s) requesting RBNE to undertake a study, which for example could be on opening a new line connecting to the Rail Baltica route.

**Figure 3-1 - Core Functions Under Option 57**



### Systems Authority

#### Network Management

The RBNE is responsible for determining and executing the operational rules for prioritisation of traffic in an open and transparent way. These rules govern which trains are given priority in the event of service disruption. In the experience of the consultant, normal practice is to prioritise high speed passenger services, then classic passenger services, then freight services. However, given the importance of freight to the Rail Baltica route, this may need to be prioritised more highly.

## Train Timetabling

This is the process of determining Sectional Running Times (SRTs) for each section of the route for passenger and freight trains, and producing Timetable Planning Rules (TPRs), which are then used to path all of the trains required to run across the entire route. There is typically an annual process and a cyclical process designed to balance capacity with network changes, typically caused by engineering works identified by the scheduling process.

This requires assessment of available capacity, knowledge of train performance characteristics, and software or procedures for managing and avoiding conflicts at stations, junctions, and any other critical interfaces. This will need to be coordinated with other Infrastructure Managers who interface with the Rail Baltica route.

## Scheduling

Scheduling is the process of determining when planned maintenance, renewals and enhancements will take place, including determining which contracted services (if any) will be disrupted or diverted. They are then responsible for communicating with the Railway Undertakings to mitigate against any disruptions, and for ensuring that compensation is paid where stipulated by the track access contracts.

## Managing Access

The RBNE is responsible for granting access to the network for all Railway Undertakings wishing to use network capacity. Primarily, this involves ensuring booked paths are available when required.

## Customer Communication

The RBNE must communicate with customers (freight and passenger operators) in the course of normal operations, and particularly in times of disruptions. Communications will involve updates on the service, including any modifications to paths available in times of disruption.

## Technical Authority

### Policies

This involves being responsible for ensuring that the new network complies with all relevant EU regulations, including checking compliance of any Railway Undertakings that wish to operate on the network, as well as producing reports and documentation as proof of compliance with those regulations. This will include technical, commercial, organisational and environmental regulations.

### Standards

This comprises ensuring the network meets required EU standards.

### Technology

The RBNE is responsible for assessing, evaluating, and accepting any new technology products on the network. For instance, this might include changing from GSM-R to 4G / FRCMS communications. They also undertake testing and feasibility analysis for any planned technological developments.

### Benchmarking

The RBNE must make sure they are performing in line with best-in-class Infrastructure Managers in Europe. This will include recording various performance metrics, and maintaining membership of appropriate international bodies (e.g. PRIME – Platform of Rail Infrastructure Managers in Europe and EIM - European Rail Infrastructure Managers)

### Competency

The RBNE must be the competent authority for establishing standards and ensuring they are met. This includes checking that all personnel working on the railway have the appropriate qualifications and training, as well as ensuring that any work undertaken is done in line with EU standards and regulations.

## Procuring Authority

### Letting Contracts

The RBNE is responsible for letting contracts for maintenance, renewal and enhancement works. This includes specifying work packages, issuing Invitations to Tender (ITTs), evaluating bids and awarding the contracts, all in line with EU procurement laws (OJEU etc.).

### Managing Contracts

After contracts have been let, the RBNE is responsible for their ongoing management, including checking the suppliers' compliance with contractual terms and obligations, ensuring the expected business benefits and financial returns are being realised, the supplier is responsive to the RBNE's needs, and the delivery of services is satisfactory to both parties.

### Commercial Risk

The RBNE must identify, mitigate and avoid the principal risks in any projects and transactions. These risks may include organisational, technical, time frame, financial, suppliers, post-delivery and third-party risks. These may be managed through the contractual agreements covering the project, including areas such as insurance, exclusion clauses, the use of contractual vehicles and the overarching concept of risk sharing.

## Safety Authority

*Memo: For clarity, acting as the safety authority for the route is not the same as acting as a safety regulator – see clarification question responses for further detail.*

### Route Driver Licencing

The RBNE must require that any drivers for freight or passenger operations on the network must be licensed. This involves ensuring that drivers have undergone sufficient operational training, safety training, and route learning (including both simulators and real-world supervised driving). We see this as an obligation for RBNE as only RBNE will have visibility on the infrastructure requirements for the whole route.

### Rolling Stock Approvals

Any rolling stock that is to be used on the network (both passenger and freight) must meet strict standards, including safety standards (e.g. braking characteristics, automatic braking systems), compatibility with any signalling requirements, and platform and structures gauging. The RBNE is responsible for assessing compliance of each class of rolling stock (with the fixed infrastructure e.g. kinematic envelope or EMC) that operators wish to approve, and they may charge for this process, at cost.

### Plant Approvals

As with rolling stock approvals above, the RBNE must certify any plant to be used for maintenance, renewals and enhancements, including certifying electrical and mechanical safety, as well as aspects such as Adjacent Line Open (ALO) working (where plant only requires the isolation of one track in a double track section).

### Issuing Permits to Work

This concerns issuing Permits to Work for any RBNE staff who are required to work on track, including providing necessary training for safe use of the network infrastructure (e.g. safety briefings, training on working on an electrified railway).

## Accepting Assets

Asset acceptance involves accepting into service new assets railway use. A common example is signalling – if a new line is added to the Rail Baltica route, the RBNE is responsible for commissioning the line and signalling assets. The asset supplier has to have safety acceptance to pass the asset over to the new owner. The RBNE issues Safety Acceptance Certificates after the assets have been checked and accepted.

## Risk Management

The RBNE is responsible for risk management on the network. This includes undertaking regular risk assessments for day-to-day activities on the railways, as well as bespoke analyses of any specific activities to be undertaken. Each risk should be scored on probability of occurrence and likely severity, with risks that score highly on either of these reviewed in detail by a sufficiently competent person.

The RBNE must then document and put into practice any possible mitigating measures, and continue to monitor the evolution of any risks identified.

### 3.2.1. Organisation Structure

Recruiting people with the requisite skillsets for Rail Baltica will be a challenge, particularly for the more technical roles, as the level of 1435 gauge rail expertise in the region is relatively lower than in Western Europe. This will be particularly difficult in Latvia and Lithuania, against a backdrop of declining population<sup>96</sup>.

We believe that to some degree this can be mitigated by a hybrid staffing model as indicated later in this document which balances the personnel needed for essential ‘in house’ functions, with those which can be (in principle) controlled in an outsourced manner (e.g. maintenance) or provided by a railway undertaking.

#### Core Functions

For core functions, excluding maintenance and station related functions which we identify later in this document, we have estimated as follows :-

For Option 57, we believe that 145 heads would be required, with a total annual cost of €5.0 million. For Option 63, we believe that 130 heads would be required, with a total annual cost of €4.3 million.

These are broken down by function as follows:

**Table 3-1 - Organisation Structure Function Breakdown**

Functional Area Headcount	Option 57	Option 63
Asset Management	17	17
Board	1	0
Finance	4	0
Human Resources	6	6
Information Technology	2	2
Legal	2	0
NOBO/DEBO	1	1
Operations	23	23
Strategy	8	0
Supply Chain	3	3
Renewals and Enhancement	78	78
Maintenance	See below.	See below.

For Option 63, it is important to understand why certain functions are shown with a ‘zero’ in terms of headcount. This is a function of how the headcount model was constructed. For example under Option 63, versus Option 57, there is negligible commercialisation of the assets.

As a consequence of this, the legal resource which is required is reduced significantly as the organisation is that of a very traditional form of infrastructure manager, focussed on repetitive types of contracts and frameworks being let. Some legal resource would obviously still continue to be required under this model, though are assumptions are that this would be covered through the normal operating costs of the business.

Similarly, while the model effectively calculates a requirement of ‘Board’ to be ‘zero’, this does not mean that the functions of the Board are not being discharged, but rather that the model is recognising

<sup>96</sup> Latvia’s population decreased 0.81% in 2017, and Lithuania’s 1.38%. Estonia saw an increase of 0.27%. <https://eng.lsm.lv/article/society/society/latvias-rate-of-population-decline-still-among-eus-worst.a285045/>

that with the relatively reduced scope of an organisation (heavily restricted commercialisation), the nature of the individuals needed to be hired will not be as senior (the function being more purely rail focussed) – this flowing through into the costs of the model.

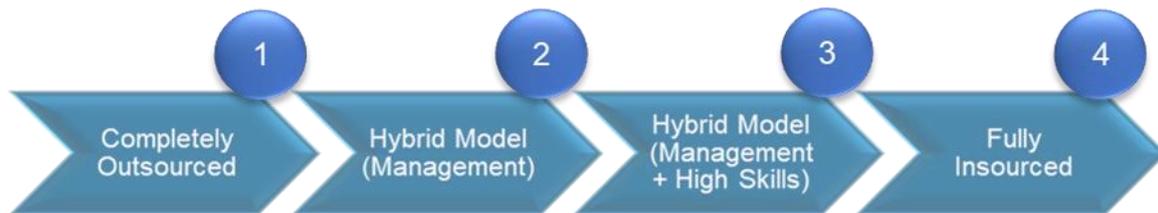
For finance, we can see that under Option 63, the model indicates that there is no finance function, but this does not mean that financial functions are not being discharged, merely that the core responsibilities are embedded elsewhere in the organisation structure – as seen in Appendix H.

It is important to understand that within each function, there will be a range of different roles. We have calculated this distribution based on our knowledge of existing infrastructure managers, these being shown in the pie chart below. In the end structure for the RBNE, it will be equally feasible to create a structure with a stronger discipline alignment, moving these roles between functions. This may well prove beneficial in the first c. 5 years of the organisation, particularly with regards to the Renewals and Enhancements function which will be ramping up to project delivery during this period.

### Maintenance

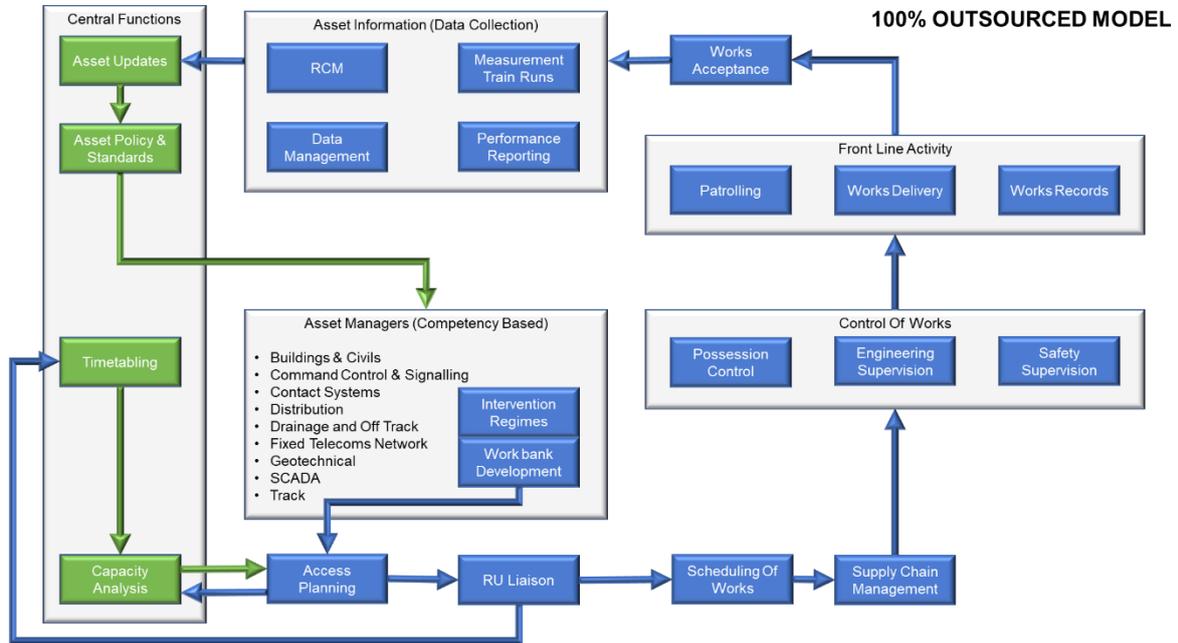
Atkins did not include maintenance in the functions above for two different reasons: the granularity of datasets which we have had access to for the purposes of this study is of lower resolution than that for the core functions; and it remains valid for maintenance delivery that this responsibility can be discharged in a number of different ways, either in-house, outsourced to the supply chain or even outsourced to a railway undertaking.

As such, to understand what this could look like, Atkins has mapped four different options reflecting logical breakpoints in maintenance elements and conducted a SWOT assessment for the same.

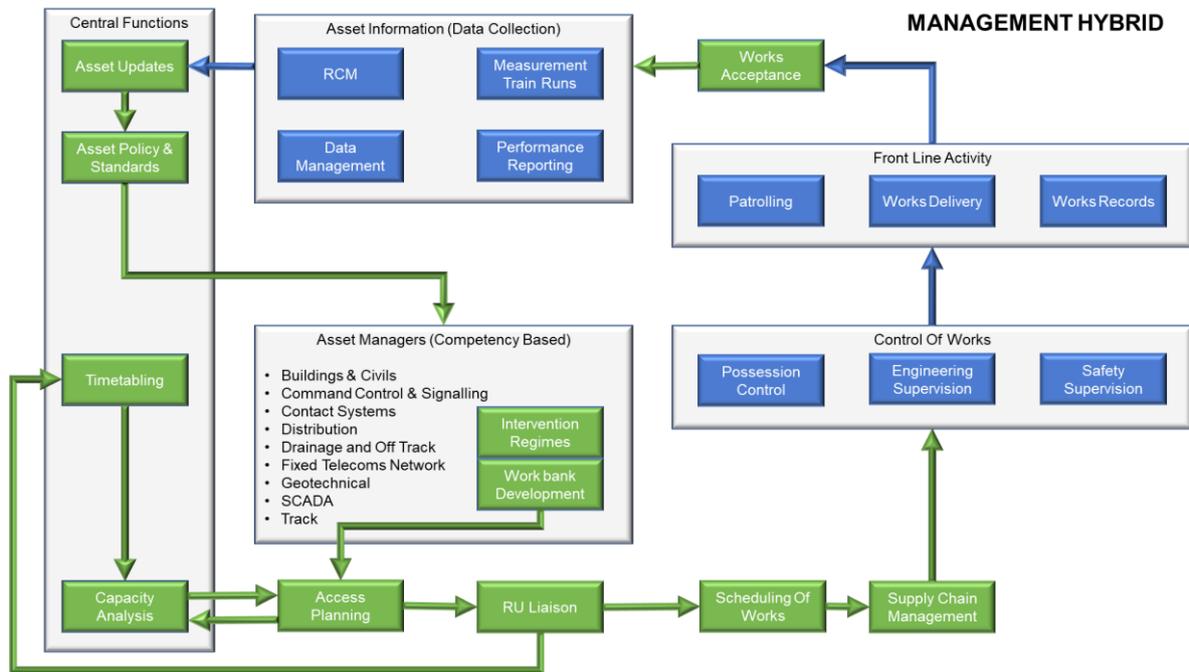


In each model, individual boxes show the key responsibilities associated with maintenance. Those marked in GREEN would be conducted by the RBNE and those in BLUE delivered under contract by an external third party, although we have not tried to identify the specific roles which will need to be identified to discharge these functions.

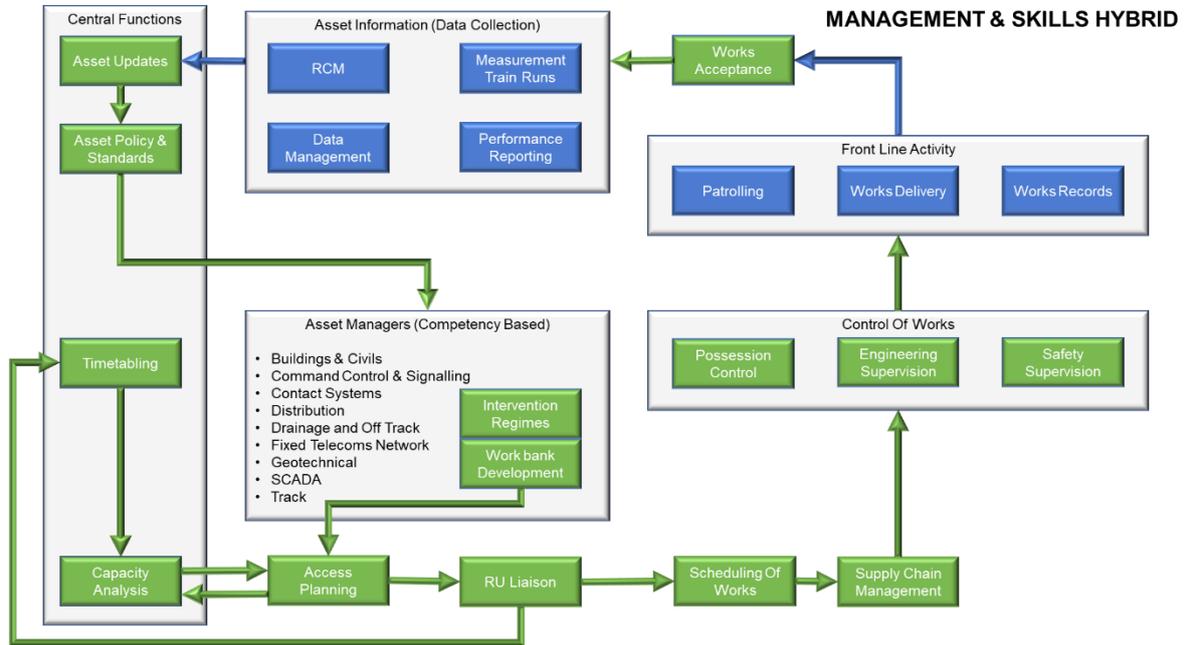
## Maintenance – Outsourced Model Responsibilities



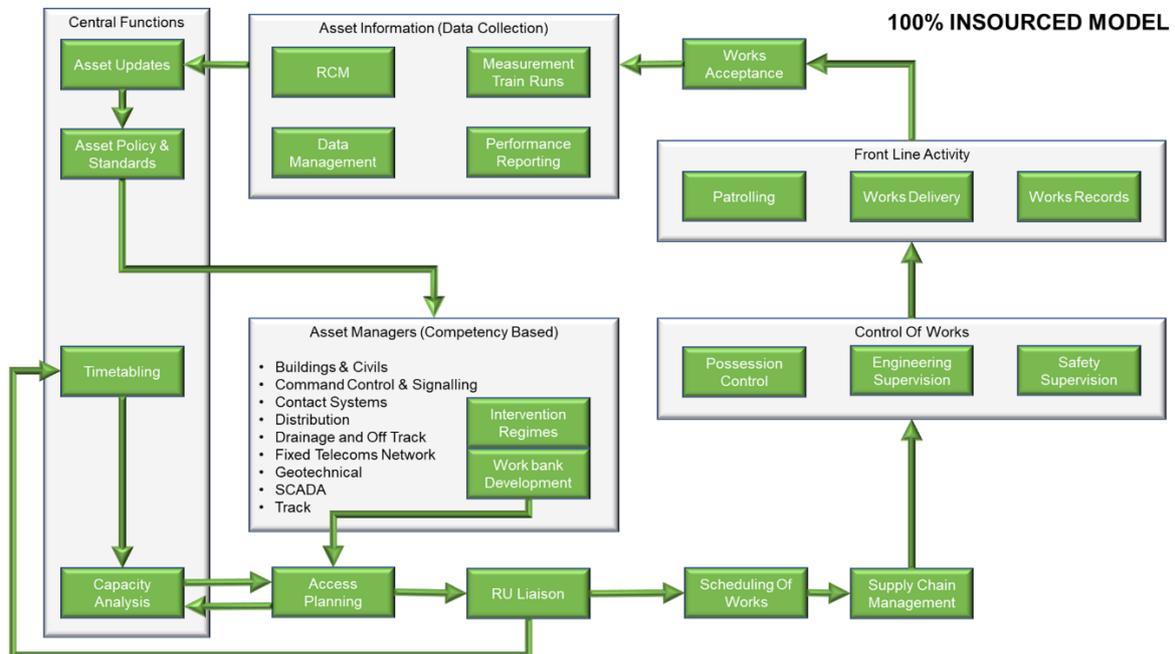
## Maintenance – Hybrid Management Model Responsibilities



## Maintenance – Hybrid Management & Skills Model Responsibilities



## Maintenance – Insourced Model Responsibilities



While the graphics show the flow of responsibilities for inclusion, the shape of these models also merits further context.

- **Completely Outsourced** – an option where long term contracts are let (c. 10 years) for the maintenance either of the whole route or sections of the route.
- **Hybrid Model (Management)** – an option where long term contracts are let (c. 10 years) for the maintenance of the whole route or sections of the route, but where there is close oversight of operations by a RBNE management team. These will likely include individuals with skills in both asset management, delivery techniques and stakeholder liaison as well as possession planning.
- **Hybrid Model (Mgt./High Skill)** – an option where medium term contracts are let (c. 5 years) for the maintenance of the whole route or sections of the route, but where there is close oversight of operations by a RBNE management team, including on site supervision such as Engineering Supervisors, COSS, PICOPS and incident management.
- **Inourced Model** – an option where nearly all responsibilities associated with maintenance (excluding heavy maintenance / renewal) are in-house and directly controlled by RBNE staff. Under such a scenario, we would still anticipate that some restricted outsourcing occurs – for example, with regards to vegetation management or fencing repairs.

The decision as to which model is best for Rail Baltica is more nuanced than that of the other core functions, as shown in the SWOT analysis below, which clearly shows very differing risk profiles dependent upon the model adopted.

### SWOT For Maintenance Insourcing / Outsourcing Options

	Strength	Weakness	Opportunity	Threat
Completely Outsourced	<ul style="list-style-type: none"> <li>* Transfers the risk of poor performance onto the supply chain.</li> <li>* Likely to be politically positive in each of the national territories.</li> <li>* Opens up the potential for the existing national Infrastructure Managers to bid for work, unlocking synergies.</li> <li>* Potentially a lower risk at launch due to the ability of the existing infrastructure managers to recruit and scale their teams.</li> </ul>	<ul style="list-style-type: none"> <li>* Potentially a very high risk at launch if the existing Infrastructure Managers do not win maintenance work packages as other companies are unlikely to speculatively recruit.</li> <li>* Results in a long-term risk emerging for the business in terms of lack of knowledge of the asset emerging (on-the ground experience).</li> <li>* The level of commercial risk which both supply chain partners and railway undertakings are prepared to incur with regards to</li> </ul>	<ul style="list-style-type: none"> <li>* Allows future insourcing if the outsourced service provision model proves ineffective.</li> <li>* Opens up the opportunity for innovative maintenance regimes to be created during a competitive procurement process.</li> </ul>	<ul style="list-style-type: none"> <li>* Possible that any competition will not produce best value for Rail Baltica, given that the incumbent Infrastructure managers are likely to have a significant advantage in bidding.</li> <li>* Will be challenging to transfer the risks and liabilities around new asset failure onto 3rd parties.</li> <li>* Snagging issue management potentially an issue.</li> <li>* Exceptionally difficult to hand off the <i>perception</i> that complete responsibility for any maintenance failure</li> </ul>

	<ul style="list-style-type: none"> <li>* Railway undertakings, as opposed to supply chain contractors are strongly motivated to maintain the asset over the long term if their contractual incentives are properly aligned.</li> </ul>	<ul style="list-style-type: none"> <li>track maintenance tend to be very low.</li> </ul>		<ul style="list-style-type: none"> <li>does not rest with the infrastructure manager.</li> </ul>
Hybrid Model (Management)	<ul style="list-style-type: none"> <li>* Allows closer control of outsourced maintenance teams.</li> <li>* Still likely to be politically positive as the majority of functions will still be available (subject to competitive tender) to the National Infrastructure Managers.</li> </ul>	<ul style="list-style-type: none"> <li>* Management teams remain exposed to potential incorrect information and data being passed through from the outsourced maintenance teams, without the technical capability to challenge the working assumptions.</li> </ul>	<ul style="list-style-type: none"> <li>* Allows for improved continuity in maintenance activity during contract handover and establishes corporate memory regarding asset performance.</li> <li>* Can increase depth of management competence.</li> </ul>	<ul style="list-style-type: none"> <li>* No clear career path into these roles from within the RBNE; external hire will be required, likely from the outsourced maintenance delivery partners. This may prove challenging.</li> </ul>
Hybrid Model (Mgt./High Skill)	<ul style="list-style-type: none"> <li>* Allows on the ground maintenance teams to develop stronger, more effective relationships with the core asset management teams.</li> <li>* Ensures closer supervision of outsourced work activity.</li> </ul>	<ul style="list-style-type: none"> <li>* Continues the need for handover between companies at contract expiry, injecting some risk to maintenance.</li> </ul>	<ul style="list-style-type: none"> <li>* Allows the organisation to 'right size' effectively in the years post launch.</li> <li>* In-house functional management activities Controllers of Site Safety drives consistent safety culture.</li> </ul>	<ul style="list-style-type: none"> <li>* The organisation may grow through attrition unless clear boundaries are defined as to what is included or excluded as in-sourced or outsourced; clear definition of roles will be needed.</li> </ul>
Insourced Model	<ul style="list-style-type: none"> <li>* Creates a much larger and 'stronger' organisation which will make it easier to recruit, attract and retain key talent.</li> </ul>	<ul style="list-style-type: none"> <li>* Very hard to flex the structure once established and ensure that the right people with the right skills are located in the right places with the right shift patterns until after the asset has stabilised post construction.</li> <li>* Risk of snagging challenges post construction likely to be absorbed by the new entity.</li> </ul>	<ul style="list-style-type: none"> <li>* Allows the development of a strong culture focused on the performance of the route.</li> </ul>	<ul style="list-style-type: none"> <li>* Risk of industrial action impacting the entire route increases through as single workforce with harmonised terms and conditions. May result in a longer-term challenge around wage inflation.</li> </ul>

## Headcount Estimates For Maintenance Insourcing / Outsourcing Options

As we are not assuming that there would be material differences in the approach to asset intervention and treatment across the different models, we assumed total overall headcount to be the same in each model, this being informed by benchmarking.

We have identified the roles for inclusion or exclusion in each of the models based upon our understanding of typical and appropriate grade distribution for a maintenance organisation, creating the distribution shown in the table below:-

### Headcount For Maintenance Delivery Options

Maintenance Delivery Structural Options	Mgt.	Mgt. & High Skill	Delivery & Support Grades				Supply Chain	In House
	Grade.1	Grade.2	Grade.3	Grade.4	Grade.5	Grade.6		
Estimated Mix	6%	12%	52%	29%	1%	0%		
Completely Outsourced	51	92	414	227	7	-	791	-
Hybrid Model (Management)	51	92	414	227	7	-	740	51
Hybrid Model (Mgt./High Skill)	51	92	414	227	7	-	598	143
Insourced Model	51	92	414	227	7	-		791

From this baseline we have identified the salaried cost of each option (per annum) below with some caveats;

- Headcount for outsourced options has not been adjusted to reflect either cost advantage of an insourced model (elimination of overhead and profit – potentially 5% - 7%)
- No cost benefits of outsourced models are assumed (lower salary costs *might* be achieved).
- There is no assessment with regards to the distribution of maintenance headcount across Estonia, Latvia or Lithuania. Differing wage rates will have a clear impact – we are working from a mathematical average. As such, costings should be taken to be directional only and appropriate allowances made for this uncertainty.

Maintenance Delivery Structural Options	Mgt.	Mgt. & High Skill	Delivery & Support Grades				Supply Chain	In House
	Grade.1	Grade.2	Grade.3	Grade.4	Grade.5	Grade.6		
All costs in EURO	2,511,781	3,072,525	9,529,527	3,904,695	84,286	-	19,102,815	-
Hybrid Model (Management)	2,511,781	3,072,525	9,529,527	3,904,695	84,286	-	16,591,034	2,511,781
Hybrid Model (Mgt./High Skill)	2,511,781	3,072,525	9,529,527	3,904,695	84,286	-	13,518,508	5,584,307
Insourced Model	2,511,781	3,072,525	9,529,527	3,904,695	84,286	-	-	19,102,815

To identify the detail of these caveats would require a significant study, but in the round are not anticipated to alter the material direction of the analysis. It is however recommended that this work is conducted as part of the Rail Baltica business planning process.

### Maintenance Recommendation

While there is some case evidence that an outsourced maintenance model can prove both efficient and cost effective (Since 2010 The Swedish Transport Administration (Trafikverket) reduced costs by 12 percent without reduction of quality through competitive tendering<sup>97</sup>) and historical international benchmarking appeared to show that where a party “has chosen to bring infrastructure maintenance ‘in house’... outsourced maintenance delivery continues to work well with proactive contractor management that focuses strongly on programme delivery and quality control”<sup>98</sup>, the unique nature of the Rail Baltica project which brings with it high speed, electrified 1435mm gauge with ERTMS means that a solution must be found that recognises that the supply chain’s competencies to work on this infrastructure in Estonia, Latvia and Lithuania will be relatively restricted.

<sup>97</sup> Mapping railways maintenance contracts – the case of Netherlands, Finland and UK, Jan-Eric Nilsson and Johan Nyström, VTI notat 27A–2014

<sup>98</sup> A report on the programme of international visits carried out by ORR between July – October 2007, Version 3.

Atkins is therefore recommending that a hybrid model for maintenance is pursued in the first instance and that this combines both management and high skilled individuals who will be capable of supporting direct works on site.

- By having their own in-house maintenance management team, the RBNE should prove more effective in aligning work bank activity with the asset management requirements and prove to be a more intelligent client. This should arise because the objectives between the parties will not be distorted due to commercial pressures regarding the treatment of the asset, while being responsible for taking the asset back into service will close the feedback loop in terms of asset information and control. Further to this, this model should
  - Reduce the risk of dispute between maintenance teams stating that the asset cannot be maintained and must be renewed.
  - Help establish a corporate asset memory regarding asset issues and performance.
  - Facilitate change of control in front line maintenance staff under contract.
  - Permit management of outsourced workforce with some seasonality due to the core skills being retained in-house.
- While 3<sup>rd</sup> parties may have the experience in delivering works on the ground, they will not have direct experience of working with the standards, processes and signalling systems that will be in place on Rail Baltica. Having high skilled frontline staff in house (for example, Engineering Supervisors, Persons in Charge of Possessions and Controllers of Site Safety) will enable;
  - RBNE to ensure that these individuals are trained to an equal and high level of performance.
  - The building of an appropriate safety culture that can be cascaded down to other parties working on the railway.
  - Support the development of better asset information due to the application of common standards.
  - This combination of in house expertise and external front line delivery can draw on best practice in Europe. *“ProRail uses reliability, availability, maintainability, safety, health and environment (RAMSHE) in order to specify the functional terms that they want the contractor to achieve. These specifications are then to be upheld by the contractor providing rail maintenance within a fixed price. No quantities or unit prices are used in these contracts. As always, things can be improved but all in all, the performance contract is working well.”*<sup>99</sup> The exact structure and detail of how these output based support contracts could be delivered for Rail Baltica should be reviewed in more detail in a future study.

The additional headcount brought by the addition of maintenance personnel should also create a greater ‘critical mass’ to RBNE, making it a more attractive organisation to work for, with a greater range of career options and choices, something that will increase organisational resilience

### Headcount Exclusions

In a comparison with the Operational Plan, Atkins has sought to understand differences in the headcount between the two studies. While an exact reconciliation should not be expected due to differing methodologies, key differentials were noted. These were as follows:-

- Local Traffic Control (Depots / Terminals), 54 heads; these functions are not included within the Infrastructure Management Study as our assumption is that RBNE will discharge a landlord function at multi-modal terminals and that as a result, these activities will be discharged by the supply chain.

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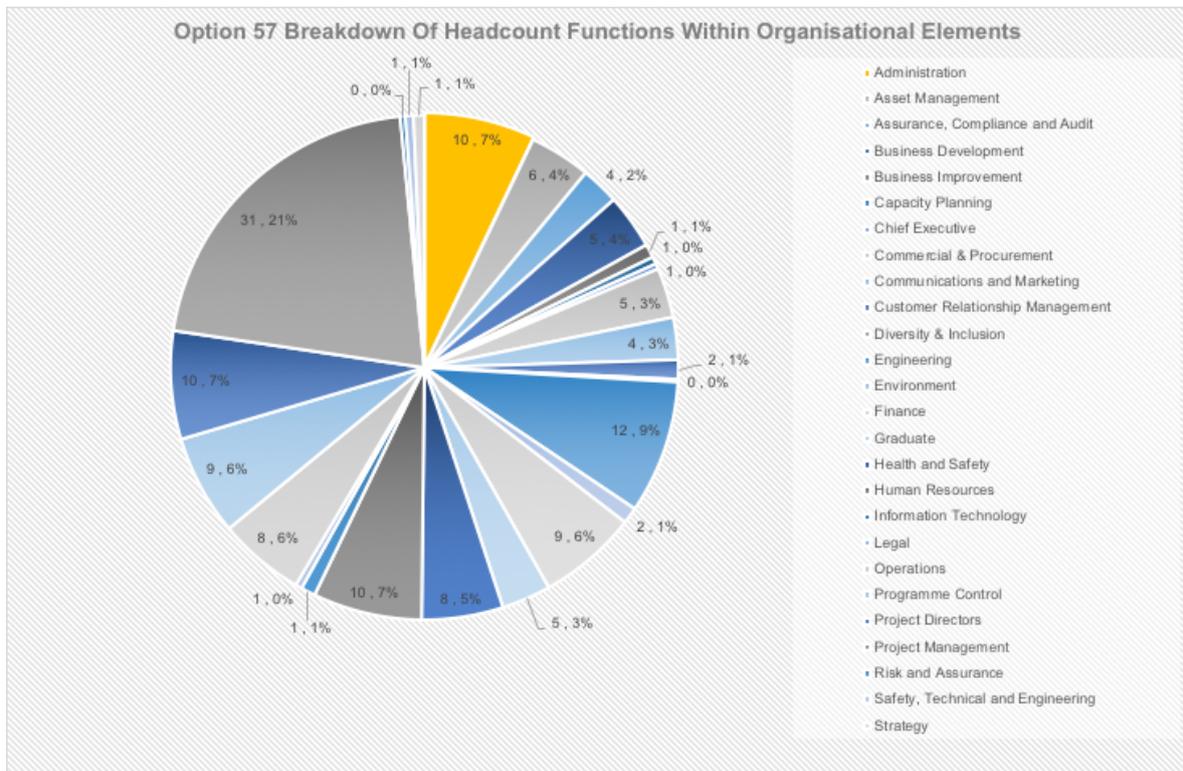
<sup>99</sup> Mapping railways maintenance contracts – the case of Netherlands, Finland and UK, Jan-Eric Nilsson and Johan Nyström, VTI notat 27A–2014

- Emergency Trains, 69 heads; the need for emergency trains was not assessed as part of the infrastructure management study.
- Passenger Station Operations, 60 heads; Atkins did allowed for station operational staff (in terms of despatching trains and in station customer management) as we anticipated these functions will be managed by the Railway Undertaking.
- On-Site Incident Managers, 59 heads; the data which Atkins used reflects a model where on-site incident managers are typically supported by transport police. Nonetheless, despite this, we still believe this figure to be relatively high given our experience and knowledge of such roles. While in principle the modelling in the operational plan (being bottom up) should be accurate, we would suggest that this headcount assumption be re-validated.

**Summary – Maintenance Headcount for RBNE**

Atkins estimates that RBNE will need a total of 143 maintenance heads with a directional annual cost of €5.6m per annum. This cost figure will need to be uplifted as part of the business plan to reflect estimating uncertainties.

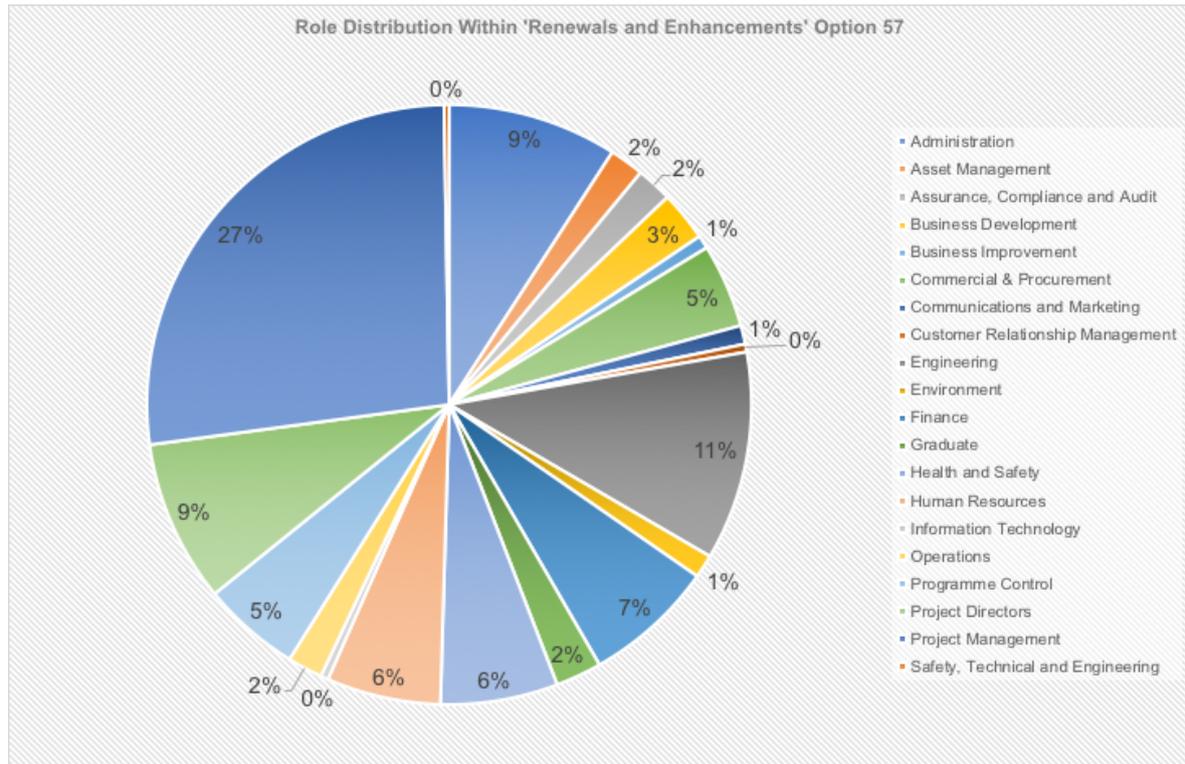
**Role Distribution within RBNE (Option 57 Example) (Excludes Maintenance)**



**Comments**

A breakdown of the role distribution shows the range of functions which exist with the Renewals and Enhancements Function specifically.

**Role Distribution within Renewals and Enhancements Function**



Breaking down by grade, (with Grade 1 being the highest earners and Grade 6 being the lowest earners) recognising appropriate span of control metrics gives:

**Table 3-2 - Organisation Structure Grades Breakdown (Excludes Maintenance)**

	Option 57	Option 63
Executive	12	8
Grade 1	17	16
Grade 2	60	57
Grade 3	28	25
Grade 4	8	8
Grade 5	12	9
Grade 6	8	7

Having identified the headcount requirement for the infrastructure manager, it is important to note that there are many ways that the RBNE could actually be propagated. While we are primarily assessing here the structural elements of the RBNE in our Options analysis, we have looked identified four key sub-options for how each primary option could be resourced. These are shown in the following table.

**Table 3-3 - Options for Population of RBNE**

	Transfer Of RB Rail Staff	New Hire	Seconded Staff	Outsourced
<b>Pro</b>	A RBNE populated through the transfer	Building a new organisation from	A RBNE populated with seconded staff	Based upon a defined set of

	<p>of RB RAIL AS staff would provide strong continuity in terms of political relationships, understanding of the asset base and a sense of ownership with regards to delivering the business case. From a cultural perspective, the team has demonstrated their willingness to create an organisation based strong ethics and transparency and this should build confidence in the organisation with the supply chain.</p> <p>The team would by this stage have significant procurement experience and could be expected to manage those elements of the model that are outsourced efficiently.</p> <p>Similarly, we would expect the political experience of the team would lead it to have an effective engagement with the Beneficial Owner(s).</p>	<p>scratch will help build a cohesive team, common culture, sense of purpose and well understood approach to the market.</p> <p>Given sufficient lead time and appropriate marketing, this solution could enable a world class team to be built, noting that due to the relative lack of skills in the region in some competencies (e.g. High Speed / Electrification), international hire should be anticipated and this will likely impact costs.</p>	<p>would lower the risk of being able to identify and hire competent individuals and would likely provide the greatest confidence that a functioning organisation would exist at 'go-live'.</p> <p>This option would have the advantage of potentially reducing the back office IT costs for the RBNE if they retained access to home systems (Bringing in some of the cost benefit of Option 85)</p> <p>This option would reduce the risk of wage escalation in the regional rail industry due to competition for key individuals.</p> <p>For clarity, a 'seconded staff' model would see individuals working for terms of 2-3 years, full time for RNBE with direct line management reporting into the RNBE organisation.</p>	<p>outputs, a contract could be let to a 3<sup>rd</sup> party company or even other a national infrastructure manager based upon a MEAT tender, transferring risk of under-performance to the market.</p> <p>While a thin client 'RBNE' would almost certainly still be required to provide oversight, this model is common in many areas of the world and could prove highly effective, the challenge being for companies with sufficient skillsets to mobilise.</p> <p>It remains a viable option for any one of the national IMs to bid to run the Rail Baltica route on a risk / reward basis, though this would obviously require the other nations to be protected in the risk of performance failure.</p>
<b>Con</b>	<p>Core skillsets within the business are unlikely to align with experience needed for delivery of the core functions of an infrastructure manager.</p>	<p>A new organisation would suffer from lack of knowledge regarding the prior activities pursued by Rail Baltica and as a consequence would have a disadvantage in understanding the justification for any variations or issues</p>	<p>Given that concerns were expressed during consultation about the culture and behaviours of the national IMs, we believe the it could prove difficult to create a new, cohesive, transparent cultural</p>	<p>The primary risk in this situation is likely to be political with outsourcing in the event of the service failing to perform as anticipated, both for the national entity that was failing to perform the service or to politicians across the Baltic</p>

	Substantive new hire would still be needed.	with the baseline assets.  A lack of political experience with the scheme could still, despite	model under this scenario.  Potential complexities regarding audit and span of control could also make this challenging.	region in the event that it was private company acting as infrastructure manager.  A thin 'oversight' client would still likely be needed in the latter option.
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The organisation charts for the two options are shown in the Appendix.

### Asset Management Model

Asset Management is the process whereby coordinated activities of an organization to realise value from assets over their life cycle in delivery of its objectives. It is delivered through the use of Asset Management Systems, a clear set of interrelated or interacting elements within the organisation to establish policies and objectives, and capabilities to achieve those objectives.

Atkins recommends that RBNE's asset management model is established in line with ISO55001, with the organisation and policies being developed under this framework. The advantages to this primarily stem from the ready-made framework that exists and which will make it easy for the organisation to establish itself, for regulators to have a clearly understood context and process to work with and to give the RBNE supply chain clear expectations of what the outcomes are that will be required of working with RBNE.

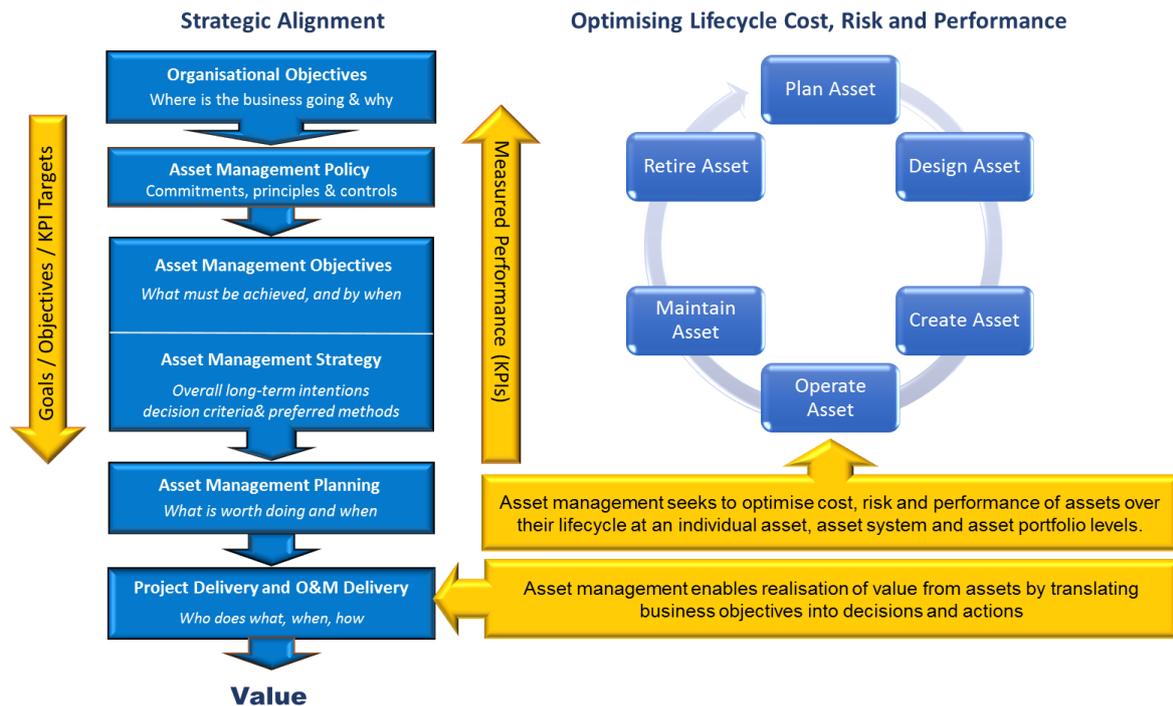
This means establishing an asset management model in line with the following:

- ISO 55000: Asset management – Overview, principles and terminology;
- ISO 55001: Asset management – Management systems – Requirements; and
- ISO 55002: Asset management – Management systems – Guidelines.

While we do not intend to go into the detail of ISO55001, RBNE will first need to define the context of the organisation, the needs and expectations of its stakeholders, the scope of the asset management system and develop its asset management system directly, with the whole organisation being layered under this organisation context and discharging their obligations based upon their function in the organisation.

The principles of asset management that RBNE will need to apply are shown in Figure 3-2 below and reflect the strategic alignment principles that will need to be defined for RBNE to achieve ISO 5500X certification as well as the requirements to develop asset management policies to optimise lifecycle cost, risk and performance.

Figure 3-2 - Key Principles of Asset Management



To deliver this, the RBNE will need to ensure that as the organisation is built, each area understands its role in the delivery of the asset management model.

- Leadership Functions must show commitment to asset management, defining policy and setting responsibilities.
- Planning Functions – will need to set out the objectives of the asset management plans and build plans to achieve them.
- Operation Functions – will need to take control of planning interventions and change.
- Performance Functions– will be working through intelligent infrastructure to ensure that assets are analysed and evaluated effectively for intervention
- Improvement Functions – need to set out control of corrective actions and continuous improvement
- Support Functions – need to establish robust document controls and communications.

The measurement of success – the tests for an effective asset management system being established in line with ISO55001 compliance by the RBNE are as follows (Table 3-4):-

**Table 3-4 - Effective Asset Management System**

Criteria	Description
<b>Strategic Alignment</b>	Alignment between the organisation's Strategic Plan, business objectives and the Asset Management Policy, Asset Management Strategy, Asset Management planning and delivery of asset lifecycle activities
<b>Horizontal Integration</b>	Integration between functional units (e.g. Planning, Projects, Engineering, Operations and Maintenance) within the organisation
<b>Roles, responsibilities, and competence</b>	Clear definition of roles and responsibilities for asset management and competence of people for undertaking the roles
<b>Lifecycle approach balancing cost, risk, performance</b>	Whole life approach, considering the impact of actions at one stage on the following lifecycle stages. Decisions on assets are made by balancing cost, risk and performance over the lifecycle of assets
<b>Risk Management</b>	Robust management of all safety, environmental, performance and enterprise risks, including contingency planning & change management
<b>Long term planning</b>	Long term optimised plan of asset lifecycle activities to deliver the Asset Management strategy, objectives and asset performance KPI targets
<b>Robust processes and controls inc. outsourced</b>	Robust processes and effective controls for the delivery of lifecycle activities: asset creation, acquisition, utilization, maintenance, renewal, retirement and disposal. Records to show effective application of the processes.
<b>Monitoring performance</b>	Monitoring of asset- and asset management- performance through KPIs, audits, investigations and management reviews
<b>Continual improvement</b>	Identifying, assessing and implementing improvement actions to improve the Asset Management Systems

Under the proposed organisation structure, RBNE should be recruiting individuals with sufficient skills to develop these items in house – early recruitment of these roles should therefore be a priority. The development of the asset management plan needs to be developed with regards to the best outcome for the route itself. This means that Atkins anticipates the asset treatments, monitoring processes and intervention profiles will not be adopted from the existing national infrastructure managers, but rather be developed from first principles.

#### Infrastructure Maintenance Organisation Model

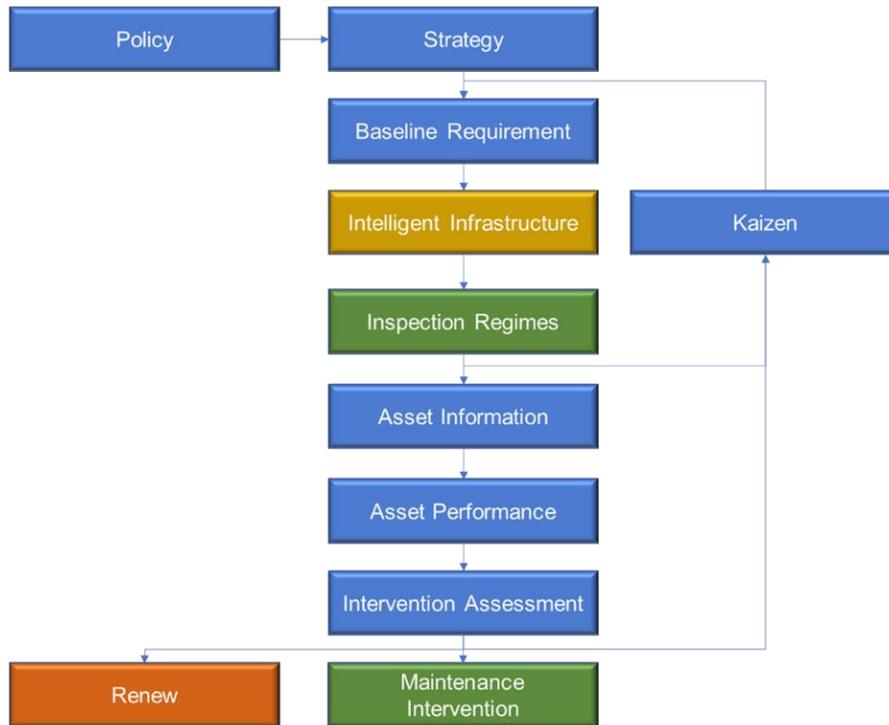
The operation and maintenance phase of an asset's lifecycle can be many years and often accounts for the majority of its whole life costs. It is therefore important that RBNE manages its maintenance performance effectively. Atkins recognises that ongoing asset performance stems from design decisions and we would therefore like to see RBNE hire maintenance specialists as a priority so that they can be involved in the construction phase of the Rail Baltica route.

Maintenance integration considerations are key to the whole-life value and it is vital this value is recognised early in a project in order to improve the maintainability of the asset through design and workmanship. This early recognition of whole-life value is also key in making sure all the necessary organisation, processes, systems and information are in place, and joined-up, for the project to be handed over effectively to operation and maintenance under RBNE.

Earlier in this document, Atkins has proposed that in the near term, the RBNE competitively tenders its maintenance activities. The scope of these are shown in GREEN in Figure 3-3 and reflects that

frontline staff should be outsourced and competitively tendered. These sit within an overall maintenance structure that is designed to ensure that the RBNE is an informed client.

**Figure 3-3 - RBNE Infrastructure Maintenance Model**



Maintenance of railway assets is focussed around the life cycle for an asset, the time period from the installation of an asset, through to its eventual decommissioning or replacement under a renewal, this being triggered by the economics of ongoing maintenance intervention being higher than the cost of replacement.

At the heart of optimising this process is the intelligent, client, whose policies will define the organisation itself, the competencies of the frontline staff, the processes for data capture (comprised of both data and analytics from intelligent infrastructure as well as frontline maintenance inspections and observations), analysis of the same and the continuous improvement (kaizen) of the maintenance intervention and inspection processes.

Starting from the baseline requirements, which will be formed from the ‘as built’ asset registers, the RBNE will refine these into annual work programmes that define the maintenance regime for the route.

While these will change over time, the RBNE will need to maintain a clear line of sight from the asset management policy through to the intervention regimes in order to ensure the route is maintained sustainably, balancing performance, cost and risk, the ultimate aim of which is to reduce safety risks for passengers, the public and the railway supply chain while maximising the operational performance of the railway.

Maintenance on the assets will need to be carried out in compliance with relevant legislative and statutory requirements and the organisation has headcount included to ensure this is resourced appropriately, forming part of the core activities of RBNE as marked in Blue in Figure 3-3.

The maintenance policy for the route will need to dovetail into other renewals contracts that are needed to deliver the ongoing management of the route.

### Track Access Charging Model

The track access charging model for RBNE is proposed in section 2.3.3.1., 'Determination and management of Track Access Charges (TAC)'.

### Capacity Allocation Model

The track access charging model for RBNE is proposed in section 2.3.2.2, 'Capacity allocation and management (consider, propose and compare different models);'

### Value Added Services.

The RBNE will conduct the following commercial activities in the first instance. These should be negotiated to be 'Permitted Business'.

- Intermodal terminal Management As Landlord
- Wayleaves (Telecoms)
- Wayleaves (Power)
- Wayleaves (Other) e.g. Water / Gas
- Telecoms (Dark Fibre) – Optional / Negligible Risk

### 3.3. WP7.3 Proposed contractual model for national governments to implement the identified model

We have tried to construct the contractual model for the RBNE as simply as possible in order to ensure that the relationships can be clearly understood. This is shown in Figure 21.

*“Stringent safeguards should be put in place to avoid any undue influence being brought to bear on decisions taken by the infrastructure manager relating to such functions [train path allocation and decision-making with respect to infrastructure charging]. Those safeguards should be adapted to take into account the different governance structures of railway entities”<sup>100</sup>.*

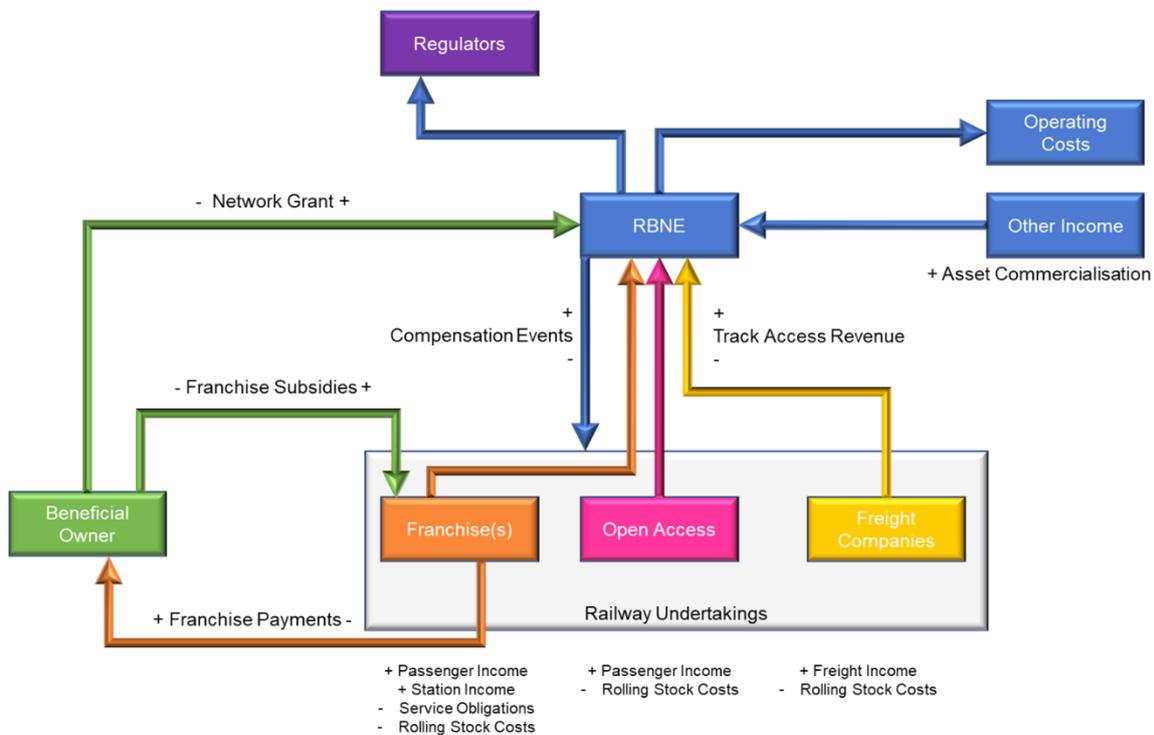
1. The RBNE will be responsible for the safe, effective and efficient operation of the infrastructure and accountable for performance to the Beneficial Owner(s).
2. A beneficiary ‘holding’ company should represent the three governments of Estonia, Latvia and Lithuania. This body will determine the service levels for the passenger franchise concession to operate on the route and as a consequence, fundamentally influence the likelihood of subsidy being required on the route through the outcome of the franchising process and the levels of track access charge which are therefore acceptable.
3. The Beneficial Owner(s) will have contact through to the RBNE where it will be able to propose new schemes for the RBNE to investigate (enhancements), but it shall not have direct right of audit or review against the RBNE.
4. The Beneficial Owner(s) shall have the right to request that the Regulators review and audit performance of the RBNE and in the event that adverse issues are detected by the regulators, shall have the right to change the Board of the RBNE, in the event of adverse reports on performance by the regulators.
5. The Beneficial Owner(s) will define the service levels for passenger services on the route, forming these into a franchise specification and letting the tender for the franchise (either directly or indirectly).
6. Based upon the outcome of the franchising process, this indicating the amount of track access charges which will be anticipated to be received, the Beneficial Owner(s) will agree the level of subsidy (or not) which will need to be paid to the RBNE.
7. Unless explicitly stated, the Beneficial Owner(s) shall not hold relationships with other parties in the contractual model. This is deliberate in order to reduce the risk of political interference in the management of the RBNE.
8. At present, the structure reflects an arm’s length relationship between the RBNE and the franchise(s). Over time, if it emerges there is little appetite for Open Access operations on the route, it may prove appropriate for this relationship to be structured around an alliance, so that the needs of the Railway Undertaking are more effectively aligned with the RBNE.
9. The franchise(s) will pay any track access charges direct to the RBNE.

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<sup>100</sup> DIRECTIVE (EU) 2016/2370 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL

10. Open Access Operators will have a direct relationship with the RBNE, operating services (subject to regulatory approval) and under appropriate tests to confirm that there will not be a materially adverse impact upon franchise revenues. They will not have a relationship with the Beneficial Owner(s) as they shall not be obliged to deliver any of the service obligations of the franchises.
11. Freight companies shall have direct relationships with RBNE, these being appropriately regulated and will have specific contracts developed suitable for their needs.
12. The RBNE will have the right to have external commercial relationships and partnerships, defined under a regulated 'permitted business' model, with the audit of these relationships, plus the operating costs of the same, subject to regulatory audit.
13. The costs of regulation will be funded by the RBNE.

**Figure 3-4 - Contractual Model for the RBNE**



Memo: The RBNE is responsible for operating the network and accountable for performance to the Beneficial Owner.

### 3.4. KPI for RBNE

Railways Key Performance Indicators (KPIs) are vital to monitoring the performance of the Infrastructure Manager. They are credible, measurable and are relevant metrics which help to monitor the performance of railway infrastructure. PRIME believe they are useful for a number of reasons including<sup>101</sup>:

- *As a learning and improvement tool;*
- *Providing a better understanding of the costs associated with each process;*
- *Performances can be compared/ benchmarked;*
- *Management decisions can be well informed;*
- *Data can be used to support negotiations; and*
- *Provides a monitoring system of how well national or EU policies are being implemented.*

Furthermore, the performance needs are aligned to passenger services and freight services, therefore, understanding the operational factors on the infrastructure.

As mentioned earlier in this document, we believe that the Beneficiaries will have a clear need for KPIs to manage the business and we anticipate that these will be produced by the RBNE.

The chosen PRIME KPIs (see Appendix H) have been selected because they cover the broad five dimensions of railway IMs which are<sup>102</sup>:

- *Safety & Environment – the management and delivery of safety, security and environmental behaviours and standards.*
- *Performance – the performance of the RBNE's assets and network and resulting impact on operators and customers.*
- *Delivery – the effectiveness of the RBNE's internal processes and management of the IMs assets and provision of a fit for purpose network, including the delivery of contractors and suppliers.*
- *Financial – the financial performance of the RBNE, including its cost effectiveness and revenues, including track access charges.*
- *Growth – the level of use of the existing network, network improvement and expansion, integration with other transport modes and use of technology to improve delivery.*

Additionally, the selected KPIs reflect the needs and key decisions that will ultimately be made by the RBNE. They include a range of Public Performance Measures (PPM), as well as Cancellation and Significant Lateness (CaSL) indicators.

Many of the selected KPIs will also be able to be used by the RBNE for a robust comparison against other IMs. There may be further KPIs that the RBNE will monitor because of their own priorities that will need a number of management metrics.

Further to these, it may be desirable to try to establish a metric focused around the Gross Value Add achieved by the line in order to understand how effectively that RBNE delivers against the original business case.

At this stage, it would be very easy for Atkins to propose a vast number of potential KPI metrics for the RBNE. The purpose of the KPIs is of course to improve the performance of the business on an ongoing basis, with these being tied into ongoing benchmarking programmes to enable improvements to be identified. This latter point drives each Infrastructure Manager to ensure at least that a number of core metrics are readily comparable.

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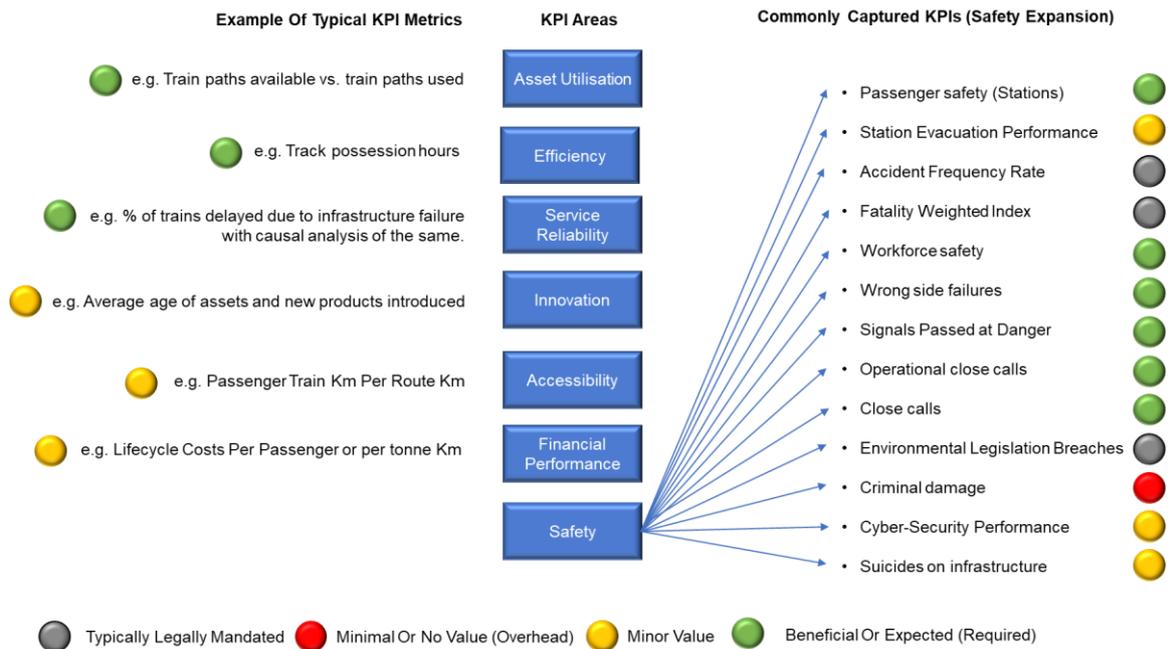
<sup>101</sup> PRIME (2016). Key Performance Indicators for Performance Benchmarking.

<sup>102</sup> PRIME (2016). Key Performance Indicators for Performance Benchmarking.

However, across many infrastructure managers, it is possible to see the emergence of significant overheads being incurred with regard to the numbers and types of KPIs which need to be captured. Just because something can be measured, does not mean that it should be measured and given the modest size of the RBNE entity, careful consideration must be given to ensure that the capture and reporting of KPIs is proportionate and material.

The challenges of developing an appropriate KPI regime for RBNE can be seen in the table below which shows a range of KPIs often reported by Infrastructure Managers.

**Figure 3-5 – Example KPIs – Applicability Challenge**



These range from items that are typically legally mandated (at least on a national level), items that have clear benefit to improving performance (delay analysis due to infrastructure failure) or are expected by stakeholders (operational close calls), while some are of minor value to the infrastructure manager directly (lifecycle costs per passenger km) or where publishing the data does not necessarily improve business performance and can in fact have negative consequences (cyber-security performance) and other which are captured that provide negligible value, often because the frequency or nature of the issue does not lend itself to statistical analysis (criminal damage).

The development of KPIs bespoke to RBNE is therefore something which Atkins would recommend is developed in conjunction with its beneficiaries. For example, while a metric such as lifecycle costs per passenger km is interesting to an Infrastructure Manager, it is not fundamental to the business (RBNE will not be responsible for driving passenger volumes onto the network), but from a beneficiary perspective, understanding data of this nature is likely to prove of significant interest.

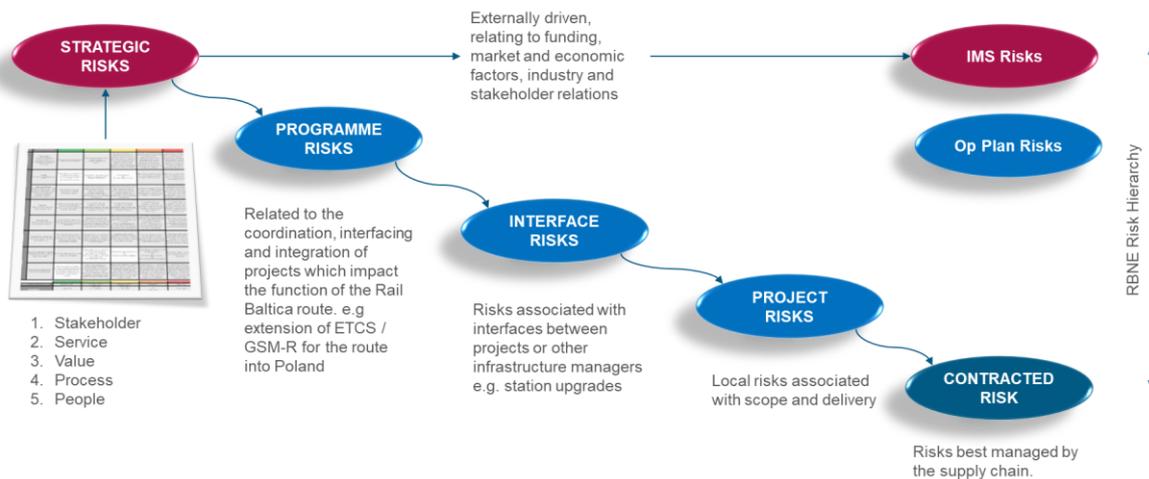
Further to this it should be noted that selecting the KPI targets cannot be sensibly developed at this point. By way of example, in the case of track possession hours, these should be only developed once the final network design is understood and the compensation and liability payments due to the train operating companies associated with both scheduled and unscheduled possessions are agreed. Only once these factors are mapped can an appropriate target be set that will drive appropriate behaviours in terms of minimising both passenger disruption and cost.

# 4. WP8 Risk Analysis

RBNE will need to develop complex risk management plans which are bespoke and closely tailored to the needs of the network, covering programme risks, interface risks and project risks, all of which will need to be captured in the operational plans – the scope of these are shown below.

Figure 4-6 – RBNE Risk Structuring

## RBNE Risk Structuring



Sitting above this and to satisfy the ‘Presentation of a comprehensive assessment of risks involved in the implementation of the proposed optimum infrastructure management model, as well as risks arising from not selecting the proposed optimum model; a thorough risk methodology shall be proposed by the Contractor, covering, inter alia, the aspects of risk probability, risk severity and mitigation measures’ the management of Strategic Risks associated with the Infrastructure Management Study is required. Atkins has assessed that this predominantly relates to the effectiveness and viability of RBNE as covered under:-

1. Stakeholder Risks
2. Service Risks
3. Value Risks
4. Process Risks
5. People Risks

In line with this, Atkins has developed a risk matrix for RBNE centred around these five key evaluation criteria and against which, specific risks are assessed and scored later in this document. This is shown in Figure 3-7 ‘RBNE Risk Matrix’ below.

Figure 4-7 – RBNE Risk Matrix

		Severity (1= Low, 5=High)				
Corporate Goal	Impact Categories	1	2	3	4	5
Stakeholder	<b>Reputation</b> Loss of or damage to reputation and / or stakeholder relationships (customers, funders, suppliers)	Adverse regional stakeholder reaction (sub-national)	Adverse local media reports over a period or local stakeholder concern.	Significant local and / or regional reports that risk becoming an issue for the route as a whole or impacting other national stakeholders. National media interest creating public concern. Negative national stakeholder statements relating to RBNE.	Extensive prolonged adverse national reporting and public disputes with key stakeholders OR press coverage relating to the performance of the Rail Baltica route as a whole. Beneficiary or Significant Stakeholder declaration of no-confidence in RBNE.	Extensive and prolonged negative reporting nationally or public disputes with key stakeholders. Escalation to external bodies inevitable & impossible to contain in medium term. Potential for significant changes to be imposed on RBNE its responsibilities and structure
	<b>Safety</b> Accident to passengers or public	Reportable injury under EU or National legislation (whichever is the lesser) OR Multiple minor injuries	Single major reportable injury under EU legislation OR National Legislation	Single Fatality OR Multiple major injuries	Major train or station accident with multi-fatality potential outside of RBNE control	Major train or station accident with multi-fatality potential within, or perceived to be within RBNE control
Service	<b>User Experience</b> Adverse impact on end user experience (passenger, train operating companies, freight operating companies) caused by RBNE maintained infrastructure	Planned disruption on the route or in RBNE managed stations.	Unplanned disruption of up to 24 hours on the route or in RBNE managed stations with effective customer communication and contingency plans. Minor compensation due to Railway Undertakings.	Unplanned disruption of up to 24 hours on the route or in RBNE managed stations without effective customer communication or contingency plans. Some compensation due to Railway Undertakings	Unplanned disruption (for up to a week) on RBNE managed infrastructure. Significant compensation payments due to Railway Undertakings.	All users experience prolonged and unplanned disruption to key routes. Access to major station facilities likely to be severely restricted. Significant compensation likely to be due to Railway Undertakings and other providers of services.
	<b>Finance</b> Failure to meet planned financial objectives	Circa €1.5m provided that this can be accommodated without the risk of unplanned subsidy. (Remote)	Circa €2.5m OR low probability that ONE beneficiary shall be required to provide unplanned subsidy to RBNE (Unlikely)	Circa €5m OR medium probability that ONE beneficiary shall be required to provide unplanned subsidy to RBNE (Possible)	Circa €10m OR high probability that ONE beneficiary shall be required to provide unplanned subsidy to RBNE (Expected or Recurring)	Circa €50m OR high probability that more than ONE beneficiary shall be required to provide unplanned subsidy to RBNE (Expected or Recurring)
Value	<b>Environment</b> Failure to meet planned environmental targets	Environmental impact that requires notification to any of the national environmental regulators.	Repeated environmental impacts of the same type or due to similar root causes that indicate a systematic failure, either in one national territory or across the line of route.	Single environmental impact that causes a change in the classification as determined by CEPA (The EU Classification of Environmental Protection activities) OR Local National Environmental Press Reaction	Multiple environmental impacts from one location or work site that cause changes in the classification as determined by CEPA (The EU Classification of Environmental Protection activities) OR National Environmental Press Reaction	Impact causing very long term environmental damage. Protests / lobbying on environmental performance OR Multi-National Environmental Press Reaction
	<b>Process Improvement</b> Failure to deliver process improvement (s)	Short term adverse trend in one process indicator for a business unit. Failure to meet some local process improvement targets.	Adverse trend in a number of process indicators. Failure to meet process improvement targets impacting a number of business areas.	Adverse trend in key corporate process indicators across the business. Failure to meet some cross functional improvement targets.	Long term adverse trend in key corporate process indicators. Failure to achieve planned delivery of corporate wide improvements.	RBNE publicly fail to deliver process improvements and benefits committed to the public, the regulators and the beneficiaries. A long term adverse trend in performance of key business processes.
People	<b>Workforce Health &amp; Safety</b> Employee and Contractor health and safety	Minor Non-Reportable Injuries Under EU Legislation	Reportable injury under EU or National legislation (whichever is the lesser) OR Chronic Health Condition Emerging OR Multiple minor injuries	Single major reportable injury OR Single reportable disease	Single Fatality (caused by non systemic failure) OR Multiple major injuries OR Multiple reportable diseases	Workforce fatality (s) caused by a systemic failure in work practices.
	<b>Employee Engagement</b> Employee Engagement	Short-term loss of morale with poor performance of non-critical activities OR poor employee engagement as marked by independent survey.	Minor disengagement. Effectiveness / Efficiency compromised with service failures in non critical activities. Staff loss trending negative, indicating initial inability to recruit effectively.	Some disengagement leading to effectiveness / efficiency compromised in some critical activities. Some limited support may be needed from national Ims on a short term basis if safety critical roles remain unfilled.	A major downturn in company-wide engagement leading to service failures within some critical activities. Lack of key skills within the team results in RBNE requiring extensive support from national infrastructure managers.	A significant downturn in company-wide engagement. Serious failings across most services. Inability to retain staff results in de-facto control of elements of the route being ceded to national Ims to maintain safety.
		1	2	3	4	5
Description (annual probability)		Remote <4%	Unlikely <20%	Possible ≥20%	Expected	Recurring
Frequency		Less than 1 in 25 years	Less than 1 in 5 years to 1 in 25 years	Less than 1 per year to 1 in 5 years	1 per year to less than 5 per year	5 per year or more

Note should be made of the fact that a risk register should be seen as a dynamic entity and this should be developed by RNBE and updated on a regular basis (or as in the event of a key change) immediately upon completion of this report. Specific risks relating to RBNE and as identified in this document are assessed using this criteria on the following pages; key risks Rail Baltica Global Project are detailed subsequently.

This risk matrix has been applied to the top 11 **strategic** risks relating to the creation and establishment of RBNE as identified within the core report, these being as follows:-

1. That the governance structure remains unchanged, resulting in the potential for political interference.
2. That the Hybrid Maintenance Model is not adopted.
3. That revenues do not materialise as planned resulting in a requirement for subsidy (this relates to potential flow through impact relating to track access charges payable by passenger operators).
4. That traffic patterns fail to materialise (Freight)
5. That RBNE fails to secure suitably skilled staff in an appropriate timeframe
6. That the cost of recruitment is higher than expected due to difficulties in recruiting key skills.
7. That the quality of regulation (currently restricted by organisational size, funding and experience in the region) does not improve.
8. That commercialisation adversely impacts day to day operations
9. That snagging and handover of assets post completion mean increased maintenance requirements and / or shorter asset life.
10. That a lack of coherent, consistent political support for RBNE jeopardises the model.
11. That emergency planning cannot be effectively agreed on shared stations along the route.

The outputs of the review can be seen in Section 4.2, but a visual summary of the relative challenges can be seen in the treemap shown below, which shows the potential scale of impact of risks based on the underlying mix, *but before adjustments are made for probability* of occurrence.

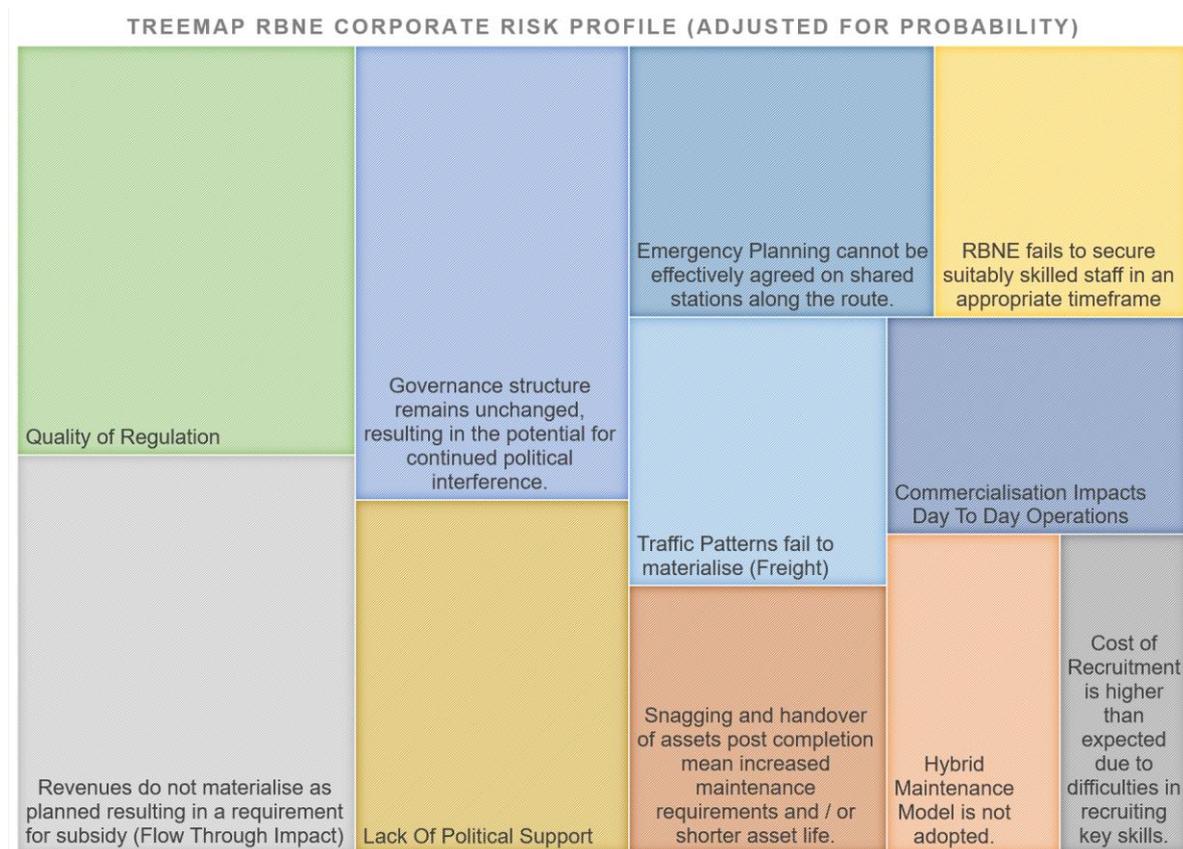
**Treemap – RBNE Strategic Risks (Corporate) – Unadjusted For Probability**



The risk profile for RBNE, based upon the organisational design, implementation and processes which Atkins has identified as required within this document results in a significantly changed and improved risk profile for the business.

This emphasises that the priorities for RB AS must be to ensure that the political, governance and regulatory environment are fully aligned behind RBNE as a single, cohesive entity and that RBNE is established with a clear culture, mindset and remit to protect and build on the business case to reduce any risk of subsidy.

**Treemap – RBNE Strategic Risks (Corporate) – Unadjusted For Probability**



While some of these risks may appear relatively discrete, they sit within an overall framework where initial failings may cause cascade effects downstream that can ultimately impact the performance and financial viability of the line. This can be seen in the Swiss Cheese Risk transfer example shown below, whereby an initial lack of political support for the model and associated strengthening of regulation has the potential to impact other critical risks.

### Risk Ranking From Analysis – RBNE Corporate Risks

	Risk Description	Risk Score	Ranking
RBNE Strategic Risks Identified	Quality of Regulation	40	1
	Revenues do not materialise as planned resulting in a requirement for subsidy (Flow Through Impact)	39	2
	Governance structure remains unchanged, resulting in the potential for continued political interference.	36	3
	Lack Of Political Support	28	4
	Emergency Planning cannot be effectively agreed on shared stations along the route.	24	5
	RBNE fails to secure suitably skilled staff in an appropriate timeframe	20	6=
	Traffic Patterns fail to materialise (Freight)	20	6=
	Snagging and handover of assets post completion mean increased maintenance requirements and / or shorter asset life.	20	6=
	Commercialisation Impacts Day To Day Operations	19	9
	Hybrid Maintenance Model is not adopted.	16	10
	Cost of Recruitment is higher than expected due to difficulties in recruiting key skills.	12	11

The risk of failure and complex interdependencies which will be seen in many of these risks will require development through workshops, with RB AS taking the responsibility for the interdependency of this risks. The development of these should be sequenced appropriately based on the risk scoring and incorporated into the political decision-making process.

For example, ensuring that an effective regulatory framework exists around RBNE is by far the most important risk to be addressed in ensuring that Rail Baltica can become a success, though this is contingent upon the Beneficiaries accepting Atkins recommendation that regulation needs to be strengthened. Strengthening regulation in the region will help define not just the safety regime, culture and ethos for RBNE, but will also help establish collaborative relationships with the other national infrastructure managers.

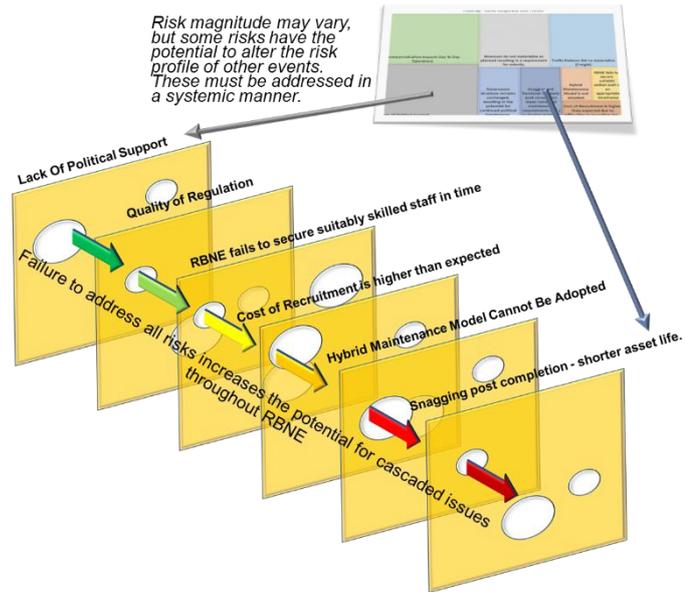
Perhaps most importantly, it will also send a clear message to the supply chain that the rail market will be open for competition and investment, demonstrating to the supply chain that the opportunities being sought in terms of both investment into freight / intermodal facilities as well as fair, open and transparent access to the infrastructure are real and available within a clear framework.

### RBNE Strategic Risks (Swiss Cheese Example)

It is important for RB AS to help influence the stakeholders in order to create a system that minimises strategic risks that can cascade through the system to result in the potential failure of RBNE.

Cascaded risk works in often subtle ways and emphasises the importance of RBNE controlling each factor individually with appropriate risk management options. Atkins would recommend that individual workshops are developed using Bow-Tie methodology to close off each individual risk.

RBNE Swiss Cheese Strategic Risk Example



This should be done in conjunction with appropriate stakeholders as identified in the table below by RB AS in order to ensure all risks and mitigations are identified, including agreeing development of early warning indicators. We would propose the following:-

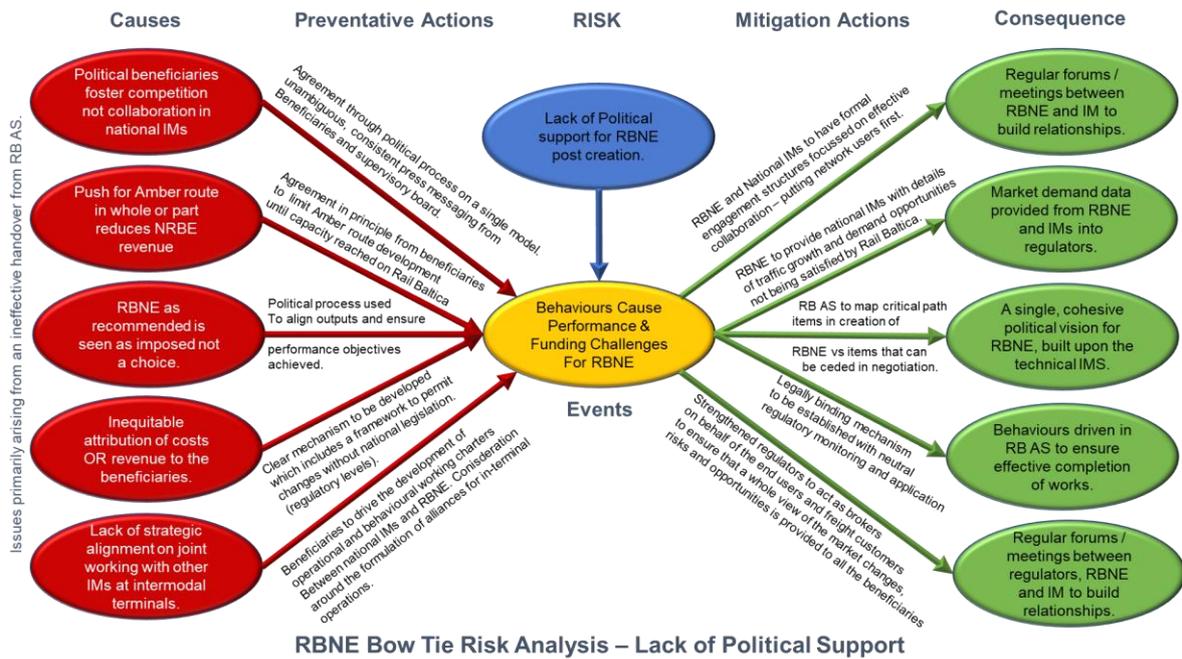
Bow Tie Risk	Stakeholders for Bow-Tie Review
<b>Governance structure remains unchanged, resulting in the potential for political interference.</b>	Beneficiaries, Regulators, RBNE, RB AS
<b>Hybrid Maintenance Model is not adopted.</b>	RBNE, Existing Infrastructure Managers, Supply Chain
<b>Revenues do not materialise as planned resulting in a requirement for subsidy.</b>	RBNE, Beneficiaries (Should be incorporated into the Political Agreement)
<b>RBNE fails to secure suitably skilled staff in an appropriate timeframe</b>	RBNE, Existing Infrastructure Managers, Supply Chain
<b>Traffic Patterns fail to materialise (Freight)</b>	RBNE, Beneficiaries (Should be incorporated into the Political Agreement)
<b>Quality of Regulation</b>	Regulatory Bodies, Beneficiaries; minor involvement from RB AS, RBNE, IMs.
<b>Commercialisation Impacts Day To Day Operations</b>	Beneficiaries, Regulators, RBNE, RB AS
<b>Snagging and handover of assets post completion mean increased maintenance requirements / shorter asset life.</b>	Beneficiaries, Regulators, RBNE, RB AS potentially existing national infrastructure managers if asset control transferred.
<b>Cost of Recruitment is higher than expected due to difficulties in recruiting key skills.</b>	RB AS, RBNE
<b>Lack Of Political Support</b>	EU, RBNE, Beneficiaries (Should be incorporated into the Political Agreement)
<b>Emergency Planning cannot be effectively agreed on shared stations along the route.</b>	RBNE, National Infrastructure Managers

## 4.1. Bow Tie Risk Reviews

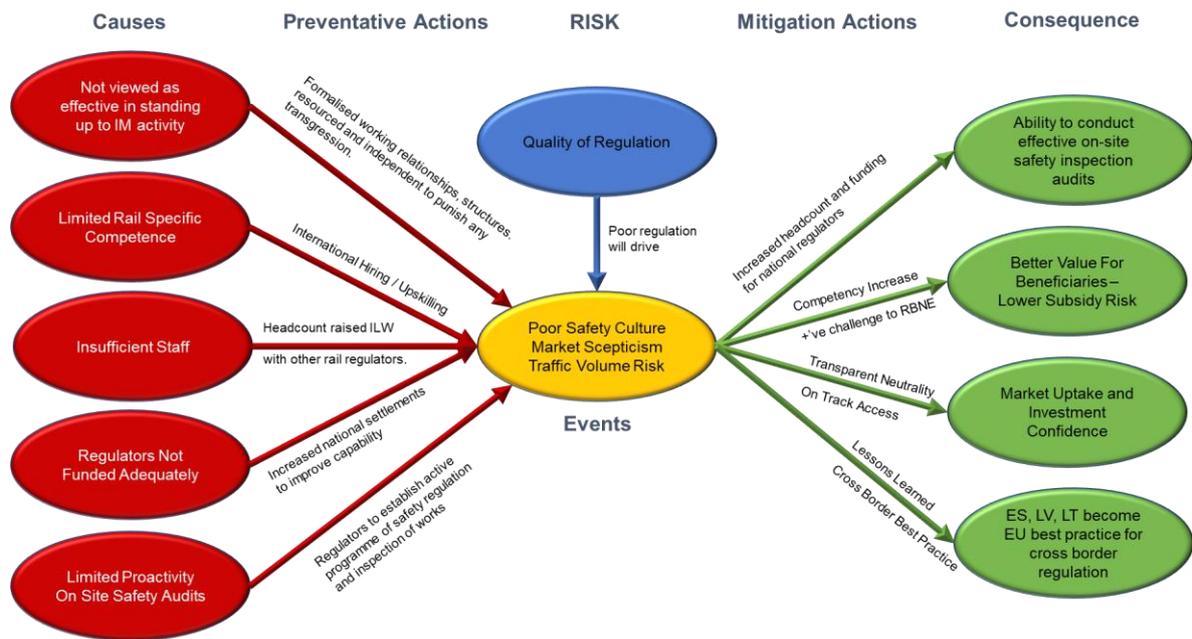
Prior to RB AS scheduling such reviews, Atkins has conducted a review of these corporate risks and completed initial bow-ties based upon the information gathered as part of this commission.

Such assessments should form the basis of future reviews, which Atkins is prepared to support to ensure effective outcomes; the output of these reviews is detailed below.

### 4.1.1. Bow Tie - Political Support

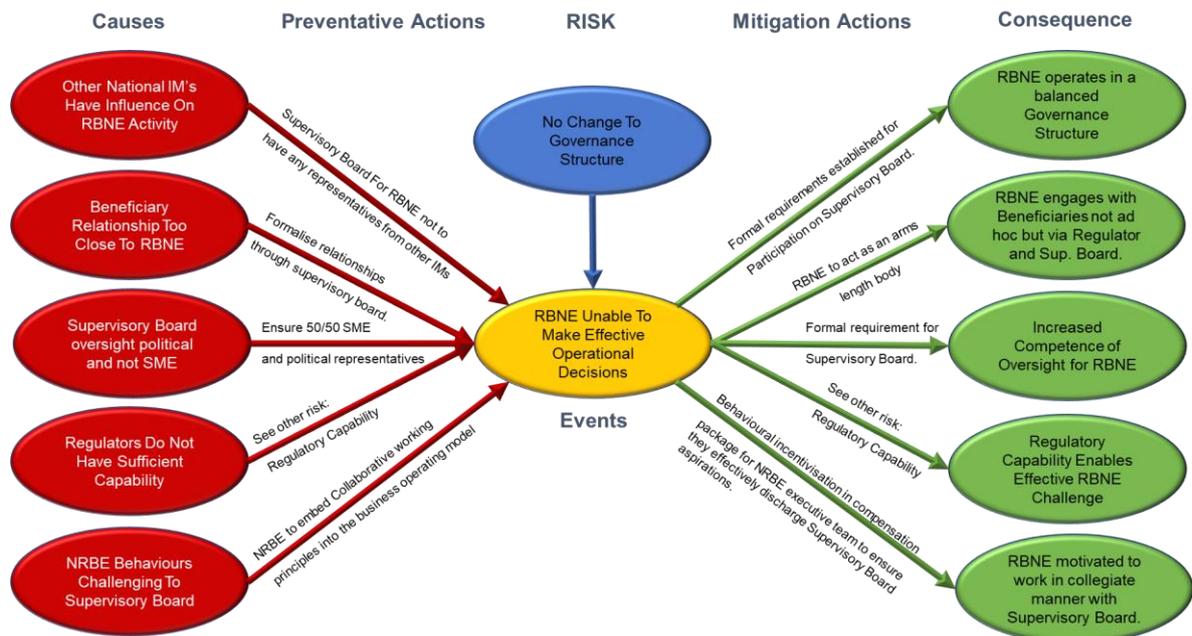


### 4.1.2. Bow Tie – Quality of Regulation



RBNE Bow Tie Risk Analysis – Quality Of Regulation

### 4.1.3. Bow Tie – Governance Structure



RBNE Bow Tie Risk Analysis – Governance Structure Remains Unchanged

### 4.1.4. Bow Tie – Recruitment Timeframe



RBNE Bow Tie Risk Analysis – Failure To Recruit Staff In Appropriate Timeframe

### 4.1.5. Bow Tie – Recruitment Cost



RBNE Bow Tie Risk Analysis – Recruitment Cost

### 4.1.6. Bow Tie – Revenue from Passenger Services

Memo: This reflects the flow through impact onto RBNE.



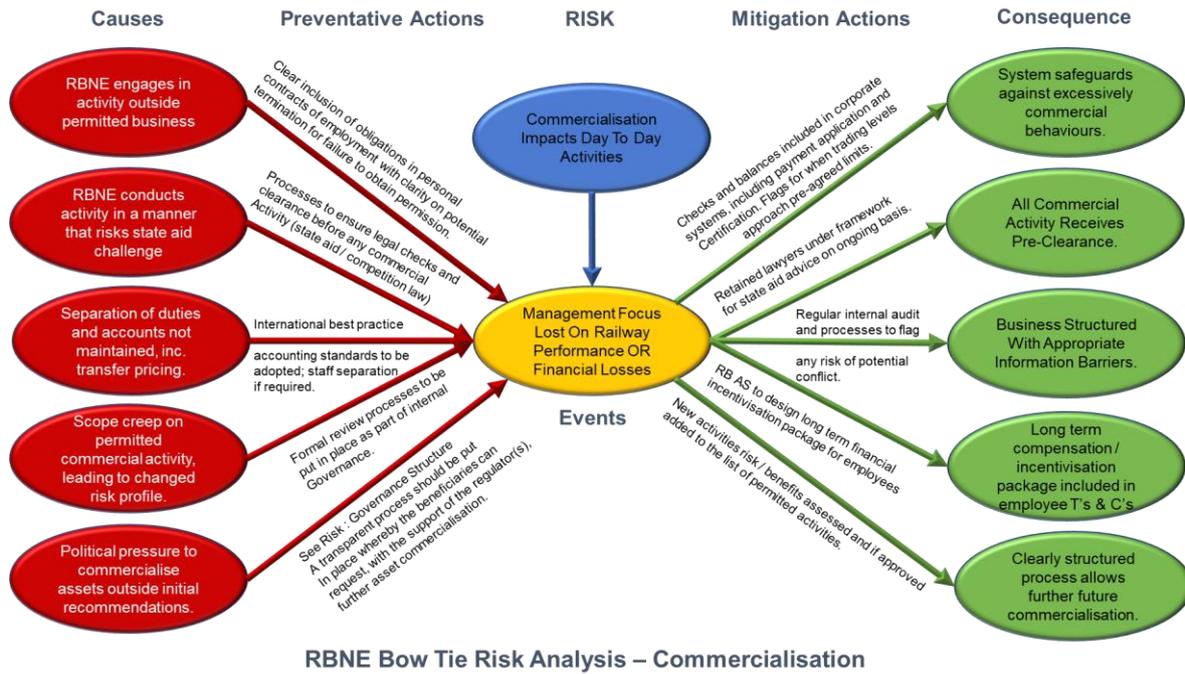
RBNE Bow Tie Risk Analysis – Revenues Do Not Materialise (Passenger)

### 4.1.7. Bow Tie – Traffic Patterns (Freight)

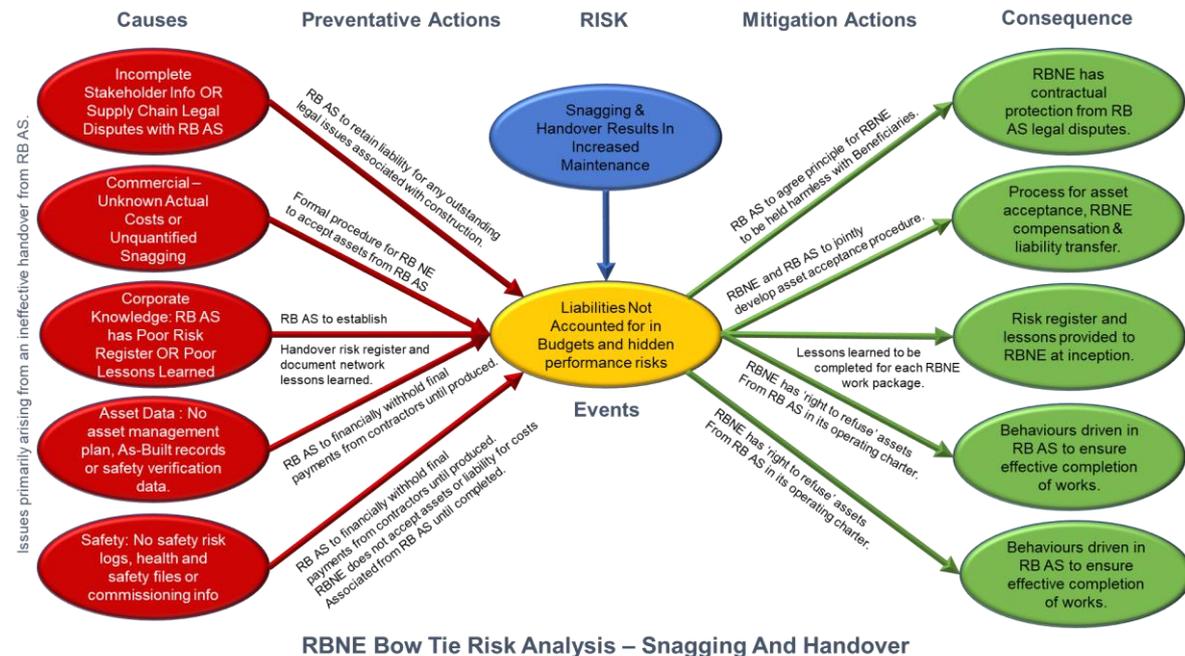


RBNE Bow Tie Risk Analysis – Traffic Patterns Do Not Materialise (Freight)

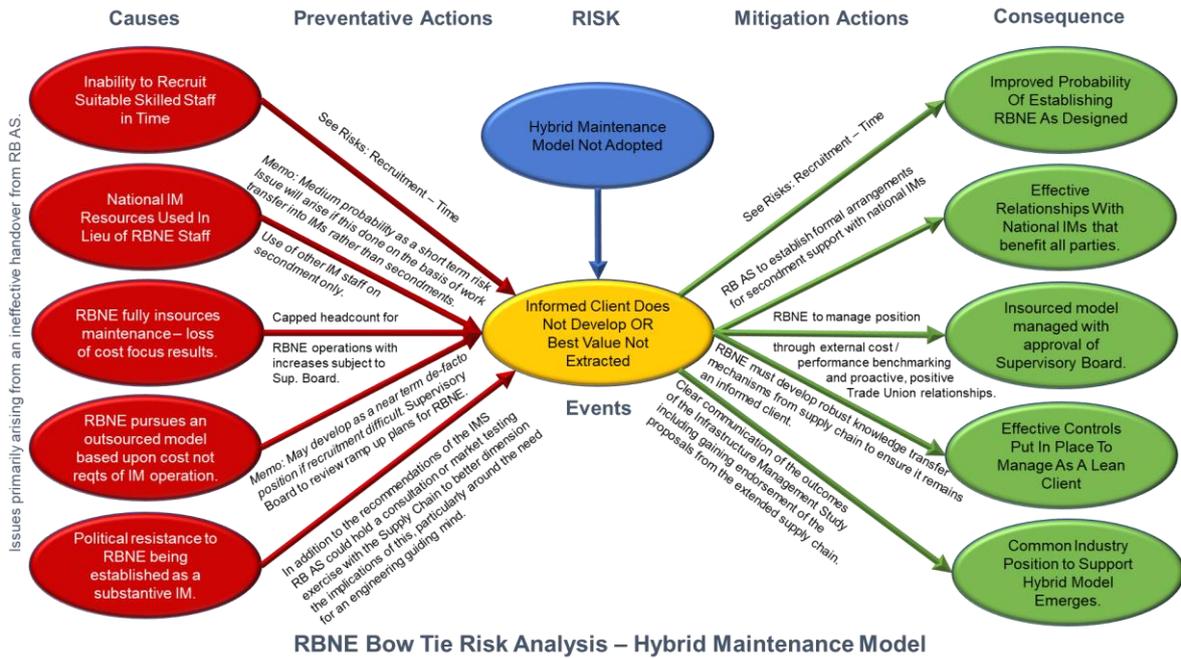
### 4.1.8. Bow Tie – Commercialisation



### 4.1.9. Bow Tie – Snagging and Handover



### 4.1.10. Bow Tie – Hybrid Maintenance



### 4.1.11. Bow Tie – Emergency Planning



## 4.2. Strategic Risk Evaluation and Scoring

		RBNE Strategic Risks Identified															
		Severity (1= Low, 5=High)					RBNE Strategic Risks Identified										
Corporate Goal	Impact Categories	1	2	3	4	5	Overseas activities remains unchanged potential for continued political interference	Hybrid Maintenance Model is not adopted	Revised fixed maintenance planned resulting in a subsidy (low Through Impact)	RBNE fails to secure a suitably skilled staff in an appropriate timeframe	Traffic Patterns fail to materialise (Freight)	Quality of Regulation	Communication in the Operations	Shedding and handover of assets post completion may not meet requirements and / or shorter asset life.	Cost of Recruitment is higher than expected due to difficulties in recruiting key skills.	Lack Of Political Support	Emergency Planning cannot be effectively implemented at stations along the route.
Stakeholder	Reputation: Loss of reputation and / or stakeholder relationships (downstream, suppliers)	Adverse local media reports	Adverse regional stakeholder reaction (sub-national)	Spurious local / or regional reports that become an issue for the stakeholder OR National media interest creating public concern. Stakeholder declaration of no-confidence in RBNE.	Extensive prolonged adverse national reporting and public coverage relating to the performance of the Rail Authority or Significant Stakeholder declaration of no-confidence in RBNE.	Extensive and prolonged negative reporting nationally in print, broadcast, social media, external bodies inevitable & impossible to contain in the short term. Significant changes to be imposed on RBNE its responsibilities and structure	2	1	3	1	4	0	3	3	1	5	0
	Safety: Accident or injury of public	Reportable injury under EU or National legislation (whichever is lessor) OR Multiple minor injuries	Single major reportable injury OR National Legislation	Single fatality Multiple minor injuries	Major train or station accident with multi-fatality potential outside of RBNE control	Major train or station accident with multi-fatality potential within RBNE control	0	0	0	2	0	3	2	1	0	0	5
Service	User Experience: Planned disruption on the route or in RBNE managed stations, flight cancellations, flight delays caused by RBNE maintained infrastructure	Planned disruption on the route or in RBNE managed stations, flight cancellations, flight delays caused by RBNE maintained infrastructure	Unplanned disruption of up to 24 hours on the route or in RBNE managed stations with communication and contingency plans. Some compensation due to Railway Undertakings	Unplanned disruption of up to 24 hours on the route or in RBNE managed stations with communication and contingency plans. Some compensation due to Railway Undertakings	Unplanned disruption of up to 24 hours on the route or in RBNE managed stations with communication and contingency plans. Some compensation due to Railway Undertakings	All users experience prolonged and unplanned access to major station facilities likely to be severely impacted. Compensation likely to be due to Railway Undertakings and other providers of services.	0	2	1	1	0	3	2	3	0	2	0
	Finance: Failure to meet planned financial objectives	Costs €5.5m provided that this can be accommodated within the planned subsidy. (Risks)	Costs €2.5m OR low beneficiary shall be required to provide unplanned subsidy to RBNE (Unlikely)	Costs €5m OR medium beneficiary shall be required to provide unplanned subsidy to RBNE (Possible)	Costs €7.5m OR high probability that ONE beneficiary shall be required to provide unplanned subsidy to RBNE (Expected or Recurring)	Costs €10m OR high probability that more than ONE beneficiary shall be required to provide unplanned subsidy to RBNE (Expected or Recurring)	4	3	4	2	4	3	4	0	3	0	0
Value	Environment: Environmental impact that requires notification to any of the national environmental regulators.	Repeated environmental claims that indicate a systemic failure, across the life of route.	Single environmental impact that causes a change in the classification as defined by CEPA (The EU Classification of Environmental Protection activities) OR Local National Environmental Press Reaction	Multiple environmental impacts that cause changes in the classification as defined by CEPA (The EU Classification of Environmental Protection activities) OR National Environmental Press Reaction	Multiple environmental impacts that cause changes in the classification as defined by CEPA (The EU Classification of Environmental Protection activities) OR National Environmental Press Reaction	Impact causing very long term environmental performance issues. Environmental Press Reaction	0	2	0	0	0	2	0	0	0	0	0
	Process Improvement: Failure to deliver process improvement (S)	Short term adverse trend in one process indicator for a business unit. Failure to meet target number of improvement targets.	Adverse trend in a number of corporate process indicators. Failure to meet target number of improvement targets.	Adverse trend in key corporate process indicators. Failure to meet target number of improvement targets.	Long term adverse trend in key corporate process indicators. Failure to achieve target number of improvement targets.	RBNE policy fails to deliver benefits committed to the public, the regulators and the shareholders. Adverse trend in key business processes.	3	3	2	1	1	2	3	2	2	5	0
People	Workforce Health & Safety: Minor Non-Reportable injuries under EU Legislation	Reportable injury under EU or National legislation (whichever is the lesser) OR Critical Events OR Multiple minor injuries	Single major reportable injury OR Single reportable disease	Single fatality OR Multiple minor injuries Multiple reportable diseases	Single fatality OR Multiple minor injuries Multiple reportable diseases	Workforce health (H) caused by a systemic failure in work practices.	0	3	0	1	0	5	1	1	0	0	3
	Employee Engagement: Short-term loss of morale with significant impact on critical activities OR poor employee engagement as marked by independent survey	Minor disengagement with significant impact on critical activities OR poor employee engagement as marked by independent survey	Some disengagement leading to effectiveness / efficiency concerns. Support may be needed from national associations on a short term basis as on a short term basis to recruit effectively.	Major downturn in company-wide engagement leading to effectiveness / efficiency concerns. Lack of key staff results in de-facto control of elements of the business to maintain safety.	A significant downturn in company-wide engagement. Lack of key staff results in de-facto control of elements of the business to maintain safety.	3	2	3	2	2	1	2	4	0	0	4	2
Description (initial probability)		Remote <4%	Unlikely <20%	Possible >20%	Expected to less than 5 per year	Recurring 5 per year or more	3	1	3	2	2	1	2	2	2	2	2
Frequency		Less than 1 in 25 years	Less than 1 in 5 years to 1 in 25 years	Less than 1 per year to 1 in 5 years	Less than 1 per year to 5 per year	5 per year or more	36	16	39	20	40	19	20	12	28	24	
<b>Overall Risk Rating</b>							36	16	39	20	40	19	20	12	28	24	

## 4.2.1. Other Risks

Further to the risk review, Atkins has also identified a range of other risks that need to be taken into account during the political decision making process. These are as follows:-

### **Uncertainties of change with an untried model**

Any change brings with it risks due to novelty. Rail Baltica is no different; both of the recommended options are Infrastructure Management models for which there is no precedent in the EU to date. Any bespoke solutions proposed for the operation and management of the railway will inevitably bring with them challenges and risks. Many of these can be anticipated and mitigated specifically, but it is unknown risks which present the greatest threat to the project's successful delivery.

The preferred option, Option 57, involves building an entirely new organisation from scratch, which inevitably takes time and steady guiding minds. It is imperative that key personnel are brought on board sufficiently early that they have time to get to grips with the task ahead and are on hand to provide direction as the organisation grows.

These key people must have clearly-defined spheres of responsibility and must be alert to the many challenges that will inevitably arise, with clear processes for identifying and mitigating against risks, such as compiling and maintaining risk registers. It is essential that these processes do not simply become bureaucratic, as any complacency will lead to major difficulties.

Another important step to counter unseen risks is to build sufficient contingency into the schedule so that disruptions do not affect the key project milestones. As the recent failings of the Crossrail project in London have shown, allowing sufficient time in the schedule for 'bedding in' of operations is essential for a flagship project, and it is crucial that this is not underestimated.

### **Lack of reversibility**

A further complication in the Rail Baltica project is that any organisational changes made are not easily reversed. There is no fall-back organisational structure to which to revert if the project runs into issues which prevent it from running successfully.

We believe that organisational changes would be difficult to reverse because establishing Option 57 as recommended in this report will undoubtedly require detailed cross governmental agreement and in the event of poor performance, even if a fall back mechanism was put in place to permit the existing National Infrastructure Managers to take over from RBNE, this would take time due to the need for them to scale their resource base appropriately and gain the competencies in technologies different to their existing asset base e.g. ETCS signalling

In the worst case, this could lead to the project incurring all capital costs and operational costs (due to having taken on all necessary staff), but being unable to provide any service, such as access to the passenger and freight operators. This would lead to major reputational damage for the project, its sponsors and stakeholders, as well as financial difficulties.

To mitigate against this, each department of the Infrastructure Manager must have clear output-based targets broken down into milestones, so that it is apparent well in advance if certain elements of the organisation's responsibilities are not being delivered. This will allow time for such issues to be rectified prior to the opening of the railway.

Further, each department should have fall-back plans, focussed on the core functions of the RBNE, which ensure that a 'bare minimum' service is provided in the event that more advanced functions are unable to be delivered.

## Overambition

The Rail Baltica project has the exciting possibility of being a pioneering project, with best-in-class service provision and operational management in several aspects. As with any brand new railway, it can set standards for efficiency and use the latest technology and bespoke processes to raise the bar for railway operation in Europe.

However, these advantages do come with risks. Any new systems and processes, whilst giving the opportunity to outperform systems in use elsewhere, do not benefit from being tried and tested.

It is important to strike a balance between innovation and using recognised methods. The precedent of other Infrastructure Managers across Europe and worldwide is important in circumventing many of the common issues that can arise.

Whilst recognising that Option 57 is itself a bespoke RBNE model, efforts should be made to avoid widespread use of bespoke and untested technologies within its departments. The RBNE should prioritise assured deliverability over potential (but unproven) gains. This will affect the choice of signalling systems, manufacturing techniques and software, to name but a few areas.

## Overreliance on technology

It can be tempting to assume that the answer to the need for efficiency in any new infrastructure project is ever-increasing use of technology to replace time-honoured processes. And this is indeed often the case.

However, Network Rail's project to electrify the Great Western Mainline (GWML) serves as a cautionary tale in this regard. Much store had been set by the use of a new High Output Plant System (HOPS) to increase the rate at which Overhead Line Equipment (OLE) could be installed. It was assumed that the HOPS could install 30 piles per night (for the gantries), far exceeding traditional construction methods, and this time saving was built into the schedule and costings. The use of standardised piles was chosen to bring in further savings. However, amidst the excitement, the details of varying ground conditions along the route were overlooked, and there were few 'real world' tests of the machinery. When the machine came to operate, troublesome ground conditions meant actual progress was as little as 5 piles per night, leading to huge delays and consequential cost overruns.

This serves to show that, whilst investing in technology can indeed bring huge efficiencies, it should supplement rather than replace the careful planning processes required to operate a railway successfully. Human capital will always be Rail Baltica RBNE's greatest resource, with advanced engineering knowledge and a wealth of experience underpinning the cutting edge technology.

## Recruitment challenges (Also Assessed In Risk Review)

A natural follow-on to the previous section is to acknowledge the challenges that the RBNE will face in recruiting key personnel with the relevant expertise to enable the successful delivery of the Rail Baltica railway.

Without such key persons, the RBNE will lack the experience to navigate the various challenges it will naturally face. A key mitigation will be to start recruiting for key roles years in advance of when they must be filled, with potential candidates headhunted and lined up for the role whilst still in their current tenures.

If key roles are still unfilled with the project's opening approaching, the RBNE must be prepared to pay above local market rates to secure people with the necessary expertise, and should set aside contingency for this eventuality.

Building a culture that genuinely values the skills of these individuals and sets high standards for Infrastructure Management will also be key to attracting such people.

### Poor international coordination

Without a Common Safety Method for the route and common interpretation on how assets should be treated and maintained to ensure a safe railway, there will be a major risk of disconnect across the three countries and consequential increase in complexity and cost.

In terms of the regulatory relationship with safety, Atkins believes that for the optimum model a common safety method in line with EU Regulation 402/2013 will need to be established. The RBNE should engage with a single body that represents the safety regulators of Estonia, Latvia and Lithuania. A model similar to the one identified as being in use for the Channel Tunnel Rail Link in our earlier benchmarking report would seem to be an effective position. This would reduce the risk of any conflicting issues and principles and would align with the position in EU Directive 2016/2370 which states that *“With a view to achieving the objectives of the single European railway area, regulatory bodies should cooperate to ensure non-discriminatory access to rail infrastructure AND (that) In particular, it is essential that regulatory bodies cooperate where matters concerning international rail services or bi-national rail infrastructure require decisions of two or more regulatory bodies, for the purpose of coordinating their decision-making, with a view to avoiding legal uncertainty and ensuring the efficiency of international rail services.”*

### Lacklustre performance

Performance measurement is of critical importance in monitoring the success of Rail Baltica which will be able to identify any early risks. Regulators of each nation broadly supported the benefit of creating a single entity that would create competition with the existing national IMs by permitting performance benchmarking. PRIME103 use several KPIs for measuring the performance of railway IMs. They have established five dimensions into which these KPIs are categorised: Safety and Environment, Performance, Financial, Delivery and Growth. Further details on these KPIs are detailed in the KPI for RBNE model section above.

Additionally, the Asset Management sector of Rail Baltica RBNE will be responsible for monitoring and maintaining the railway assets, implementing systems, methods, procedures and tools to optimise costs, performance and risks for the complete rail infrastructure life cycle.

Monitoring will ensure risks associated with Safety, Security, Costs, Revenues and Asset capability are recorded, tracked and dealt with appropriately where needed, to name but a few. Under Option 57, this would be a fairly complex reporting and analysis task. Dedicated staff may be needed to undertake this, and to facilitate good relationships between the RBNE and the national economic regulators.

Regulation of the RBNE is also of great importance, because this will ensure interventions are made when needed throughout the life-cycle of the Rail Baltica project. Through several stakeholder meetings with regulators of the three Baltic nations, it was clear that regulation needs to be clearly defined and understood, to ensure regulators are working to the same principles and goals, ensuring the whole system is transparent and fair.

### Lack of political support

A key risk to the project is lack of political support. As a flagship cross-border project, the success of Rail Baltica, its reputation and its ability to attract customers depend on the cooperation of the three nations it traverses. As with any project, different stakeholders will have different goals, leading to potential differences in opinion on how the project should be run.

However, it is essential, once decisions have been taken about how Rail Baltica will be run, that all stakeholders unite in supporting the project and work together to ensure its success.

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<sup>103</sup> PRIME (2016). Key Performance Indicators for Performance Benchmarking.

## Risk Associated With Not Selecting The Proposed Optimum Model

As the Infrastructure Management Study closes and the Rail Baltica project moves into a period of political negotiation to define the Infrastructure Manager, the risks associated with not choosing the proposed optimum model are effectively those which are embodied in the multi-criteria analysis and reflect in many ways, not so much risk, but lost opportunity cost.

Stakeholders should not lose sight of the potentially transformative opportunity associated with the Rail Baltica project – within the context of a balanced risk assessment, which Atkins believes this document provides, this remains a project where all countries should have the ambition do something remarkable, something better than the status quo.

Set against this, it is right that the outcome of this study is robustly challenged. Rail Baltica remains the Project of the Century and in the words of Siim Kallas '*Noble causes always deserve a closer look*'.

All the core functions that need to be discharged by any infrastructure manager can be discharged under any of the options considered. These will have different advantages (e.g. in terms of cost or disadvantages (e.g. in terms of ability to optimise route performance). This can be clearly seen in the chart 'Figure 1-22 - MCA of Infrastructure Manager by Business Area' and in general mean that a failure to adopt the optimum model means the following risks will emerge, noting that a sliding scale of options were considered, reflecting a range of outcomes from Options with a strongly coherent single entity, to ones which resulted in no central infrastructure management: -

- The route is less likely to function as an effective system;
  - It will be more complex for train paths to be defined.
  - It will be more complex in terms of compensation payments for disruption.
  - It will be more complex in terms of rolling stock approvals.
  - It will be more complex in terms of billing.
- Performance will likely be poorer, with more chance of cross border delays.
- Freight businesses will have reduced confidence that effective competition will exist.
- It will likely prove significantly harder to encourage the private sector to invest.
- Commercial benefits associated with the route as a whole will be lost.
- There will be no coherent vision for future development of the route.

Despite the risks that will emerge if the optimum model is not selected, Atkins recognises that the Beneficiaries have the absolute, sovereign freedom to shape the outcome of the Infrastructure Management Study and to shape it for political, not just technical ends. This is an intrinsic part of the process – RBNE must be *owned* and supported by all for it to be a success and reaching substantive consensus will be key.

Nonetheless, it Atkins' firm belief that all stakeholders uniting behind Option 57 is will result in the creation of an Infrastructure Manager that will help all prosper together and diverging away from this position is not something that should be considered lightly.

# Appendices

# Appendix A. Benchmarking Matrix – Operational Railways

Vision & Purpose / Critical to Quality	Channel Tunnel (Eurotunnel)	Guangzhou-Hong Kong KTT Intercity	Øresund link	Dublin-Belfast	Nacala-Moatize	Addis Ababa-Djibouti
Primary purpose	Shuttle service (55% of passengers, 89% of freight)	Intercity passenger, on a suburban network	Road link (cars, coaches, trucks)	Intercity passenger	Freight (bulk mining)	Freight
Secondary purpose	HSR Passenger	None	Intercity commuter passenger	Some local passenger	Some passenger	Some passenger
Tertiary purpose	Freight trains	None	Freight trains	None	None	None
Critical measures (operations) (Measures that are customer-critical)	Lack of disruptions, Frequent departures, Adequate capacity, Punctuality, Journey speed, Safety	Punctuality, Journey speed (total journey), Safety	Frequent services, Adequate capacity, Punctuality, Journey speed, Safety	(More) frequent departures, Journey speed, Safety	Freight capacity (frequency, max axle weight)	Freight capacity (frequency, max axle weight)
Critical measures ((Infra.))	Lack of disruptions, fast recovery from disruptions, interoperability of train control, maximum speed	Lack of disruptions, fast recovery from disruptions, interoperability of train control, maximum speed	Lack of disruptions, fast recovery from disruptions, interoperability of train control	Few disruptions, low cost (demand is low)	Few disruptions (control animal incursion), low cost	Few disruptions (control animal incursion), low cost
Critical measures (revenue)	Commercial fares, Attractive shopping & developments at terminals	Commercial fares, Shopping malls at terminals, connectivity	Commercial fares, commercial development	Attractive shopping areas at terminals	Price-competitive with road	Commercial development

Outcome	Channel Tunnel (Eurotunnel)	Guangzhou-Hong Kong KTT Intercity	Øresund link	Dublin-Belfast	Nacala-Moatize	Addis Ababa-Djibouti
Passenger trips variance from plan	-13% (after 24 years!)	+21% over 10 years	-36% (after 5 years)	-22% over 10 years	Not material	Not material
Freight tonne-km variance from plan	-89%	Not relevant	+24%	Not relevant	+ 40%*	No data yet
Impact on economic activity	+++++	+++++	+++++	+	+++++	No data yet
Stakeholder mgmt	++++	+++++	+++++	++	+++++	+++
Political commitment	+++ (UK) ++++ (France)	+++++	+++++	+++	+++++	++++
Construction budget overrun	80% (+140% on financing costs)	No data	39%	0%	No data	30%
Timetable overrun	1 year late	No data	3 months AHEAD	No data	On time	2 years late
Minimum headway (minutes)	3	2.5	4	7.5	55	No data
Modal share (passenger)	7.5%	40%	8%	3%	0.1%	0%

Modal share (freight)	11.7%	0% (rail freight no longer available)	8% (national) 50% (link only)	0%	14%	n/a
Time to first dividend / profit	15 years / in 18 years profitable	No data	14 years / 30 years repayment of loans	No data	No data	No data
Governance	Channel Tunnel (Eurotunnel)	Guangzhou-Hong Kong KTT Intercity	Øresund link	Dublin-Belfast	Nacala-Moatize	Addis Ababa-Djibouti
Separate independent infra Co?	It also operates the shuttle service. So not independent of all operators	No, MTR is also the passenger operator	Yes – two InfraCo's split at half-way point, but same ownership as train service operator	No, neither state railway has a separate InfraCo from train operators	Information not available	Information not available
Inter Governmental agreement	Yes	Yes – MoU	Yes	None needed	Yes – part of funding	Yes
Inter Government steering committee	Yes, IGC	Information not available	Yes	No	Information not available	Information not available
Safety Regulator	Channel Tunnel Safety Authority hands over at tunnel area entrance/exit	EMSD (HK govt authority) hands over at boundary	Joint operational responsibility but regulation hands over at border	Regulation hands over at border	Information not available	Regulation hands over at border
Joint ownership?	No longer joint	No	Yes	Operator only	Yes	
Local investors involved?	Yes	Yes –MTR (state & private operator)	Information not available	State railways only	Yes, 70% (30% state)	State only
Role of supranational / external agency /	Private equity, with national guarantees after some years. Role of EU negligible in construction	Negligible external influences. Original build HK gov't funding	Private equity, with state participation: EU financing high	EU role in refurbishment	Vale (42.5% & Mitsui (42.5%) +15% local investors	Chinese interests dominant for building & operation

<b>Maintenance Insourced / Outsourced</b>	Insourced	Information not available	Insourced	Maintenance contracted, technical expertise inhouse	Information not available	Currently outsourcing construction and maintenance, in 2024 it will become inhouse.
<b>Government Grants</b>	Government and other public bodies provided €6,568,000 in 2016	HKSAR government provided HK\$12,652 million subject to a repayment mechanism	Danish and Swedish Government loans provided, information on quantity not provided	Total state grants of €296.4 million in 2016 Maintenance Funding (€22.4m) provided by the Department of Transport, Tourism and Sport in 2016	Grant-aid/Soft loan of US\$350 million, for the phased redevelopment of freight-port infrastructure	Information not available
<b>Revenue</b>	Total = €1033 million, €311 million for the IM (2016)	Information not available	DKK 1,928m	€467,748	Information not available	Information not available
<b>Profit</b>	Gross margin for IM and shuttles in 2016 was ~€521 million	Information not available	Profit (before value adjustments) DKK 1070 million. (up DKK 50m or 5% on 2016, up 79% on 2013.	A deficit of €2.9 million, down from €7.7 million in 2015	Information not available	Information not available
<b>Headcount</b>	3400 (2017)	MTR Total onshore: 17,524 (2017)	153 (2016)	3806 (2016)	Information not available	Information not available
<b>Route Length</b>	50.45km	183km	7845m	167km	912km	759km

## Appendix B. Core Functions of IMs from Benchmarking

Infrastructure manager	Channel Tunnel	Dublin-Belfast	Øresund	Addis Abbaba to Djibouti	Kunming	Kuala Lumpur to Singapore	Guangzhou to Hong Kong (KTT)
Is there a single control centre (Traffic Management)	Yes, all control from the Rail Control Centre.	No, separate centres on both sides of border	Yes for fixed link (unsure if Denmark or Sweden)	Yes, Ethio-Djibouti Standard Gauge Rail Transport S.C. (from 2024)	Not available yet	Single Asset Co will operate all of the infrastructure, but no information on OCCs	MTR's OCC operates to the boundary, handing over to first Guangshen OCC at that point
Is there a single maintenance entity OR is the maintenance contracted centrally	Yes, single entity	No, separate. No apparent coordination of work programmes	Single entity but subcontracted by consortium to a related company Infranord	Yes (single maintenance contractor)	Not available	AssetsCo contracted to operate and maintain technical equipment – so likely to be single entity	No – MTR and Guangshen maintain separately
Single capacity allocation	Yes, single entity	No, prioritisation agreement in place for the jointly-operated Enterprise train service	Yes, Consortium allocates for rail tunnel & bridge	Yes	Assumed yes, due to single operator	Yes, AssetsCo will allocate for all	Yes, currently done by MTR Corporation
Single billing	Yes single entity, Getlink	No, separate for N. Ireland & Eire	Øresundsbro Konsortier collect link revenue and distribute profit as dividends to two parents companies.	Yes	Assumed yes, due to single operator	Single system, with outlets in both countries	No data available
Single safety system (Common Safety Method)	Separate safety systems within EU CSM but with central responsibility for Tunnel.	Separate safety systems within EU CSM, change at the border. Both follow CSM but Irish Rail is more developed	Separate safety systems within EU CSM but with central responsibility for Tunnel	No	Not available	Not currently clear	Separate - EMSD ( Electrical and Mechanical Services Department – HK Gov. authority) hands over at boundary
Single enhancement body looking at Network	Single for tunnel but 2-3 separate bodies outside it	No, separate	Consortium?	No, two separate bodies	Assumed yes, due to single entity designing, building and operating	Coordinated with parties across boundary, but no single body	Not available
Data reporting – who is data reported to?		To safety regulators and the two governments, on either side of the border.	To both Danish & Swedish safety regulators and both governments	To the consortium company and the two governments, on either side of the border	Not available	Separate to safety regulators and governments of each territory	Separate, to safety regulators and governments of each territory

*No data was available for Ncala to Moatize.*

## Appendix C. Planned Railways Critical to Quality Metrics

<b>Benchmarking Examples</b>	<b>Guangzhou-Hong Kong XRL</b>	<b>Kunming-Bangkok</b>	<b>Kuala Lumpur-Singapore</b>	<b>Fehmarnbelt</b>
Primary purpose	HSR passenger, dedicated network	HSR passenger (?)	HSR passenger	Road
Secondary purpose		Freight trains (or is this primary? Not mentioned in press)	No: freight to use conventional rail	Freight
Tertiary purpose				Passenger
Critical measures (customer-critical) (operations)	Punctuality, Journey speed, frequency, safety	Total journey time, comfort, punctuality, safety	Total journey time, comfort, punctuality, safety	Punctuality, Journey speed, frequency, safety
Critical measures (infrastructure)	Lack of disruptions, fast recovery from disruptions, maximum speed, connectivity	Lack of delays en route (disruptions), maximum speed	Lack of disruptions, maximum speed	Lack of disruptions, fast recovery from disruptions
Critical measures (revenue)	Commercial fares Attractive shopping areas at terminals	Probably depends on freight development	Commercial fares Attractive shopping areas at terminals(?)	Commercial fares / tolls
<b>Outcome &amp; Governance</b>	<b>Guangzhou-Hong Kong XRL</b>	<b>Kunming-Bangkok</b>	<b>Kuala Lumpur-Singapore</b>	<b>Fehmarnbelt</b>
Construction budget overrun	31%	No data yet	No data yet	No data yet
Construction timetable overrun	No data yet	No data yet	No data yet	No data yet

Separate independent InfraCo?	No	No	No	Yes-will be one for each country
Intergovernmental agreement?	Yes	Progressively	Yes	Yes
Intergovernmental steering committee			Yes	
Safety Regulator	One for each country	Not yet clear	One for each country	One for each country
Joint ownership?		Not yet clear	Yes	Yes
Local investors involved?	Yes – but only for property at terminal	Little or none	Yes – and being encouraged heavily	State governments only so far
Role of supranational / external agency or construction partner	Need to achieve Chinese state railway interoperability	Chinese influence dominant	Local state control + world best expertise	EU financing significant, local involvement strong
Funding & financing	HK Government+ property developers at terminal	Chinese state funding 85% of Laos HSR	Both state governments – property developers being recruited (?)	Private equity, with state participation: EU financing 85%

## Appendix D. Sub-options on national differences (Composite 2:1 Option)

The options described in this document are based on the formal arrangements across all THREE countries will be the same, and that two countries will not have a separate agreement for closer cooperation than with a third country. However, it is possible for SOME of the differentiators above that arrangements for closer cooperation could be agreed between two nations and not with a third, but for OTHER differentiators that is not the case.

It has been verbally indicated to the consultant that an Option which combined both Option 85 and Option 57 could be a preferred outcome for some stakeholders. While detailed analysis of this has not been done, the list below sets out where it may or may be not be practical to have a bilateral agreement in addition of any tri-lateral arrangement. Through complex contracts some of the 2:1 options below may be possible but, in the professional opinion of the authors of this paper, are impractical and complex and as such, cannot be endorsed. The reasoning is given below.

Differentiators ACROSS 2 nations ONLY	Bilateral practical / impractical	Reason
1. Freedom to set market rates for PASSENGER and freight	Impossible	Because RB passenger and freight trains are international in character
2. Freedom to set market rates for FREIGHT only and freight	Impossible	Because RB freight trains are international in character
3. Traffic Management	Practical	
4. Capacity Allocation	Practical	
6. Single entity for maintenance and inspection	Practical	
7: Vision Author	Possible but with no value	Most market across all three nations so restriction is handicaps effectiveness of vision output
8. International Relations Lead	Impractical	Adds complexity
9: Passenger letting body	Impractical	The key passenger services will operate across all three countries and single TOC concession required for such international services
10. No significant commercial freedom	Practical	Requires arrangements to cover revenue reimbursement and risk. Risk comes from liabilities which may need to be specified in agreement so not picked up by 3 <sup>rd</sup> nation.
11. Enhanced Commercial Services Capability (minimum):	Practical	Requires arrangements to cover revenue reimbursement and risk. Risk comes from liabilities which may need to be specified in agreement so not picked up by 3 <sup>rd</sup> nation.

12. Commercial Services Capability (partial – no extra land):	Impractical	Requires arrangements to cover revenue reimbursement and risk. Risk comes from liabilities which may need to be specified in agreement so not picked up by 3rd nation.
13. Commercial Service Capability (partial – some extra land - for railway associated services only):	Impractical	Risk is disproportionate and will be hard to contract, as ownership of extra asset (i.e. extra land) is complicated.
14. Commercial Service Capability (full):	Impractical	Risk is disproportionate and will be hard to contract.
15. Governance structure the same as RB Rail AS	Impractical	Existing agreement would allow 2 national shareholders to outvote a third which would make bi-lateral arrangements (i.e. across 2 nations only impractical)
16. Governance minimally modified from that of RB Rail AS with greater RB IM management freedom (minimal relaxation):	Possible	Require reduction of 2 parties to c.9% each (from 33%) and 2 agreeing nations holding no more than 16% each maximum – otherwise 2 nations would have a majority. May be required as otherwise
17. Governance moderately modified from that of RB Rail AS (progressive relaxation):	Possible	Measures would be needed to prevent 1 party/nation to buy shares or otherwise gain majority through proxy
18. Fully modified governance structure	Possible	Measures would be needed to prevent 1 party/nation to buy shares or otherwise gain majority through proxy
19. Back-stop haulage offer capability:	Impractical	Liabilities and benefits overly complicated

The table shows that, should it not be possible to reach an agreement over all three nations on the Rail Baltica route over the function of the Rail Baltica IM entity, the activity of Rail Baltica on the route over the two nations where agreement was reached would be limited – to at most the core activities discussed at the start of this paper. In addition, the governance structure would need to be different to that of RB Rail AS, which would require consent from all three national shareholders.

# Appendix E. Multi Criteria Analysis

Due to file size issues in this document, the MCA is not included directly, but an Excel file is available upon **request**. Individual Options have been modelled, with adjustment mechanisms applied to the scoring as indicated.

## E.1. Adjustment Mechanism for MCA

Description in Core Document	Description in Core Document							Adjustment %	Application	Applies to Question Numbers
	Option 5	Option 31	Option 57	Option 63	Option 80	Option 81	Option 85			
1. Freedom to set all track access (passenger and freight)	No	No	No	No	No	No	No	100%	No difference in Option, therefore retain base option score.	NONE
2. Freedom to set FREIGHT ONLY flows	Yes	Yes	No	No	No	No	No		If Yes, National Score, If No, Then Multiple IM Option	33, 57, 76
3. Traffic Management	Yes	Yes	Yes	Yes	Yes	No	No		If Yes, National Score, If No, Then Multiple IM Option	19, 25
4. Capacity allocation	Yes	Yes	Yes	Yes	Yes	Yes	No		If Yes, National Score, If No, Then Multiple IM Option	62
6. Inspection and maintenance across all route	Yes	Yes	Yes	Yes	Yes	No	No		If Yes, include all Asset Management functions, otherwise use Multiple IM	1 - 24 inclusive
7. Vision Author	Yes	Yes	Yes	Yes	Yes	Yes	No		Question selection based upon where 'Vision'	29, 91
8. International Rail Relations Lead	Yes	No	Yes	Yes	Yes	No	No		Only assessed in detail in draft	63, 64, 73
9. Passenger Concession Letting agency	Yes	No	No	No	No	No	No		Only assessed in detail in draft	NONE
12. No significant commercial freedom/capability	No	No	No	No	Yes	Yes	No	0%	Measure of effectiveness combined with share structure	8, 16, 17, 30, 35
13. Commercial Services Freedom (minimal):	No	No	No	Yes	No	No	No	25%	Measure of effectiveness combined with share structure	8, 16, 17, 30, 35
14. Commercial Services Freedom (partial – no extra land):	No	No	Yes	No	No	No	No	50%	Measure of effectiveness combined with share structure	8, 16, 17, 30, 35
15. Commercial Service Freedom (partial – extra land for rail associated services only)	No	Yes	No	No	No	No	No	75%	Measure of effectiveness combined with share structure	8, 16, 17, 30, 35
16. Commercial Service Freedom (full):	Yes	No	No	No	No	No	No	100%	Measure of effectiveness combined with share structure	8, 16, 17, 30, 35
17. Share structure remains the same as current	No	No	No	Yes	Yes	Yes	No		Measure of effectiveness combined with share structure	8, 16, 17, 30, 35
18. Minimally modified Share structure (minimal relaxation)	No	Yes	No	No	No	No	No	60%	Measure of effectiveness combined with share structure	8, 16, 17, 30, 35
19. Moderately modified share structure (some relaxation + gold share)	No	Yes	No	No	No	No	No	80%	Measure of effectiveness combined with share structure	8, 16, 17, 30, 35
20. Fully modified Share structure (creation of private entry):	Yes	No	No	No	No	No	No	100%	Measure of effectiveness combined with share structure	8, 16, 17, 30, 35
21. Rail Haulage offer	Yes	No	No	No	No	No	No		Only assessed in detail in draft	8, 16, 17, 30, 35
Other Default Scoring (Single IM = Yes / Multiple IM = No)	Yes	Yes	Yes	Yes	No	No	No			

Description in Core Document	Description in Core Document							Adjustment %	Application	Applies to Question Numbers
	Option 5	Option 31	Option 57	Option 63	Option 80	Option 81	Option 85			
All Commercial Scoring Adjustment (Commercial Freedoms)	100%	75%	50%	25%	0%	0%	0%		Adjusts based on ability to deliver based upon commercial freedom	
All Commercial Scoring Adjustment (Shareholder Freedoms)	100%	80%	60%	40%	40%	40%	40%		Adjusts based on ability to deliver based upon shareholder freedom	
All Commercial Question Scoring Adjustment For Option (Multiply By)	100%	60%	30%	10%	0%	0%	0%			8, 16, 17, 30, 35

## E.2. Example (Subset of MCA for Option 5)

Option Number	Option Description - For each option we need to describe what functions we believe should be included or excluded. There will be no need to draft the procurement document for each option.	Core Option	Single	Multiple	21-24 IM Score	25-30 IM Score	31-35 IM Score	36-40 IM Score	41-45 IM Score	46-50 IM Score
1	Asset Condition Information Systems TECHNOLOGY	Industry Knowledge	The parameter 'Asset Condition Information Systems (Technology)' is concerned with the systems that will need to be put in place for the Infrastructure Manager to manage its assets by line with commonly understood best practice. Infrastructure Managers have started to move over time both condition based inspection to frequency based inspection (using mean time between failures), but the very best asset managers are now moving towards risk based inspection, often supported by sensor condition monitoring. This helps extend the asset life by prioritising asset inspections in accordance with assessed risk levels. It is typically built upon details of degradation analysis that can be developed when all traffic flows and environmental conditions on the network can be understood in order to model the failure risk for the asset (PMEA) and the understanding of the impact of this, leading to a controlled inspection and maintenance regime. The parameter looks at the potential effectiveness of deploying asset condition information systems e.g. Predictive (sensor condition monitoring) and associated modelling of the data in order to optimise asset performance under each of the individual routes.	Single	Multiple	15	15	15	15	15
2	Asset Acquisition & Commissioning	Industry Knowledge	The parameter 'Asset Acquisition & Commissioning' is concerned with the introduction of new assets onto Rail Baltica following construction and 'Go-Live'. Rail Baltica will involve immediate post construction. As with any railway, we can assume that certain assets will fail and need replacing. This will be the case not just for spares, but in many cases will be relatively minor, but for some items, such as telecom base stations, the design and support life will most likely require upgrade and replacement within the decade after completion. This means that new equipment will need to be procured as part of an integrated programme and commissioned in a way that reflects how the railway operates as a system.	Single	Multiple	15	15	15	15	15
3	Asset Data and Knowledge	Industry Knowledge	The parameter 'Asset Data and Knowledge' is concerned with how the model will facilitate best practice - for the route - around how knowledge arising from the data gathered is used. In modern high performing railways, assets are increasingly managed through data that can be integrated into enterprise asset management, enterprise resource planning and scheduling systems, with data being captured electronically in the field or through the use of sensor condition monitoring equipment. This generally permits efficiencies in the number of maintenance staff required to maintain the railway.	Single	Multiple	15	15	15	15	15
4	Asset Management	Industry Knowledge	Asset Management is concerned with 'The coordinated activity of an organization to realise value from physical assets.' - this definition being taken from the definition of asset management as included in the international suite of standards, BS ISO 55000 series (2014). For Rail Baltica, we will seek to understand how the coordination elements of asset management will be influenced by the different modes (predominantly from a single asset) / multiple solutions of best practice systems by assets should include a common.	Single	Multiple	15	15	15	15	15
5	Asset Management Plans ACTIONABLE ACTIVITY	Industry Knowledge	Asset Management Plans are documents produced by infrastructure managers to demonstrate how they are maintaining their assets. They do this in order to ensure high levels of availability and performance, generally covering the implementation, maintenance and improvement of the asset. Good asset management plans are a cornerstone of effective economic and safety regulation.	Single	Multiple	15	15	15	15	15

Contains sensitive information

# Appendix F. Stakeholder Analysis Transcripts

## F.1. Standard Stakeholder Interview Pack

The below questions were used as the standard stakeholder interview pack and were followed throughout the meetings. For each stakeholder in the sections below, questions that were not answered have been omitted.

### Interviewee Record

Name of Interviewee	
Job Title of Interviewee	
Explanation of how this role fits within the wider interviewees organisation structure – reporting lines etc	
Contact Email	
Contact Telephone	
Date of Interview	
Location of Interview	

### Information About Your Business

This section is designed to help us identify the structure and capability of your own organisation and its current operating model.

What is the registered name of your business?	
Please describe the structure of your organisation and how this fits within the rail industry including government and regulatory bodies	
Please describe the financial flows for your business, between the different industry parties – if possible detailing the sums that flow in €m	
Please describe the functions that your business performs, including whether these are insourced or outsourced.	
Who are your key stakeholders? What is your relationship with them?	
What is the headcount of your business, please break this down by function where possible. What is your current target headcount?	

<p>What metrics are used to measure the performance of your business? Who sets these? How has performance been over the last few years?</p>	
<p>Are there metrics that are missing – for your organisation or others?</p>	
<p>Is the structure of your organisation currently aligned with the principles of the 1<sup>st</sup>, 2<sup>nd</sup> 3<sup>rd</sup> and 4<sup>th</sup> Railway Package?</p> <p><i>1<sup>st</sup> Railway Package – ‘non-discriminatory access’ (2001)</i> <i>2<sup>nd</sup> Railway Package ‘common standards / open access’ (2004)</i> <i>3<sup>rd</sup> Railway Package ‘international access and cabotage’ (2010)</i> <i>4<sup>th</sup> Railway Package ‘independent infrastructure management’ (2016)</i></p> <p>What steps are you taking (if any) to change your business to reflect the principles of the 1<sup>st</sup>, 2<sup>nd</sup> 3<sup>rd</sup> and 4<sup>th</sup> Railway package. Do you have a date by which you expect to be compliant?</p>	
<p>What do you think your business does particularly well? What evidence can you provide to support this?</p>	
<p>What do you think your business does not do well? Why is this?</p>	
<p>What is the size of the network in track km that your organisation is responsible for?</p>	
<p>What is your annual spend on: - Maintenance (€m) Renewals (€m) Enhancements (€m) How and why do you anticipate this will change over the next 5-10 years?</p>	
<p>How are you funded?</p>	
<p>Is this funding proving sufficient to achieve the quality and sustainability performance required for your infrastructure?</p>	

<p>Please describe your approach to procurement e.g. supply chain development, use of category management, the use of alliancing, ISO14001 / 9001 accreditation etc.</p>	
<p>Who do you think we should speak to outside your organisation in order to best understand the optimum model for the Rail Baltica project.</p>	
<p>What are your organisations top three biggest business risks? How and where have you identified these?</p>	
<p>What things (if any) do you believe are unique about the operation of the railway and railway infrastructure in your Country? Why?</p>	

**Stakeholder View of Target Operating Model**

This section is designed to enable you to describe how you see a high performing infrastructure manager should operate.

<p>We are undertaking benchmarking of international railways. Are there any examples that you think are worth our examining?</p>	
<p>What do you think the obligations of any infrastructure manager are?  Core (and optional below)  Do these include train operations?</p>	
<p>What do you think the optional functions are for any infrastructure manager?</p>	
<p>What metrics would you use to test the effectiveness of any structure?</p>	

**Your Vision for Rail Baltica**

<p>Can you describe your view of the optimal arrangements for Rail Baltica? Please draw an organisational chart. Please include who operates: Passenger services; Freight services; Infrastructure inspection;</p>	
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<p>Infrastructure standards and systems design;          Timetable planning;          Civil and system maintenance and renewal;          Terminal;          Rolling stock (locomotives, wagons and passenger trains)</p>	
<p>What metrics would you use to test the effectiveness of the future organisation?</p>	
<p>Can you describe the regulatory regime and common operational processes that you see will or need to be in place to allow Rail Baltica to operate effectively – e.g. does Rail Baltica need a common timetable body?</p>	
<p>Who do you think shares your vision?</p>	
<p>Does the construction of Rail Baltica represent an opportunity to your organisation?</p>	
<p>Is there a conflict of interest between the commercial/strategic objectives of your organisation and those of Rail Baltica</p>	
<p>What do you think would be the fairest way of balancing any competing objectives amongst the stakeholders?</p>	
<p>The European Rail Infrastructure Manager's Association is (one of 10 European railway organisations) recognised by the European Commission as a 'representative body from the railway sector'. Are you familiar with this?</p> <p>Does or will your business be able to endorse the <b>principles</b> of the EIM charter and indicate where, if any you perceive there to be a conflict with your business strategy in the medium term (5 years+) – See Appendix One.</p>	
<p>What are the biggest concerns you currently have that you would like to see addressed in the study?</p>	
<p>What else would you like to tell us?</p>	

## F.2. Lithuanian Railways

### Interviewee Record

Name of Interviewee	Karolin Sankovski (Arenijus Jackus minor contributions)
Job Title of Interviewee	Deputy General Director – Director of Railway Infrastructure Directorate (Director / “Rail Baltica” Coordination Department)
Contact Email	k.sankovski@litrail.lt
Contact Telephone	+370 269 33 05
Date of Interview	Thursday 10 <sup>th</sup> May 2018
Location of Interview	Gedimino pr. 17. Vilnius

### Information About Your Business

This section is designed to help us identify the structure and capability of your own organisation and its current operating model.

What is the registered name of your business?

Lietuvos geležinkeliai (Lithuanian Railways)

### Your Vision for Rail Baltica

Can you describe your view of the optimal arrangements for Rail Baltica?

Please draw an organisational chart.

Please include who operates:

Passenger services;

Freight services;

Infrastructure inspection;

Infrastructure standards and systems design;

Timetable planning;

Civil and system maintenance and renewal;

Terminal;

Rolling stock (locomotives, wagons and passenger trains)

Criteria for success should be selected, not a target model. Most important criteria:

- free & simple access
- clarity of infrastructure charges
- effective scheduling for both passenger services and freight (day-to-day and planning for the future)
- effective maintenance
  - organised to minimise cost (efficiency)
  - good quality (operational performance)
  - good punctuality (operational performance)
- existing resources must be well used (infrastructure, human resources, know-how, systems)
- RB should not be an exception to the existing national networks, so the efficiency of the whole network should be optimised, not just RB
- assure synergy between 1520mm and 1435mm gauge railways, both for scheduling and maintenance

Discussion of arranging timetables so that all traffic is equally assured.

RB should be part of the national railway networks, but should be a single railway with respect to capacity allocation and traffic management.

Must have a minimum output-based standard for maintenance, internationally agreed, to avoid other states opting out if there is no traffic.

Discussion of variable access technology to allow trains to enter anywhere on the LT, LV, EE national networks.

Long discussion about who decides the passenger service specification. Initial suggestion was a common capacity allocation, with the market allowed to decide passenger service level. Warwick pointed out that passenger services can't disappear after being introduced, so there has to be an agreement on minimum passenger service levels, and that the governments need to underwrite any potentially loss-making service. Warwick suggested the governments specifying to RB the minimum services and RB running the competition to run these services for the minimum subsidy. Karolis stated that the nature of the Passenger Service Obligation should not affect the structure of the IMs, just the IM income.

Discussion of access charges. Karolis asserts that charges should be similar, but does not believe that the charges (or the formula for the charges) must be exactly the same, as long as the charges are agreed between the countries. Who maintains the infrastructure should be decided by efficiency only.

What are the biggest concerns you currently have that you would like to see addressed in the study?

Study should analyse different models regarding existing resources, about existing overall practices in Europe. Should be a legal study of feasibility of different models under legal requirements, as well as understanding national security implications.

Cross-border delays are a matter of agreements/rules – there should be agreed rules between IMs on how to handle, with clear procedures, and equipment in Traffic Management (TM) centres to enable this. Base case should be 3 TM centres to ensure interoperability. Shouldn't re-invent the wheel – RNE already has interoperable systems.

IMs should be allowed to make profit, so they are able to be self-sufficient and can develop the network to include other cities and industrial centres. IM should maximise profitability subject to the market being able to bear it. Prices should be coordinated

between countries for international traffic, but not necessarily agreed in advance. Each IM should charge individual prices.

Warwick (Atkins) pressed on the subject of whether charges should be agreed in advance; Lithuanian Railways responded saying they haven't thought about that yet.

### F.3. Lithuanian Railways IM Board

#### Interviewee Record

Name of Interviewee	Mantas Bartuška Egidijus Lazauskas Linus Baužys
Job Title of Interviewee	Director General - JSC "Lithuanian Railways" Deputy Director General – Director of Freight Transportation Directorate Deputy Director General – Passenger Transportation Directorate
Contact Email	<a href="mailto:m.bartuska@litrail.lt">m.bartuska@litrail.lt</a> <a href="mailto:e.lazauskas@litrail.lt">e.lazauskas@litrail.lt</a> <a href="mailto:l.bauzys@litrail.lt">l.bauzys@litrail.lt</a>
Contact Telephone	+370 5 269 2038 +370 5 269 3301 +370 5 269 2300
Date of Interview	Tuesday 22nd May 2018
Location of Interview	Mindaugo St 12, Vilnius

#### Information About Your Business

This section is designed to help us identify the structure and capability of your own organisation and its current operating model.

What is the registered name of your business?	Lietuvos geležinkeliai (Lithuania Railways)
Please describe the structure of your organisation and how this fits within the rail industry including government and regulatory bodies	In the process of splitting into 3 business units: infrastructure, freight and passenger.
Is the structure of your organisation currently aligned with the principles of the 1 <sup>st</sup> , 2 <sup>nd</sup> 3 <sup>rd</sup> and 4 <sup>th</sup> Railway Package?  <i>1<sup>st</sup> Railway Package – 'non-discriminatory access' (2001)</i>	Already in line with the 4th Railway Package.  Following DB model: <ul style="list-style-type: none"> <li>• IM profitable, charging market rates</li> <li>• Passenger side loss-making, freight profitable</li> </ul>

*2<sup>nd</sup> Railway Package 'common standards / open access' (2004)*

*3<sup>rd</sup> Railway Package 'international access and cabotage' (2010)*

*4<sup>th</sup> Railway Package 'independent infrastructure management' (2016)*

What steps are you taking (if any) to change your business to reflect the principles of the 1<sup>st</sup>, 2<sup>nd</sup> 3<sup>rd</sup> and 4<sup>th</sup> Railway package.

Do you have a date by which you expect to be compliant?

- Passenger services subsidised - €30m annual loss covered by the government
- Loss in operating part of passenger service

### Your Vision for Rail Baltica

Can you describe your view of the optimal arrangements for Rail Baltica?

Please draw an organisational chart.

Please include who operates:

Passenger services;

Freight services;

Infrastructure inspection;

Infrastructure standards and systems design;

Timetable planning;

Civil and system maintenance and renewal;

Terminal;

Rolling stock (locomotives, wagons and passenger trains)

Discussion about how passenger and freight work together commercially - Who does a potential customer call? One window, or one window in each country with the same price whoever they phone. Regulator for each country calculates costs and determines what the market can bear and sets the formula at the right level. Long discussion on who the customer should negotiate with if the price is too high. Eventually settle on no negotiation. Long discussion on whether the formula should be the same across countries/who has flexibility on the price. Eventually settle on a pre-agreed formula, the same across the 3 countries. If the regulator changes the formula, the national government has to subsidise the difference.

Long discussion about passenger services. Lithuanian Railways shouldn't necessarily run any cross-border passenger services. Market should decide what services to run – politicians should decide the minimum service levels. Too early to decide minimum service levels. Up to regulation to decide whether tariffs for passenger trains should include some contribution to fixed costs. Governments to decide if operators want to change service levels. Liquidated damages if operator gives up.

Traffic Management should be done in 3 centres, as now. New infrastructure should just be added to the existing centres.

Short discussion of Amber Train, including talking about competition driving efficiency. No clear conclusion. Email Ergidijus for more information/statistics about Amber Train.

IM should operate capacity allocation, charge tariffs, pay for maintenance. It doesn't necessarily have to maintain track – track maintenance should be done by whatever is most efficient. It is critical that the IM is efficient. More analysis needed to know whether to tender for Traffic Management.

## F.4. Lithuanian Private Railways Association

### Interviewee Record

Name of Interviewee	Tomas Kersis
Job Title of Interviewee	
Explanation of how this role fits within the wider interviewees organisation structure – reporting lines etc	Fully private. They transport to station, LT railways transport from station. They want to start operating themselves
Contact Email	tomas@rail.lt
Date of Interview	Thursday 10th May 2018

### Information About Your Business

This section is designed to help us identify the structure and capability of your own organisation and its current operating model.

What is the registered name of your business?	Lietuvos Privačių Geležinkelių Imonių Asociacija
Please describe the structure of your organisation and how this fits within the rail industry including government and regulatory bodies	4 members Contract through LT railways Currently contract through IM for existing services
Please describe the functions that your business performs, including whether these are insourced or outsourced.	Goal is to start a private railway operator in Lithuania (transporting Potassium and fertilisers to Klaipėda).  2tpd from Yornova, 6tpd Belarus.  Lobby government to lower infrastructure charges and make them predictable (4 price changes last year). Usual contact through Lithuanian Railways (Cargo division), but from 2018 the contract is with the Infrastructure Manager. They can provide formula, which is set by the IM (and the comparison by period). “The regulator only gets involved in complaints – they don’t set the tariffs.”  They also lobby for capacity for other players to enter the market. The company that wants the largest allocation of capacity usually gets it, but the companies don’t provide any evidence that they use the capacity – they have the capacity and just say it’s

overfilled. (Some companies have done calculations to show that there is capacity.) Companies can't easily use alternative ports because they have infrastructure set up in Klaipėda. They have asked how the existing capacity is used, but were told it's the business of the IM (which is the same company as the cargo operator). For instance, you have to pay 10% of track access fee in advance, which is not real money for an internal transfer for the cargo operator to IM. Evidence for charges being too high is the European Commission report European Railways Market Monitoring Survey – Lithuania and Latvia in the top three.

The IM doesn't want to be efficient, because then they can charge everybody high fees. In Jan 18, the IM bought the TM service from the Cargo Management. That was unregulated, so there is no record of how much that cost element contributes to the infrastructure charges. This is a subsidy being transferred across.

The 4 price rises were caused by: mistaken calculations; they lost some EU court proceedings over the closure of a line to Latvia; 2 x no explanation. No contractual protection – sign for one year and start again each year. They use a consistent formula, but they change the input numbers (and nobody knows what they are – i.e. cost of signalling).

Cost + 5% formula for Rail Baltica, indexed over time, the same in Lithuania/Latvia/Estonia, that would make things much more predictable/comfortable.

They asked the IM/regulator whether the charges were compliant with EU Commission regulation 909 ("Infrastructure managers have to set the charges [for] using the infrastructure at the costs directly incurred by the train service.", details about how to calculate direct costs), but didn't get a good answer.

<p>What is the headcount of your business, please break this down by function where possible.</p> <p>What is your current target headcount?</p>	<p>Transachemal (Jornova?) – 100 (-----) Geležinkelis – 60 + 14 miscellaneous</p>
<p>What metrics are used to measure the performance of your business?</p> <p>Who sets these?</p> <p>How has performance been over the last few years?</p>	<p>No metrics currently.</p> <p>Desirable metrics would be location of wagons, clear time of transportation, stops, infrastructure repairs.</p>

	<p>Mainly get information by phone/email about repairs (often as late as on the day). No access to the Traffic Management systems/nothing real time.</p>
<p>Is the structure of your organisation currently aligned with the principles of the 1<sup>st</sup>, 2<sup>nd</sup> 3<sup>rd</sup> and 4<sup>th</sup> Railway Package?</p> <p><i>1<sup>st</sup> Railway Package – ‘non-discriminatory access’ (2001)</i> <i>2<sup>nd</sup> Railway Package ‘common standards / open access’ (2004)</i> <i>3<sup>rd</sup> Railway Package ‘international access and cabotage’ (2010)</i> <i>4<sup>th</sup> Railway Package ‘independent infrastructure management’ (2016)</i></p> <p>What steps are you taking (if any) to change your business to reflect the principles of the 1<sup>st</sup>, 2<sup>nd</sup> 3<sup>rd</sup> and 4<sup>th</sup> Railway package. Do you have a date by which you expect to be compliant?</p>	<p>Only hear what is planned to be delivered (DB model), where IM/cargo/passengers are separate, but part of the same company. “Even in Germany, one holding company always leads to barriers.”</p> <p>He hopes Rail Baltica will be different, but he doesn't envisage doing business with RB, as Klaipėda sea port is more important for them.</p> <p>They would be happy if prices were regulated, transparent, fixed, with agreed (and fair) capacity allocation between the three countries.</p> <p>The regulator is not effective. It has enough power, but it doesn't use it. It's possible to take the regulator to court, but that's up to the member companies. The regulator takes a long time to respond, and keeps putting off responding.</p> <p>The IM is difficult to work with. Negotiations take months, and new contracts are imposed (“you must sign this to use our infrastructure”).</p>
<p>Who do you think we should speak to outside your organisation in order to best understand the optimum model for the Rail Baltica project.</p>	<p>Klaipėda port – sea port authority Orlan – oil company</p>
<p>What things (if any) do you believe are unique about the operation of the railway and railway infrastructure in your Country? Why?</p>	<p>Kaliningrad access which should lower costs. No private companies allowed on Belarus – Kaliningrad line.</p> <p>Big trains (6000 tonnes) should make the IM more efficient. This is the same in all the Baltic states.</p>

### Stakeholder View of Target Operating Model

This section is designed to enable you to describe how you see a high performing infrastructure manager should operate.

<p>We are undertaking benchmarking of international railways. Are there any examples that you think are worth our examining?</p>	<p>(No)</p> <p>Viking is a success, if you want to keep a monopoly. The infrastructure fees are very low - would be happy to have that!</p>
<p>What do you think the obligations of any infrastructure manager are?  Core (and optional below)</p>	<p>Maintenance at a competitive price Traffic Management Charging Safety</p>

<p>Do these include train operations?</p>	<p>Must be a single company, so they can manage the different technical systems.</p> <p>Their companies own the wagons. “There are no plans by any members of the consortium to adapt wagons to be able to use both systems [1520mm and 1435mm gauge]”</p>
<p><b>Your Vision for Rail Baltica</b></p> <p>Can you describe your view of the optimal arrangements for Rail Baltica? Please draw an organisational chart. Please include who operates: Passenger services; Freight services; Infrastructure inspection; Infrastructure standards and systems design; Timetable planning; Civil and system maintenance and renewal; Terminal; Rolling stock (locomotives, wagons and passenger trains)</p>	<ul style="list-style-type: none"> <li>• Clear tariff system</li> <li>• Clear costs feeding into the infrastructure fees</li> <li>• Predictable 5-10 years ahead.</li> <li>• IM independent from LT railways and existing LT IM.</li> <li>• New system, so will be efficient</li> </ul>
<p>What metrics would you use to test the effectiveness of the future organisation?</p>	<ul style="list-style-type: none"> <li>• Efficiency</li> <li>• Competitive infrastructure fees (closer to highway costs)</li> <li>• Sidings at Kaunas to transfer</li> <li>• Existing customers are set up at Klaipėda, but new customers could use Riga, etc.</li> </ul>
<p>Can you describe the regulatory regime and common operational processes that you see will or need to be in place to allow Rail Baltica to operate effectively – e.g. does Rail Baltica need a common timetable body?</p>	<p>Everything we can't get now – good communication, explanations. Easier to talk to 1 IM, as it's easier to communicate.</p>

## F.5. Arijus (Lithuania)

### Interviewee Record

Name of Interviewee	Egidijus Ramonas
Contact Email	arijus.lt
Contact Telephone	Tel +370 46 314799 Mob +370 69 833839

Date of Interview

Thursday 10<sup>th</sup> May 2018

### Your Vision for Rail Baltica

What are the biggest concerns you currently have that you would like to see addressed in the study?	No big concerns – no direct involvement with the IM today.
What else would you like to tell us?	<p>New developments are good. Quite happy on Klaipėda – Moscow. N-S cross-border shipment not very developed in the business at the moment – mostly E-W</p> <p>Kaunas intermodal terminal would be a good future development. Need to know more details about Rail Baltica. Rail-Sea connections should be prioritised.</p> <p>Traffic Management is very effective. Need to know what cost/transit time savings will be in the future.</p>

## F.6. Estonian Regulatory Authority / Ministry of Economic Affairs

### Interviewee Record

Name of Interviewee	Kristjan Kaunissaare, Anti Moppel, Jaak Simon, Heigo Saare, Indrek Laineveer
Job Title of Interviewee	<ul style="list-style-type: none"> <li>• Technical Regulatory Authority</li> <li>• Ministry of Economic Affairs</li> </ul>
Explanation of how this role fits within the wider interviewees organisation structure – reporting lines etc	
Contact Email	info@mkm.ee
Contact Telephone	(+372) 625 6342
Date of Interview	09/05/2018
Location of Interview	Ministry of Economic Affairs and Communications, Suur-Ameerika 1, Tallinn, 10122, Estonia Regards, Aivar

### Information About Your Business

This section is designed to help us identify the structure and capability of your own organisation and its current operating model.

Please describe the structure of your organisation and how this fits within the	Two IM's in Estonia. 1) Estonia rail – public owned. 2) Private (99% passenger)
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<p>rail industry including government and regulatory bodies</p>	<p>Both independent, natural monopoly with no intent to compete with each other, as they serve different areas.</p>
<p>Please describe the financial flows for your business, between the different industry parties – if possible detailing the sums that flow in €m</p>	<p>Finances are reported to an independent body. The Regulatory Authority sorts charges.</p> <p>Formula and price for tariffs set up by Regulation Authority, Independent of ministry, for both IM's. The RA do not collect the tariffs.</p> <p>Tariff formula considers what the 'market can bear' principle.</p> <p>All tariffs combined are not enough to pay for all the infrastructure, different for the four sectors.</p> <p>Estonia has efficient infrastructure, but low traffic levels. So, price per unit is very high.</p> <p>Costs are based on Direct Costs + Mark-up so tariffs still relatively low in benchmarking exercise.</p> <p>Direct costs are ~20/25% of the total IM costs. The state does not pay anything.</p> <p>ACTION: Request report from Estonia Railways on traffic levels.</p> <p>ACTION: Request how much the tariffs cover for the four segments of their direct cost.</p>
<p>What is the headcount of your business, please break this down by function where possible. What is your current target headcount?</p>	<p>Headcount in national IM is ~800. This is publicly available information.</p>
<p>What metrics are used to measure the performance of your business? Who sets these? How has performance been over the last few years?</p>	<p>In summary, the three-metrics measured are: Safety, Direct Costs and Asset Performance.</p> <p>Metrics formulated by a board (that the ministry appoints).</p> <p>Also have a financial contract in place so in return for the subsidy, they must provide certain objectives e.g. amount of upgraded level crossings.</p> <p>Asset performance figures, against metrics measured by, are not published publicly.</p> <p>Performance of the metrics:</p> <ul style="list-style-type: none"> <li>• Costs have been stable, but the funding gap is getting bigger</li> <li>• Safety performance is getting better</li> <li>• Asset performance is getting better, the infrastructure quality measured by the design line</li> </ul>

	speed as a metric. Measured in how many km's of track need to be at certain speeds.
Are there metrics that are missing – for your organisation or others?	No missing metrics volunteered.
Is the structure of your organisation currently aligned with the principles of the 1 <sup>st</sup> , 2 <sup>nd</sup> 3 <sup>rd</sup> and 4 <sup>th</sup> Railway Package?  <i>1<sup>st</sup> Railway Package – ‘non-discriminatory access’ (2001)</i> <i>2<sup>nd</sup> Railway Package ‘common standards / open access’ (2004)</i> <i>3<sup>rd</sup> Railway Package ‘international access and cabotage’ (2010)</i> <i>4<sup>th</sup> Railway Package ‘independent infrastructure management’ (2016)</i>  What steps are you taking (if any) to change your business to reflect the principles of the 1 <sup>st</sup> , 2 <sup>nd</sup> 3 <sup>rd</sup> and 4 <sup>th</sup> Railway package. Do you have a date by which you expect to be compliant?	Yes, in compliance with the structure of the packages.
What do you think your business does particularly well? What evidence can you provide to support this?	<ul style="list-style-type: none"> <li>• Good at using the available funding</li> <li>• They are efficient, small workforce</li> </ul> <p>Action: Request a metric to show their efficiency.</p>
What do you think your business does not do well? Why is this?	No internal incentive to deliver excellence (e.g. in safety)– this is even worse in the private IM, they are reactive (soviet mindset).
What is the size of the network in track km that your organisation is responsible for?	Action: Request this.
What is your annual spend on: - Maintenance (€m) Renewals (€m) Enhancements (€m) How and why do you anticipate this will change over the next 5-10 years?	Action: Request this.
Is this funding proving sufficient to achieve the quality and sustainability performance required for your infrastructure?	<p>Yes – at present. However, the investment capability is directly linked to EU funding. So, if this reduces, this won't still be the case.</p> <p>It is sufficient at present as they signed the contract – evidence.</p>

	The asset life of network getting better/worse? The network is running at design speed, so yes, a sustainable model is in place.
Please describe your approach to procurement e.g. supply chain development, use of category management, the use of alliancing, ISO14001 / 9001 accreditation etc.	Private IM uses these, the State IM is introducing these.
Who do you think we should speak to outside your organisation in order to best understand the optimum model for the Rail Baltica project.	<ul style="list-style-type: none"> <li>• The Transit Association</li> <li>• Energy Sector in the Baltics</li> </ul> <p>Action: Ask Ministry for contact details so we can contact them</p>
What are your organisations top three biggest business risks? How and where have you identified these?	<ol style="list-style-type: none"> <li>4. State Funding</li> <li>5. Freight values</li> <li>6. International cooperation</li> </ol>
What things (if any) do you believe are unique about the operation of the railway and railway infrastructure in your Country? Why?	<p>Estonia has efficient infrastructure, but low traffic levels. So, price per unit is very high.</p> <p>Costlier due to heavy axle loads (32 tonnes)</p> <p>They are dependent on cargo traffic (politically linked as they have no internal cargo)</p>

### Stakeholder View of Target Operating Model

This section is designed to enable you to describe how you see a high performing infrastructure manager should operate.

We are undertaking benchmarking of international railways. Are there any examples that you think are worth our examining?	None volunteered.
What do you think the obligations of any infrastructure manager are?  Core (and optional below)  Do these include train operations?	<ul style="list-style-type: none"> <li>• CSM</li> <li>• One access point for operator</li> <li>• One simple tariff system</li> <li>• Optimal infrastructure distribution and maintenance across the route, centrally managed.</li> </ul> <p>Extra Question from WL: If a company outside of Estonia won the maintenance tender for RB, and as a result the costs for Estonia for the existing network goes up... does it matter?</p>

Answer: Doesn't matter too much. A free market is fine. They outsource on 1520 track at present (3 tenders).

### Your Vision for Rail Baltica

Can you describe your view of the optimal arrangements for Rail Baltica?

Please draw an organisational chart.

Please include who operates:

Passenger services;

Freight services;

Infrastructure inspection;

Infrastructure standards and systems design;

Timetable planning;

Civil and system maintenance and renewal;

Terminal;

Rolling stock (locomotives, wagons and passenger trains)

One IM for 3 Baltic states and separate from existing IMs. New IM should be appointed politically between the 3 states. It doesn't matter who is appointed, if it is regulated. Regulation is the most important factor for maintaining efficiency other than the IM itself.

RA believes the new IM must be a completely new for RB, not an existing IM. They especially do not want an IM with soviet tendencies.

RA "Regulation is even more important than the constitution of the body that sets its up"

The states will own their own geographic area.

No clear answers on how charges will be dealt with in this RB ideology.

All adhere to CSM.

Current existing agreements on the operations between the 3 states?

Lots of administrative issues regarding cross border activities.

Who owns the railway? The state will.

Intergovernmental agreements will be needed, under regulation, regarding the shape of RB in the future. Therefore, how will you deal with winners/losers in this situation, who decides where new trains should run? IM collects tariffs, and profit should go to shareholders on an equal basis.

## F.7. Rail Baltica Estonia

### Interviewee Record

Name of Interviewee	Anvar Salomets
Job Title of Interviewee	Technical Manager
Explanation of how this role fits within the wider interviewees organisation structure – reporting lines etc	<ul style="list-style-type: none"> <li>• RB Estonia: a shareholder of RB Rail. It's the national implementing, taking care of building activities in Estonia. They act as agents for the ministry of transport for Estonia.</li> <li>• RB Rail is responsible for detailed design.</li> </ul>
Contact Email	Anvar.salomets@rbe.ee
Contact Telephone	+372 56904148
Date of Interview	08/05/2018
Location of Interview	Rail Baltica Estonia

### Information About Your Business

This section is designed to help us identify the structure and capability of your own organisation and its current operating model.

What is the registered name of your business?	Rail Baltic Estonia
Please describe the structure of your organisation and how this fits within the rail industry including government and regulatory bodies	It is a separate company, that focuses purely on development (not maintaining infrastructure). They report directly to the ministry of transport as a separate entity.
Please describe the financial flows for your business, between the different industry parties – if possible detailing the sums that flow in €m	<p>Action: To ask Anvar for where the information is held in the public domain.</p> <p>The infrastructure manager is subsidized by the government. In 2016, the new regulation of access charges was implemented. So now in Estonian law there is a requirement for the government to pay 5 yearlong state aid for infrastructure management.</p> <p>Question from WL: Why does it have to be subsidized?</p> <p>Answer from AS: Unsure of the political choices as to why it is subsidized. However, they have many sources of money for the Estonian railways. 1st source – passenger services. 2nd source – direct state aid for covering investments. 3rd source – revenue freight operators. 4th source – Other stuff e.g. selling off land.</p> <p>Question from WL: In your opinion, is Estonia subsidizing the freight rail operator?</p>

	<p>Answer from AS: Principally yes. When new infrastructure access charges implemented, considered so that freight operators should not pay more than they paid historically.</p> <p>Question from WL: In theory, if traffic was to double, then there would be more revenue and therefore no need for the government grant?</p> <p>Answer from AS: Yes.</p> <p>There is one freight operator that is state owned – they make a profit, some goes to investments (for rolling stock), and some goes back to the government’s central pot (not to the infrastructure manager).</p> <p>Action: Find out the profit that the state-owned freight operator makes, and where it goes.</p>
<p>Please describe the functions that your business performs, including whether these are insourced or outsourced.</p>	<p>Low rate of outsourcing. Only the building of new facilities (renewals) are external.</p> <p>These renewals are public tenders; however, it will never compete for these tenders.</p>
<p>Who are your key stakeholders? What is your relationship with them?</p>	<p>Key stakeholders: government organizations including the regulator body, local governments/ municipalities.</p> <p>Relationships now are pretty good. One of the freight operators is state owned, so always some disagreements here.</p>
<p>What is the headcount of your business, please break this down by function where possible. What is your current target headcount?</p>	<p>Estonia railways infrastructure manager has ~800 staff.</p> <p>Railway administration from the 15:20 framework. So, the railway administration should coordinate all the technical issues, maintenance, timetable on the 15:20 fleet (Russian gage).</p> <p>Question from WL: Are any of the open access operators going for the Russian traffic?</p> <p>Answer from AS: according to the rules, it’s not allowed to drive those non-EU operators on Estonian territory and vice versa. No legal entities across the border. Historically, = there was a private rail undertaking (Estonian railway services) who had the legal entity on the Russian side.</p>
<p>What metrics are used to measure the performance of your business?</p>	<p>Safety, punctuality, financial, delivery (e.g. delays, asset failures, asset performance. Safety is reported to the regulatory body and European railway</p>

<p>Who sets these? How has performance been over the last few years?</p>	<p>industry. Punctuality, financial and delivery metrics are reported to the ministry and passenger train metrics to passenger railway undertaking.</p> <p>These metrics are published by the infrastructure manager itself.</p> <p>Action: Ask Anvar to direct us to this published information.</p>
<p>Are there metrics that are missing – for your organisation or others?</p>	<p>Lots of KPIs missing, however Anvar was unsure which metrics.</p>
<p>Is the structure of your organisation currently aligned with the principles of the 1<sup>st</sup>, 2<sup>nd</sup> 3<sup>rd</sup> and 4<sup>th</sup> Railway Package?</p> <p><i>1<sup>st</sup> Railway Package – ‘non-discriminatory access’ (2001)</i></p> <p><i>2<sup>nd</sup> Railway Package ‘common standards / open access’ (2004)</i></p> <p><i>3<sup>rd</sup> Railway Package ‘international access and cabotage’ (2010)</i></p> <p><i>4<sup>th</sup> Railway Package ‘independent infrastructure management’ (2016)</i></p> <p>What steps are you taking (if any) to change your business to reflect the principles of the 1<sup>st</sup>, 2<sup>nd</sup> 3<sup>rd</sup> and 4<sup>th</sup> Railway package.</p> <p>Do you have a date by which you expect to be compliant?</p>	<p>All 4 railway packages already implemented, since the access charge regime implemented in 2016. Therefore, fully complaint since 2016. However, Anvar says the ministry would have their own opinion on this.</p>
<p>What do you think your business does particularly well? What evidence can you provide to support this?</p>	<p>The legal framework has always been the same until now. So, the people from the Estonian railways are very good at observance of legal and contractual rules and structures.</p>
<p>What do you think your business does not do well? Why is this?</p>	<p>Everyday performance is very low. Referring to the asset performance (renewal, processes). Financially they are doing badly because the 5-year contract with the government has not been signed. Therefore, they are managing the infrastructure year by year, so no long-term view. There is no evidence to suggest the performance of Estonian railways infrastructure manager is better than average.</p> <p>The maintenance regime being used is very patch and mend due to the financial situation.</p>
<p>What is the size of the network in track km that your organisation is responsible for?</p>	<p>Size of Estonian railway track ~1200km (track km).</p> <p>There is one private railway infrastructure manager who has 250km of track. Once the government</p>

	<p>decided to privatize the infrastructure, this railway was bought back by the government. They are subsidized by the government through the passenger services (they are 97% passenger services, no freight). They have different standards and maintenance regime appropriate for passenger rail.</p> <p>Action: WL/ CD to organise to speak to this private company.</p>
<p>What is your annual spend on: - Maintenance (€m) Renewals (€m) Enhancements (€m) How and why do you anticipate this will change over the next 5-10 years?</p>	<p>Action: Ask Anvar for the direct contact to find out the annual spend of maintenance, renewals and enhancements.</p> <p>Estonian railways, the overall budget for IM is ~60 million.</p> <ul style="list-style-type: none"> <li>• 30 million for Opex, this was covered by revenue from freight and passenger services. There was a need for state aid for the investments renewal part.</li> <li>• 30 million for Capex (renewal). The 5-year average was 12 million euros. Ideally, the infrastructure manager thinks they need 30 million to operate, however in negotiate with the government they are typically getting ~12 million. Therefore, the amount of renewal and enhancement is less than the infrastructure manager would like.</li> </ul>
<p>How are you funded?</p>	
<p>Is this funding proving sufficient to achieve the quality and sustainability performance required for your infrastructure?</p>	<p>Question from WL: Is there evidence that there is not enough money?</p> <p>A: They have had to enforce speed restrictions as there isn't enough funding, there will be a trend analysis to show this. Also, national law gave an obligation to renew all signalling at required level crossings to meet the new safety requirements. However, due to insufficient funding, they haven't been able to replace all the required level crossings to meet the Estonian national law.</p> <p>Action: Ask Anvar where speed restriction data is held.</p>
<p>Please describe your approach to procurement e.g. supply chain development, use of category management, the use of alliancing, ISO14001 / 9001 accreditation etc.</p>	<p>Fully compliant to EU rules. They were starting to implement ISO systems, however Anvar is unsure if they have actually done this.</p> <p>Action: Check whether they have implemented ISO systems.</p>

<p>Who do you think we should speak to outside your organisation in order to best understand the optimum model for the Rail Baltica project.</p>	<ul style="list-style-type: none"> <li>• Estonian Railways IM</li> <li>• Private railway (WL has name of)</li> <li>• The Ministry</li> <li>• Regulatory body</li> </ul>
<p>What are your organisations top three biggest business risks? How and where have you identified these?</p>	<p>Funding from the government, revenue, competent personnel (small pool of both technical and managerial workers entering the industry).</p>
<p>What things (if any) do you believe are unique about the operation of the railway and railway infrastructure in your Country? Why?</p>	<p>There is a small amount of mineral resources to build the railways (e.g. Ballasts) in Estonia. They import from countries such as Finland and Sweden. Anvar believes that Lithuania may have the same trouble with resources.</p>

### Stakeholder View of Target Operating Model

This section is designed to enable you to describe how you see a high performing infrastructure manager should operate.

<p>We are undertaking benchmarking of international railways. Are there any examples that you think are worth our examining?</p>	<p>Deutsche Bahn – shows that the vertically integrated model could also fit to the European legislation, Anvar believes they fit to the 4<sup>th</sup> rail packages. DB may not be suitable when it comes to assets, they have quite complex assets to run compared to RB e.g. tunnels.</p>
<p>What do you think the obligations of any infrastructure manager are?  Core (and optional below)</p>	<p>Capacity allocation (Anvar wouldn't allow this be to be outsourced), timetabling, asset charges, maintenance (can be outsourced), renewal (can be outsourced), traffic management e.g. regulating services.</p>
<p>Do these include train operations?</p>	<p>Common facilities that anyone can use (e.g. fuel points)</p>
<p>What do you think the optional functions are for any infrastructure manager?</p>	<p>Capacity allocation: how much capacity is in the reserve or how much is used.</p>
<p>What metrics would you use to test the effectiveness of any structure?</p>	<p>Timetable production: how much capacity is in the reserve or how much is used, punctuality metrics.</p>
<p>Extra Questions:  • Assume they outsource maintenance. Estonian railways tenders to do this in house, and it costs one price. However, Lithuanian railways can offer to do this for a</p>	<p>Maintenance: Opex, cost per track km.</p> <p>Yes, I would choose Lithuanian railways.</p> <p>I would still give it to Lithuanian railways.</p>

cheaper price, should you accept the tender from Lithuania railways?

- What if, Estonia IM say, 'if that happens then we won't be able to work on the existing Estonian railways as efficiently, so our price for that may increase'

### Your Vision for Rail Baltica

Can you describe your view of the optimal arrangements for Rail Baltica?

Please draw an organisational chart.

Please include who operates:

Passenger services;

Freight services;

Infrastructure inspection;

Infrastructure standards and systems design;

Timetable planning;

Civil and system maintenance and renewal;

Terminal;

Rolling stock (locomotives, wagons and passenger trains)

Handled in a centralised way by one international company:

- Capacity allocation
- Charging
- Traffic management (with exception to work with local transport coordination if needed)

Handled by each country:

- Renewal and upgrades

No preference:

- Maintenance regime

If the maintenance is handled internationally across the routes, the bill could be split by the km of track.

Revenue and marketing handled by an international company, and the bill also handled by them.

Question from LW: If maintenance can be done by local IM, what if it is very cheap or very expensive? Who agrees the budget for the international company? And what if it goes wrong?

In Anvars ideal version, this should be handled by the international company and the stakeholders of this. Would create a rolling contract to manage this.

Question from LW: If there was a skills shortage in Lithuania, so they needed to build a new training college, and therefore they decided to charge you double to maintain the track and Rail Baltica said yes, we must accept the local IM but the shareholders say this is out budget. How do you resolve this dispute?

Answer from AS: The best solution in this case would be for the maintenance to be organised by the international company.

There would be little competition between Rail Baltica and existing IMs (e.g. the amber train). Today there is no competition as the 15:20 track is not a very efficient way to carry cargo. However, yes, I would let the competition make the exact price.

What metrics would you use to test the effectiveness of the future organisation?	<p>Safety, punctuality, financial, efficiency.</p> <p>In Anvar's ideal Rail Baltica, the IM does not operate any passenger train services or freight services.</p>
Can you describe the regulatory regime and common operational processes that you see will or need to be in place to allow Rail Baltica to operate effectively – e.g. does Rail Baltica need a common timetable body?	Answered already.
Who do you think shares your vision?	<ul style="list-style-type: none"> <li>Estonian Ministry</li> </ul> <p>Regulatory authority</p>
Does the construction of Rail Baltica represent an opportunity to your organisation?	<p>Referring to the Estonian IM:</p> <ul style="list-style-type: none"> <li>Engineering (building logistics)</li> </ul> <p>Maintenance of traffic management</p>
Is there a conflict of interest between the commercial/strategic objectives of your organisation and those of Rail Baltica	<p>Yes</p> <p>Amber train may be a conflict of interest but it's only been running a year.</p>
What do you think would be the fairest way of balancing any competing objectives amongst the stakeholders?	<ul style="list-style-type: none"> <li>To use metrics</li> </ul> <p>To have an agreement in place before Rail Baltica starts running</p>
The European Rail Infrastructure Manager's Association is (one of 10 European railway organisations) recognised by the European Commission as a 'representative body from the railway sector'. Are you familiar with this?	Yes
Does or will your business be able to endorse the <b>principles</b> of the EIM charter and indicate where, if any you perceive there to be a conflict with your business strategy in the medium term (5 years+) – See Appendix One.	<p>Yes</p> <p>Action: Make sure these last 4 questions are sent to Latvian Transport Ministry, due to the lack of time they were not asked in the session.</p>
What are the biggest concerns you currently have that you would like to see addressed in the study?	<ul style="list-style-type: none"> <li>The balance of who handles the national and international level (from a technical and operational point of view)</li> </ul> <p>Benchmarking will be the best way to propose solutions to this.</p>
What else would you like to tell us?	We have common facilities developed in Tallinn, e.g. freight terminal. Is it possible for the international IM

to the operations there or at least provide this as a service?

## F.8. DB Schenker / Lineka

### Interviewee Record

Name of Interviewee	Edmundas Daukantas
Job Title of Interviewee	Managing Director
Explanation of how this role fits within the wider interviewees organisation structure – reporting lines etc	
Contact Email	Edmundas.daukantas@dbschenker.com
Contact Telephone	+370 526 02524
Date of Interview	Thursday 10th May 2018
Location of Interview	

### Information About Your Business

This section is designed to help us identify the structure and capability of your own organisation and its current operating model.

What is the registered name of your business?	Lineka and DB Schenker
Please describe the structure of your organisation and how this fits within the rail industry including government and regulatory bodies	Freight forwarding company, using rail operators to transport freight.
Please describe the financial flows for your business, between the different industry parties – if possible detailing the sums that flow in €m	Train operator no direct relationship with IM.
Please describe the functions that your business performs, including whether these are insourced or outsourced.	<p>Specialist rail division – slowly improving New management and now trying to re-organise Single point of contact</p> <ul style="list-style-type: none"> <li>• Reality is Baltics are small countries</li> <li>• Enough skills to deal with each separately?</li> <li>• Majority one project open customers, more efficient for one point of contact</li> <li>• Lineka would want one but DB make more money from complexity</li> <li>• Business development not good</li> </ul> <p>East-West and South-North are different and RB is a very different market. It's not just about rail but different services and different customers. Traffic is</p>

different and a different tradition, international traffic. Single IM would be more effective.

East-West rail has 3 railways with 2 seriously completing (Lithuania and Latvia, with Poland to smaller extent)

RB N-S different market and different customers, Baltics plus Belarus a solution?

RB – a single point of contact is important for each section, wouldn't be bad for one overall contact

Important: Single Infrastructure Contact. Nature of traffic different, nature of quality of service different, nature of relationship to damages is different, different tradition and need professional service, would be better for a single infrastructure contact.

RB/S-N – Professional quality service and one IM to deal with. Nature of traffic and quality of service is different to that of E-W.

Inventory and Tracking Control – multiple different to single. If 3, same quality no problem but no 2 businesses provide the same.

RB – provides a chance for change and countries economics. 15% of GDP is through logistics, but industry not strong enough

AMBER train – good attempt but no real live product. Daily moving shuttle train, frequency and speed.

To be competitive – main port connectivity and central Europe.

If RB different it could access different port.

RB offers alternative port potentially in competition with E-W and adds value if different IM.

Attractiveness for Foreign Investors – always checking for alternatives such as resilience i.e. second route.

It is important that RB can offer a competitive product. May be perfect/good for one contact, two maybe but one connecting. Possible language and legislation issues. Lots communicate English, old ones in Russian.

What metrics are used to measure the performance of your business?

Who sets these?

Intermodality and multimodality – trains moving containers.

Trains are ready to transport – Swap bodies to move on to trucks. Swap bodies are coming to Baltics but

How has performance been over the last few years?	<p>not currently able to. Latvia attention to infrastructure around main road, Lithuania no information given to Lineka, they want to be single provider for everything.</p> <p>Swap bodies tend to have danger with labour force. Germany in 2017, 52,000 truck drivers left job, Baltics only 1400. Due to the young not wanting overnight, they want day 9 to 5 etc.</p>
Please describe your approach to procurement e.g. supply chain development, use of category management, the use of alliancing, ISO14001 / 9001 accreditation etc.	Easy way to handle things with standards.
Who do you think we should speak to outside your organisation in order to best understand the optimum model for the Rail Baltica project.	Latvian FF, DB Schenker Head Office
<p>What are your organisations top three biggest business risks?</p> <p>How and where have you identified these?</p>	<p>Not enough efficient services, need to deliver services on time.</p> <p>Base is 30km from logistics centre. Frustration not being able to operate terminal from rail siding but feels Lithuania Railways want to handle that but he does not understand how they would operate this – not as good as how Lineka would operate.</p> <p>There is a risk of filling the container trains fully – risk of this is on to the freight forwarder. It would be good to have train operator with moving shuttles. Easier in terms of risk to have 1 IM. Key issues would be regulation for traffic and published regulator prices.</p>
<p>What things (if any) do you believe are unique about the operation of the railway and railway infrastructure in your Country?</p> <p>Why?</p>	<ul style="list-style-type: none"> <li>• Higher business flexibility</li> <li>• IT Solutions</li> <li>• Business process changes</li> </ul> <p>Require railway operator to be more flexible</p>

### Stakeholder View of Target Operating Model

This section is designed to enable you to describe how you see a high performing infrastructure manager should operate.

We are undertaking benchmarking of international railways. Are there any examples that you think are worth our examining?	Ocean Lines (China to Europe etc) – Price change every 2 weeks when shipping takes 50 days, need high flexibility, railway company wouldn't be able to take revenue risk in the same way, seasonal fluctuations, permanent basis won't work
What do you think the obligations of any infrastructure manager are?	<b>IM should not go in to end service customer solution, best competition means best costs, when you can compete you should.</b>

Core (and optional below)	
Do these include train operations?	
What metrics would you use to test the effectiveness of any structure?	<ul style="list-style-type: none"> <li>• Speed, reliability and frequency</li> </ul> RB project is expensive, volume demanding, RB deal with huge consumers such as amazon etc and need a single point of contact. Single point of contact for RB not just Lithuania
<b>Your Vision for Rail Baltica</b>	
Can you describe your view of the optimal arrangements for Rail Baltica? Please draw an organisational chart. Please include who operates: Passenger services; Freight services; Infrastructure inspection; Infrastructure standards and systems design; Timetable planning; Civil and system maintenance and renewal; Terminal; Rolling stock (locomotives, wagons and passenger trains)	One IM – to pay back will be volume demanding. To be competitive in relatively small area, Rail Baltica will be forced to deal with huge international consumers – Amazon, Hewlett Packard etc. They will want single point of contact.
Can you describe the regulatory regime and common operational processes that you see will or need to be in place to allow Rail Baltica to operate effectively – e.g. does Rail Baltica need a common timetable body?	Well organised
Who do you think shares your vision?	local industries, middle size rail forwarders
Does the construction of Rail Baltica represent an opportunity to your organisation?	RB is a huge opportunity for the country, potentially a challenge for Freight Forwarder Lineka.
Is there a conflict of interest between the commercial/strategic objectives of your organisation and those of Rail Baltica	National conflict of interests, should be opportunity not conflict of interest.  Open with RB about saying access to infrastructure as investment opportunity it would be serious/real thinking about investment strategy.
What do you think would be the fairest way of balancing any competing objectives amongst the stakeholders?	Challenge. Schenker cannot make it in the Baltics? They have very polite way with one operator?

What are the biggest concerns you currently have that you would like to see addressed in the study?

Intermodality, service, customers measure railways against trucks (trucks vs trains) – lead time and price important.

## F.9. Lithuanian Railways / Ministry

### Interviewee Record

Name of Interviewee	Karolis Sankovski
Job Title of Interviewee	Deputy General Director – Director of Railway Infrastructure Directorate
Explanation of how this role fits within the wider interviewees organisation structure – reporting lines etc	
Contact Email	k.sankovski@litrail.lt
Contact Telephone	+370 269 33 05
Date of Interview	Thursday 10th May 2018
Location of Interview	Gedimino pr. 17. Vilnius

### Information About Your Business

This section is designed to help us identify the structure and capability of your own organisation and its current operating model.

What is the registered name of your business?	Lietuvos geležinkeliai (Lithuania Railways)
Please describe the structure of your organisation and how this fits within the rail industry including government and regulatory bodies	<p>9 departments within the Infrastructure Manager Directorate. For the last 1 year they have restructured and some services have transferred to Daughter companies or other administrations including maintenance (still in progress of handover), asset management centre, with a centralised back office for Lithuanian Railways (Shared services - PR, legal, HR etc), signalling automation/ telecommunications (responsibility for this but resources introducing to IT centre to make more effective and make it more digital). Traffic management included within IM.</p> <p>Spoken to a lot of IMs in Europe to build most effective IM.</p> <p>They have a separate directorate recently set up for Rail Baltica.</p>
Please describe the financial flows for your business, between the different industry parties – if possible detailing the sums that flow in €m	See Financial Analysis Report on LG website.

Please describe the functions that your business performs, including whether these are insourced or outsourced.	Renewals and Enhancement outsourced.
Who are your key stakeholders? What is your relationship with them?	National Safety Authority, Traffic Safety Authority (responsible for capacity allocation, timetabling and approving infrastructure charges, but there is a plan to move this over to IM), Rail Transportation, Ministry of Transport, Clients & Markets (Railway Undertakings etc), New Independent Regulators (established for last 1.5/2 years), beginning to get very active.
What metrics are used to measure the performance of your business? Who sets these? How has performance been over the last few years?	<p>Tariffs for Infrastructure set by IM – the calculation / formula is provided by the government and draft it for legislation (independent regulator) – ministry prepare formula, into legislation and Lithuanian railways calculate direct costs/charges.</p> <p>Metrics – throughput capacity, management of bottlenecks, safety parameters, progress of development, performance of maintenance and overhaul. “We must be safe and sufficient”.</p> <p>Q asked – who sets the throughput capacity and how you perform?</p> <p>Answer: Demand – passenger and freight forecast, is there sufficient capacity? The goal/target figure is approved by the board which is still in progress for final KPIs (Progress is in the strategy with some figures approved – long term perspective).</p> <p>The plan is in the strategy but trains per km is one metric with the annual train schedule put up in December and running for 1 year (approved). They are obliged to increase to ensure demand is met and follow measures, therefore, it is <b>market led</b>.</p> <p>Ministry added in it is strategic development to – not just KPIs that need to be achieved.</p> <p>Punctuality within KPIs – in relation to Railway Undertakings and IM (how effective traffic is managed).</p>
Are there metrics that are missing – for your organisation or others?	Part of PRIME with 100s of KPIs and working on priorities.
Is the structure of your organisation currently aligned with the principles of the 1 <sup>st</sup> , 2 <sup>nd</sup> 3 <sup>rd</sup> and 4 <sup>th</sup> Railway Package?	1 <sup>st</sup> , 2 <sup>nd</sup> , 3 <sup>rd</sup> = yes

<p><i>1<sup>st</sup> Railway Package – ‘non-discriminatory access’ (2001)</i></p> <p><i>2<sup>nd</sup> Railway Package ‘common standards / open access’ (2004)</i></p> <p><i>3<sup>d</sup> Railway Package ‘international access and cabotage’ (2010)</i></p> <p><i>4<sup>th</sup> Railway Package ‘independent infrastructure management’ (2016)</i></p> <p>What steps are you taking (if any) to change your business to reflect the principles of the 1<sup>st</sup>, 2<sup>nd</sup> 3<sup>rd</sup> and 4<sup>th</sup> Railway package.</p> <p>Do you have a date by which you expect to be compliant?</p>	<p>3<sup>rd</sup> already compliant so 4<sup>th</sup> will not be problematic. 4<sup>th</sup> is under way till December and taken to parliament, hopefully approved by June.</p> <p>New arrangements will mean they are compliant – current structure is compliant but waiting for approval.</p> <p>Government saw benefits – free access to infrastructure. Government happy with that ‘journey’.</p> <p>Warwick “none of you said EU law” response was “yes and no”.</p> <p>No problem with access and effectiveness, clear to the market with less complaints and needs to be separate.</p>
<p>What do you think your business does particularly well?</p> <p>What evidence can you provide to support this?</p>	<p>Region Wide – traffic management system, GSMR for Lithuanian system, could use for RB?</p> <p>The functions of Lithuanian Railways are clearer and makes process faster.</p> <p>Their trains are increasing their speeds and invest in their infrastructure- Vilnius to Klaipeda.</p> <p>Cost of IM maintenance and head count per km for LG is high and the number of trains is increasing with the same infrastructure.</p> <p>Freight has increased from 47 million tonnes to 52.5 million tonnes.</p> <p>Lithuanian Railways long history and no serious accidents. No major accident on infrastructure so infrastructure is managed well in relation to safety. Since 1990s there has been £3 billion invested in infrastructure, achieving targets and working on development projects – No 27 EU Priority Project.</p> <p>Lithuanian Railway very efficient in how they spend EU funding/money.</p>
<p>What do you think your business does not do well?</p> <p>Why is this?</p>	<p>“No”</p> <p>Mixture of measurements, objectively what’s the point of assessing ourselves.</p>

LG and Ministry asking for advice on best measures and Rail Baltica. How do you know which metrics are the best to use?

Ministry asked, “what competition in relation to IM please elaborate”

Discussion around IM and how we (Atkins) need to understand LG. Competition did you mean between IM or Railway Undertakings? Competition between freight operators, IM etc.

LG stated that they want to increase transparency and increased metric performance.

LG want to visit IM around Europe and those who are currently restructuring to understand best practices. Although they noted that national specifics are needed to understand why certain models in different countries.

We are not perfect today a number of items et to improve.

Q: What is difficult to implement but is hard because of law etc in Lithuania?

EU Public Procurements – very strict regulations in Lithuania since July 2017 – daughter companies have to procure publicly (in some cases) and a framework agreement is needed. Procurements are simple but process is complicated and long, need to be open and transparent.

Q: Are there procurements that you don’t want to be public?

A: Sometimes something simple is hard because of the process which is robust, lengthy and time consuming etc – ability of the projects is impacted with such rules.

How are you funded?

- Charges for minimal access package (main tracks) and service facilities.
- Income Package
- Renting of buildings/stations
- Intermodal terminals

	State Funding – energy and efficiency saving, maintenance of the environment (trees and hedges etc) - railway is sufficiently profitable currently because of the traffic levels so apart from specific tasks railway is self-funding.
Is this funding proving sufficient to achieve the quality and sustainability performance required for your infrastructure?	N/R
Please describe your approach to procurement e.g. supply chain development, use of category management, the use of alliancing, ISO14001 / 9001 accreditation etc.	LG to check, think yes
Who do you think we should speak to outside your organisation in order to best understand the optimum model for the Rail Baltica project.	<ul style="list-style-type: none"> <li>• Little response, maybe Regulator GM of railway undertakings</li> </ul>
What are your organisations top three biggest business risks? How and where have you identified these?	<ol style="list-style-type: none"> <li>7. Ambitious investment programme (speed, electrification RB, resourcing, funding)</li> <li>8. Increase in passenger and freight volumes</li> <li>9. Procurement process challenge, non-EU customers</li> </ol>
What things (if any) do you believe are unique about the operation of the railway and railway infrastructure in your Country? Why?	Dealing with large non-EU customers

### Stakeholder View of Target Operating Model

This section is designed to enable you to describe how you see a high performing infrastructure manager should operate.

We are undertaking benchmarking of international railways. Are there any examples that you think are worth our examining?

Germany – fully implemented 4th package clear and simple access, the IM respond to market in good and efficient way.

Amber Train – one test train – good bilateral relations that cross more than one border, different charge regimes etc and viable (benchmark against this as it's a good study).

You do not have to change IM, if there is a regulation across three IMs.

What do you think the obligations of any infrastructure manager are?	Essential Functions – capacity, Traffic control, charging, maintenance (intrinsic to running the network) and development (IM and shared with Ministry level).
Core (and optional below)	
Do these include train operations?	Set list of functions in EU and Lithuanian Law (Legislation)
What metrics would you use to test the effectiveness of any structure?	Effectiveness and efficiency of measures and resources needed, maintenance - take all in to account, not in burden to national budget or railways when comparing models, best use of existing base

### Your Vision for Rail Baltica

Can you describe your view of the optimal arrangements for Rail Baltica? Please draw an organisational chart. Please include who operates: Passenger services; Freight services; Infrastructure inspection; Infrastructure standards and systems design; Timetable planning; Civil and system maintenance and renewal; Terminal; Rolling stock (locomotives, wagons and passenger trains)	<p>No cross subsidy between countries for example Lithuania subsidy shouldn't benefit other two countries.</p> <p>WL: Revenue is international. 1 country may not look after infrastructure, saving money, cost national.</p> <p>They respond by saying it is feasible with international agreements for capacity and maintenance which means no possibility of a country not maintaining.</p> <p>Long discussion around – Bilateral Agreement: should they maintain track if no traffic and revenue doesn't come in? Depends on agreement – there is no need for an organisation. Intergovernmental agreement between the 3 countries will work so the member state takes responsibility.</p> <p>Lithuania Railways – Why have revenue together/international? Lithuania Railways should get own revenues, mechanism to separate – 3 national bodies.</p> <p>Latvia current budget problems now.</p>
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## F.10. Latvian Safety and Technical State Inspectorate

### Interviewee Record

Name of Interviewee	<p>Safety Inspectorate (S) and Technical Inspectorate</p> <p>For the State Railway Latvia (T)</p>
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Job Title of Interviewee	
Explanation of how this role fits within the wider interviewees organisation structure – reporting lines etc	
Contact Email	
Contact Telephone	14/05/18
Date of Interview	
Location of Interview	

### Information About Your Business

This section is designed to help us identify the structure and capability of your own organisation and its current operating model.

What is the registered name of your business?	
Please describe the structure of your organisation and how this fits within the rail industry including government and regulatory bodies	<p>S – 4 units; safety, certification, development, supporting archiving/finance etc.</p> <p>T – Under supervision of the ministry of transport, ministry can intervene if their actions are illegal. Distinct divisions; regulation, international, registers, rolling stock, infrastructure.</p>
Please describe the financial flows for your business, between the different industry parties – if possible detailing the sums that flow in €m	<p>S – Not state budget, funded by the sector, with a percentage coming from infrastructure. To keep independence. The IM give them funding, they get paid without a problem. If they want more money from the IM – the law must be changed (political issue).</p> <p>T – identical to above.</p>
Please describe the functions that your business performs, including whether these are insourced or outsourced.	<p>S – Railway undertaking, IM, maintenance, manufactures, building companies</p> <p>T – Two IMs (one public, one private), railway undertaking, 3 freight companies, 4 passenger companies, operator service (9), facilities, functions of IM (essential functions) e.g. capacity allocation, independent regulatory company.</p>
Who are your key stakeholders? What is your relationship with them?	
What is the headcount of your business, please break this down by function where possible. What is your current target headcount?	<p>S – 22 people</p> <p>T – 12 people</p>
What metrics are used to measure the performance of your business? Who sets these?	<p>S – safety, auditing, accidents, punctuality, trend analysis for suicides, electric issues.</p>

<p>How has performance been over the last few years?</p>	<p>T – very difficult to keep account of the things we do e.g. complaints.</p>
<p>Are there metrics that are missing – for your organisation or others?</p>	<p>All metrics are published annually. The trend analysis shows that things are getting better.</p>
<p>Is the structure of your organisation currently aligned with the principles of the 1<sup>st</sup>, 2<sup>nd</sup> 3<sup>rd</sup> and 4<sup>th</sup> Railway Package?</p>	<p>T – Yes. In charge of infra charging since 2016. This cost is very small in the organisation and happens quickly.</p>
<p><i>1<sup>st</sup> Railway Package – ‘non-discriminatory access’ (2001)</i> <i>2<sup>nd</sup> Railway Package ‘common standards / open access’ (2004)</i> <i>3<sup>rd</sup> Railway Package ‘international access and cabotage’ (2010)</i> <i>4<sup>th</sup> Railway Package ‘independent infrastructure management’ (2016)</i></p>	<p>S – Yes, in legislation. The government thought the company is not effective because it is so small (under 30 people). There is a big conflict between the size of the company and how the government view them, even though they need to be independent and thus be small.</p>
<p>What steps are you taking (if any) to change your business to reflect the principles of the 1<sup>st</sup>, 2<sup>nd</sup> 3<sup>rd</sup> and 4<sup>th</sup> Railway package. Do you have a date by which you expect to be compliant?</p>	
<p>What do you think your business does particularly well? What evidence can you provide to support this?</p>	<p>S – small, effective team</p> <p>T – small, effective team. Every 2 months they organize a meeting with the entire sector to discuss issues and try to prioritize issues to deal with. They have a good experience of regulatory bodies.</p> <p>Challenges: both inspectorates are in the same building, so the same stakeholders can attend at the same time.</p>
<p>What do you think your business does not do well? Why is this?</p>	<p>S – overworked staff, under capacity, need to work on independence.</p> <p>T – all legislation on European directives but Baltic states are in a different situation e.g. freight. Freight rules written in ‘former soviet countries’ but they are split between practical business and European rules. It is not easy to change this situation. Regulatory is only for specific services, those in European law, but they don’t regulate services not in European law which they also cover.</p>

What is the size of the network in track km that your organisation is responsible for?	T – Yes S – There are very difficult cultural issues.
Please describe your approach to procurement e.g. supply chain development, use of category management, the use of alliancing, ISO14001 / 9001 accreditation etc.	S – can't give an answer right now.
Who do you think we should speak to outside your organisation in order to best understand the optimum model for the Rail Baltica project.	Lat Rail Net – New Organisation  Action: Get these contact details.
What are your organisations top three biggest business risks? How and where have you identified these?	S – authorisation, 4th railway package as we can't predict how the process will work, there are lots of changes in the processes and a lot of areas which could have misunderstandings. T – Complaints (there has been 9 years without an official complaint because they have all been resolved early). The freight business is decreasing so conflict is increasing, so in the last 10 months alone there has been 15 complaints. Complaints are associated with 'East' markets, out of our control. Legislation is not prepared for this conflict. The authority needs more rights and possibilities to solve complaints.
What things (if any) do you believe are unique about the operation of the railway and railway infrastructure in your Country? Why?	S – Interoperable country – broad knowledge across the countries. T – Ministry of transport is also the biggest market player. No conflict Estonia and Lithuania – Conflict is unique to Latvia.

### Stakeholder View of Target Operating Model

This section is designed to enable you to describe how you see a high performing infrastructure manager should operate.

We are undertaking benchmarking of international railways. Are there any examples that you think are worth our examining?	S – Channel Tunnel
What do you think the obligations of any infrastructure manager are?  Core (and optional below)  Do these include train operations?	S – Safety is the most important, all operations of IM should be safe, IM should have no ties to railway undertakings, capacity allocation/ charging separate from renewals, infrastructure separate from IM.  T – Biggest concern is that DB are bidding to be involved in RB. Concerned that if DB start operating in Latvia, there will be a big conflict of interest and that DB will have a large advantage. Fully split IM and railway undertakings. 1 IM for the whole line. How will priority for delayed trains be dealt with across the three nations?

	Big issue with legislation across the countries. The IM currently have a soviet mentality, this cannot be introduced in RB. It needs to have European laws.
What do you think the optional functions are for any infrastructure manager?	Fully implemented safety management system.
What metrics would you use to test the effectiveness of any structure?	S – Safety metrics and culture

### Your Vision for Rail Baltica

<p>Can you describe your view of the optimal arrangements for Rail Baltica? Please draw an organisational chart. Please include who operates:</p> <p>Passenger services; Freight services; Infrastructure inspection; Infrastructure standards and systems design; Timetable planning; Civil and system maintenance and renewal; Terminal; Rolling stock (locomotives, wagons and passenger trains)</p>	<p>T – single international IM (all countries have same share in IM), each country will share the risk, reliability and reward.</p> <p>S – Common safety.</p> <p>If there were to be 3 IM's, there would be a huge risk to safety, due to contract and different safety management systems. But if safety management system covers all the countries, then it wouldn't matter if 3 different IMs.</p>
Can you describe the regulatory regime and common operational processes that you see will or need to be in place to allow Rail Baltica to operate effectively – e.g. does Rail Baltica need a common timetable body?	<p>S – CSM</p> <p>T – Common timetabling body, capacity allocation, New IM to organize allocation and timetabling.</p>
Who do you think shares your vision?	Estonia shares safety vision.
Does the construction of Rail Baltica represent an opportunity to your organisation?	<p>S – Easier to get building permits, help with technical issues.</p> <p>T- Big opportunity for Baltic states. To promote competition in the rail sector, which they need as currently lacking. e.g. currently only buy oil from Russia, no rail line to Romania to buy their oil. If they had the choice, this could drive down the price in oil.</p>
What do you think would be the fairest way of balancing any competing objectives amongst the stakeholders?	<p>S – The one which is the safest. A bigger push of European commission as they are financing this.</p> <p>T – no answer.</p>
What are the biggest concerns you currently have that you would like to see addressed in the study?	<p>S – technical point – concerned we don't have expertise on this network so need to get European help, but they need to take into account Latvian legislation. T – for Baltic states two possibilities for RB.</p> <p>10. RB system helps Baltic states, economy.</p> <p>11. RB will be a subcontractor of East Stato Systems.</p>

## F.11. Latvian Infrastructure Manager (Latvijas dzelceļš)

### Interviewee Record

Name of Interviewee	Ainis Stūrmanis
Job Title of Interviewee	Vice-President
Explanation of how this role fits within the wider interviewees organisation structure – reporting lines etc	
Contact Email	Ainis.Sturmanis@ldz.lv
Contact Telephone	+371 6723 4405
Date of Interview	
Location of Interview	Electronic response only.

### Information About Your Business

This section is designed to help us identify the structure and capability of your own organisation and its current operating model.

What is the registered name of your business?	State Joint Stock Company “Latvijas dzelzceļš” (LDz) Gogola Street 3, Riga, Latvia
Please describe the structure of your organisation and how this fits within the rail industry including government and regulatory bodies	<p>LDz is the manager of the public railway infrastructure in accordance with the provisions of the “Railway Law” and the only manager of the public railway infrastructure in Latvia according to Section 6 of the “Railway Law” manages the railway infrastructure (maintenance and development of the railway infrastructure), plans, organizes and supervises movement of trains and other rolling stock over the railway infrastructure tracks under the management thereof, as well as is responsible for the for the management of the infrastructure control and safety system.</p> <p>LDz is a State Joint-Stock Company, with 100% of its capital shares owned by the state. Holder of the capital shares is the Ministry of Transport of the Republic of Latvia. LDz manages, maintains and develops the public railway infrastructure in</p>

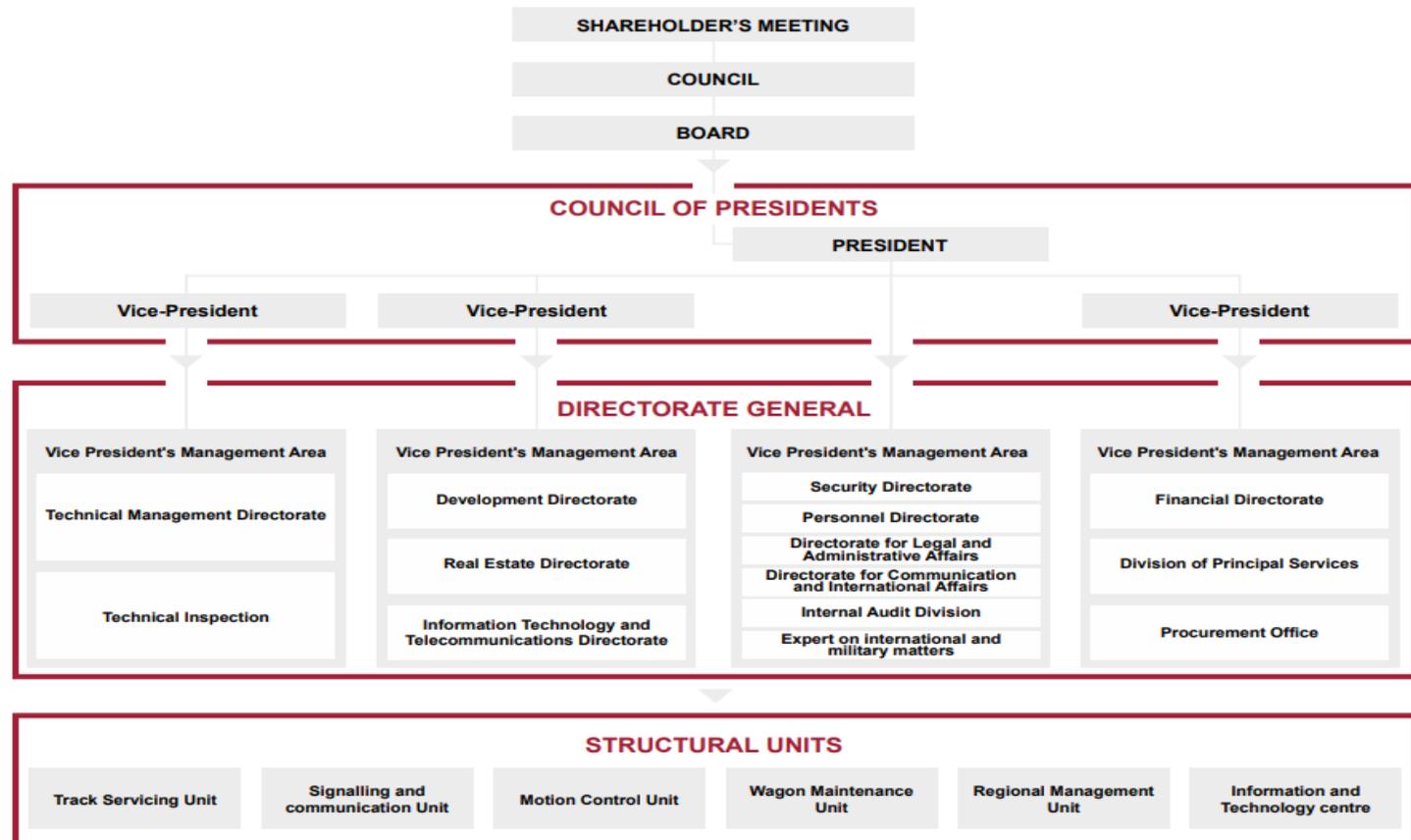
Latvia, and provides public-use railway infrastructure use, handling of the freight wagon rolling stock, wagon technical maintenance and inspection, power distribution and sale, rental, information technology, electronic communication, as well as principal services.

Legal address of LDz is: Riga, Gogoļa Street 3, LV-1050, however, the structural units of the company are located also elsewhere in Riga and Latvia (including Jelgava, Liepāja, Daugavpils, Krustpils, Rēzekne, Ventspils etc.). Latgale region is especially important for successful operation of the company, where significant number of LDz personnel is employed. Majority of the operational volumes of LDz consists of handling of transit freights, which are mainly imported in Latvia through the eastern state border. Primary handling, distribution and planning of further train movement is performed in Latgale region. Especially high number of employees is in Daugavpils, the second largest city of Latvia, furthermore, significant part of employees are employed in Rēzekne and Krustpils, which are important freight handling hubs before delivery to any of the leading ports of Latvia.

In 2016, Council of LDz was established. It is subordinated to the meeting of shareholders, whereas, Board of LDz is subordinated to the Council. Management of the Company's operational matters is provided by the Council of Presidents consisting of the President and three Vice-Presidents of LDz, and every one of them is responsible for certain areas of the company's activity (general management, technical matters, financial matters and development).

Company's daily operation is provided by the General Directorate of LDz, nine Directorates and five structures providing the execution of internal audit, procurements, principal services and other functions. Another six structural units located both in Riga, Daugavpils and elsewhere in Latvia, perform daily works on tracks, in stations and at the stops, as well as provide efficient performance of the company's information system.

## The organizational structure of the SJSC “Latvijas dzelzceļš”



LDz is the managing company of the LDz group of companies, furthermore, the group of companies includes six subsidiaries operating in the area of provision of freight traffic, rolling stock modernization and maintenance, logistics solutions, infrastructure repair, freight and infrastructure security and other services, as well as the JSC (AS) “LatRailNet” executing significant functions of the infrastructure manager (decisions on the distribution of capacity and determination of fee).

The JSC (AS) “LatRailNet” is an independent Joint-Stock Company, which executes significant functions of the infrastructure manager – adoption of decisions on the distribution of capacity, assignment of railway tracks, including determination and assessment of access. Furthermore, the JSC (AS) “LatRailNet” adopts decisions on the amount of the fee for the use of the public railway infrastructure.

Please describe the financial flows for your business, between the different industry parties – if possible detailing the sums that flow in €m

Information on 2017: net turnover: 180.2 million euro (-6.4% in comparison to 2016), including:  
 fee for access to public-use railway infrastructure: freight trains – 86.7 million euro, passenger trains – 37.9 million euro;

- Revenue for freight train formation handling services: 15.8 million euro;
- Revenue for wagon technical inspection services: 13.8 million euro;
- Revenue for other services: 26 million euro

Profit before taxes: 0.8 million EUR

Paid taxes and duties: 70.2 million euro (+4.5% in comparison to 2016)

Freight volumes:

- 43.8 million tons (-8.4% in comparison to 2016)
- 15,016 million ton-kilometres (-5.4% in comparison to 2016)

Inland freight traffic 1.65 million tons (+11.3% in comparison to 2016)

Passenger transport 17.5 million passengers (+1.5% in comparison to 2016)

Majority of the turnover of LDz consists of revenue from the fee for the use of infrastructure, and, under the influence of decrease in traffic volumes, financial indicators have also declined. However, drop in turnover is lower than decrease in volume of freight traffic (having the major impact on revenue from the fee for use of infrastructure), thus showing optimization of the undergone optimizations.

LDz is the manager of the public railway infrastructure in the territory of Latvia, and 65–70% of its turnover and revenue is formed by the fee for the use of railway infrastructure for freight traffic, but approximately mere 30% - by the fee for the use of railway infrastructure for passenger transport provided by an independent, state-owner Joint-Stock Company “Pasažieru vilciens”. The above mentioned share of transport makes Latvia different from majority of the Member States of the European Union, where public railway infrastructure is basically used for passenger transport. This is determined by the geographic situation of Latvia and historical development of the transit sector providing freight logistics services from the Eastern Europe and Asia to Europe. In the recent years, traffic in the opposite direction is also undergoing more active development.

Please describe the functions that your business performs, including whether these are insourced or outsourced.

In accordance with the provisions of the “Railway Law” LDz as the manager of the railway infrastructure (capital company managing the railway infrastructure (maintenance and development of the railway infrastructure)) plans, organizes and supervises movement of trains and other rolling stock over the tracks of the railway infrastructure under its management, as well as is responsible for the management of the infrastructure control and safety system.

Therefore, in accordance with the provisions of the “Railway Law” operational principles of the economic activity of LDz (business model) is aimed at the management of the public-use railway infrastructure according to the needs of the development of the national economy and interests of stable traffic providing the use of the network of railway infrastructure available at certain volume and quality and performing management, maintenance and development of the railway infrastructure.

The above mentioned business models are not outsourced.

Provision of all services is provided by the own resources of LDZ. LDZ provides management, maintenance and renewals of the infrastructure by its own resources, while enhancements are provided by external providers on the basis of procurement.

LDz provides control of train traffic by its own resources in the entire 1520 mm gauge railway network of Latvia.

Who are your key stakeholders?

What is your relationship with them?

LDz as one of the leading transport, logistics and infrastructure companies in Latvia and the Baltic States operates in connection with other market participants and cooperation partners, sector associations, port authorities and other organizations.

Significant party of impact is the Latvian Railway and Transport Industry Trade Union (LDzSA), because LDz is one of the largest employers nationwide, furthermore, the company has strong traditions of social dialogue.

Besides, relations with the clients, in case of LDz – with the freight traffic and passenger transport companies, play significant role in this sector. When planning the projects for the modernization and development of infrastructure, LDz takes into account the sectoral needs and interests timely involving all parties in discussion on the planned development projects. Along with freight traffic (provided by three operators – LLC (SIA) “LDz Cargo” of the LDz group of companies and two private operators – JSC (AS) “Baltijas Tranzīta serviss” and JSC (AS) “Baltijas Ekspresis”), in the recent years, the railway infrastructure is used for the organization of still growing passenger transport providing the network of main routes to all regions of the state (Joint-Stock Company “Pasažieru vilciens”), as well as for the international passenger transport to Russia and Belarus (provided by

the LLC (SIA) “LDz Cargo”, Belarusian railway, Lithuanian railway). LDz and JSC (AS) “Pasažieru vilciens” cooperates with the Road Transport Administration on matters regarding the options of development of inland passenger transport. Whereas, relations with the suppliers of the goods and services required for the operation of LDz are regulated by the Law On the Procurement of Public Service Providers, because LDz is a public service provider (manager of the public-use infrastructure). Basic principles for business ethics of the cooperation partners developed by LDz apply both to the suppliers of goods and services selected through procurement procedures and in any other way.

LDz has several partners in the non-governmental sector, and cooperation with these parties of influence is implemented by the participation in the management structures thereof, engagement in certain activities and projects, as well as at the level of mutual consultations.

LDz is active in the status of member and protects its interests in several national scale non-governmental organizations, including Latvian Transit Business Association (LTBA), Employers' Confederation of Latvia (LDDK), Latvian Chamber of Commerce and Industry (LTRK), Latvia China Business Council, Baltic Institute of Corporate Governance and Institute of Corporate Responsibility and Sustainability. In May this year, LDz joined OECD ITF CPB.

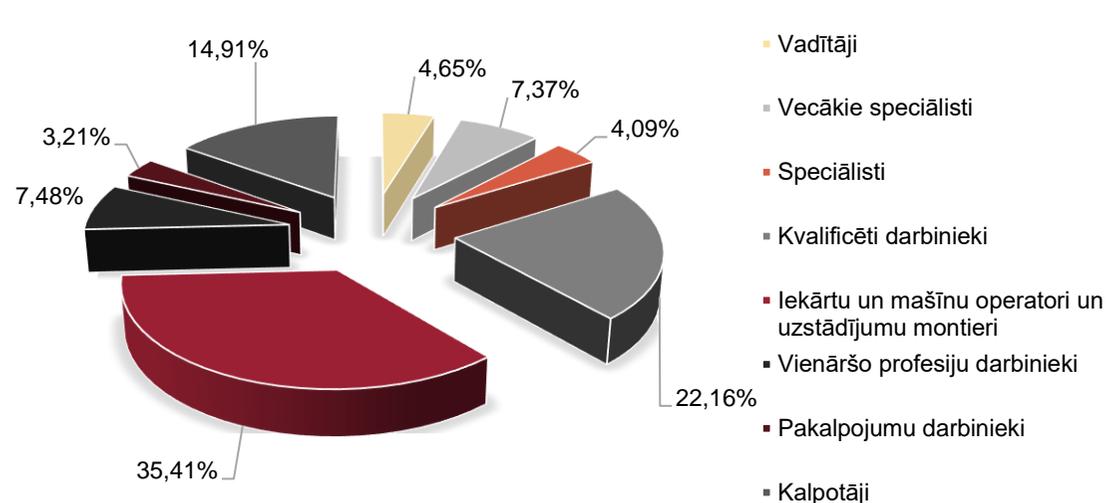
LDz is a legal member of the Latvian Railwaymen Society since 2003. This society unites more than 1,000 professionals of the Latvian railway sector, and participation of LDz therein is natural in view of the large number of sectoral members represented therein. The company engages in the activities for the railway engineers organized by the society.

What is the headcount of your business, please break this down by function where possible.  
 What is your current target headcount?

In 2017, the average number of employees of LDz group of companies was 11,192, including the employees, who were absent due to work incapacity and on parental leave. The average number of active employees was 10,395 in 2017. 6497 of them were employees of the managing company SJSC (VAS) “Latvijas dzelzceļš”.

LDz group of companies is the largest employer, as well as one of the largest taxpayers nationwide. Amount of the taxes paid in state and municipal budgets by LDz in 2017 was 123.8 million euro at the level of the group of companies, including 70.2 million euro – contributions of the SJSC (VAS) “Latvijas dzelzceļš” to the state and municipal budgets.

Overall, employees of 348 professions are employed in the group of companies, mostly represented occupations are: track fitter (7.7%), driver of diesel locomotive (6.7%) and wagon inspector – repairman (4.1%). According to the Classification of Occupations of the Republic of Latvia, percentage of the employees of the Group of Companies is as follows (data of 2016):



The planned number of employees of the managing company SJSC “Latvijas dzelzceļš” in 2018 is 6449, including:

- In the maintenance of infrastructure – 4687;
- In the organization of train traffic – 676;
- In the wagon inspection and repair services – 694;

In the remaining services – 392.

What metrics are used to measure the performance of your business?

Key performance indicators (KPI) have been developed to reach the medium-term strategic goals of LDz, and these goals are defined and determined in “LDz Medium-term Operational Strategy 2017–2022”. KPI have been developed on the basis of the forecasts regarding the freight traffic and passenger transport identified in the LDz Group of Companies Business Plan 2017–2036, determined on the basis of the analysis conducted by international auditing companies.

Who sets these?

The strategy has been accepted by the Council of the SJSC (VAS) “Latvijas dzelzceļš” by the Decision No. PA 1.2./8-1 of 25.08.2017.

How has performance been over the last few years?

However, it must be taken into account that LDz Strategy has been developed under the circumstances of variable geopolitical situation, when competition in the area of freight traffic at international level becomes fiercer. Market tendencies in the international railway freight traffic are related to international trade, port capabilities and development thereof. Business of LDz as the manager of infrastructure depends on the development tendencies of the market of freight services, without exclusion of global level events affecting international freight traffic.

Furthermore, taking into account the fact that implementation of labour-consuming projects, as well as finance-consuming investments are planned during the Strategy period, key KPI results will be achieved after expiry of the Strategy period, while positive dynamic influence for successful achievement of results is significant during this period.

For the purposes of determination and development of the main KPI, we have based on and taken into account inter alia the development tendencies, directions and the set main KPI determined by the European railway sector and companies, in order to promote the benchmarking. From February 2018, we have joined also the PRIME (Platform of Rail Infrastructures Managers in Europe) platform.

Indicators	Base value in 2016	Achieved indicator in 2017
Freight passage capacity in the Eastern–Western railway corridor, million t per year	73	73

Description of KPI: Retention of stable indicator is planned for the entire Strategy period, taking into account the fact that significant increase in passage capacity of LDz infrastructure is not planned until 2022, concentrating resources instead for the elimination of the “bottlenecks” of LDz infrastructure and increase in efficiency thereof.

Number of serious accidents per 1 million vkm	1.5	1.5 (1.53)
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Description of KPI: Taking into account the projected growth in freight traffic and passenger transport over the railway and the increasing traffic intensity, it is significant to retain the above-mentioned indicator along with the average characteristic of safety level of the new Member States of the EU by preventing increase thereof.

Average freight train site speed, km/h	31	31
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Description of KPI: In 2022, the indicator will be mainly affected by the amount of funds assigned for the planned improvements for the renovation of tracks, replacement of railway switches, modernization of level crossings, capital

repairs of engineering technical structures and track equipment repairs, as well as introduction of the management projects of railway transport.		
Movement of freight trains according to schedule, punctuality %	91	91
Description of KPI: In 2022, the indicator will be mainly affected by the amount of funds assigned for the planned improvements for the renovation of tracks, replacement of railway switches, modernization of level crossings, capital repairs of engineering technical structures and track equipment repairs, as well as introduction of the management projects of railway transport.		
Emissions of main traction CO2 in freight traffic, kg/1000 tkm (according to UIC methodology)	12.46	10.15
Description of KPI: For the purpose of determination of the indicator, the target reduction of CO2 set for Latvia and which is planned to be achieved before 2030 has been taken into account. Reduction of CO2 will be achieved by increasing the percentage of modernized main diesel locomotives and shunting locomotives in the overall locomotive park, as well as by the increase of the total length of electrified lines and addition of locomotive park by electric traction main locomotives.		
Optimal capital structure/loans to total assets	0.2	0.2
Description of KPI: Retention of the indicator is planned by providing financial balance between investments and loans and investing the profit in the implementation of public-use railway infrastructure.		
Sustainability index	Golden	Golden
Description of KPI: In 2016, LDz for the first time stepped from silver category to golden category in the LDz Sustainability Index assessment, showing special improvements on annual basis in the areas of working environment and market relations. Goal set for 2022 is to retain the gold category and improve performance, thus approaching the platinum assessment.		
Employee satisfaction, % of the maximum possible assessment	74	78
Description of KPI: Measurements of employee satisfaction are significant for the development of the personnel motivation system, and measures for complex approach are planned in four components – employee satisfaction; recommendation of LDz as an employer to others; motivation of colleagues; repeated job application to LDz.		

	<p>Years of 2016 and 2017 were complicated for the sector and for the company, however, performance indicators show that, under the circumstances of decrease in traffic, we have maintained financial balance and provided competitive and cost-efficient provision of service. This is important, because the task set for LDz is to provide maintenance of good quality and competitive infrastructure regardless of the traffic volumes and the related revenue.</p> <p>Primary activity in 2017 led to positive result. Equity has increased, which is important upon commencement of work on large scale investment projects – including electrification of railway network requiring significant co-funding. Furthermore, in 2017, the company was able to provide 3% increase of the average wage, thus promoting retention of qualified specialists.</p>
<p>Are there metrics that are missing – for your organisation or others?</p>	<p>Comprehensive and more detailed operational goals and tasks have been defined in the “SJSC (VAS) “Latvijas dzelzceļš” Medium-term Operational Strategy 2017–2022”, and they will be monitored and supervised every year, if necessary, making adjustments according to the variable operating conditions, as well as reacting timely to the possible external risks (if any).</p> <p>Every December, meeting of shareholders approves financial and non-financial goals of LDz for the following year.</p>
<p>Is the structure of your organisation currently aligned with the principles of the 1<sup>st</sup>, 2<sup>nd</sup> 3<sup>rd</sup> and 4<sup>th</sup> Railway Package?</p> <p><i>1<sup>st</sup> Railway Package – ‘non-discriminatory access’ (2001)</i></p> <p><i>2<sup>nd</sup> Railway Package ‘common standards / open access’ (2004)</i></p>	<p>2nd Railway Package ‘common standards / open access’ (2004)</p> <p>The company faced significant changes after accession of Latvia to the European Union (hereinafter referred to as – EU) in 2004. Railway system of Latvia was rearranged according to the requirements set by the EU directives, namely, the Council Directive 91/440/EEC on the development of the Community's railways, Directive 2001/12/EC of the European Parliament and of the Council of 2001 amending Council Directive 91/440/EEC on the development of the Community's railways, Directive 2001/14/EC on the allocation of railway infrastructure capacity and the levying of charges for the use of railway infrastructure, and Directive 2001/16/EC on the interoperability of the trans-European conventional rail system.</p> <p>During the period from 2005 till 2007, separation of the activities of railway infrastructure management and the activities of traffic took place. Accordingly, capital companies LLC (SIA) “LDZ infrastruktūra”, LLC (SIA) “LDZ ritošā sastāva serviss” and LLC (SIA) “LDZ CARGO” commenced their operation.</p> <p>In 2007, Board of LDz set the task to have more active engagement in the promotion of logistics business are a priority in order to not only execute the orders of the current clients, but also to attract new traffic from the freight formation points in China and other Asian countries. For the purpose of provision of freight forwarding and logistics services, in 2008, the LLC (SIA)</p>

3<sup>rd</sup> Railway Package  
‘international access and  
cabotage’ (2010)

4<sup>th</sup> Railway Package  
‘independent infrastructure  
management’ (2016)

What steps are you taking (if  
any) to change your business  
to reflect the principles of the  
1<sup>st</sup>, 2<sup>nd</sup> 3<sup>rd</sup> and 4<sup>th</sup> Railway  
package.

Do you have a date by which  
you expect to be compliant?

“LDZ CARGO” established a new subsidiary company “LDZ Cargo Loģistika”, the main task of which was to expand transit container freight traffic from China, Kazakhstan and Western countries and in the opposite direction, as well as to develop logistics services to receive container freight from Europe through the ports of Latvia for the railway traffic. New routes of contained trains with destination in Russia, Moscow, were established from the Port of Riga and the Port of Liepāja. In 2016, “LDZ Cargo Loģistika” became the LLC (SIA) “LDZ Loģistika”, a subsidiary of LDz.

3<sup>rd</sup> Railway Package ‘international access and cabotage’ (2010)

In order to provide equal access of both the state and private operators to the railway infrastructure, a new and independent subsidiary of LDz – Joint-Stock Company “LatRailNet” was established at the end of 2010, and, in accordance with the law, this company executes significant functions of the manager of the railway infrastructure – determines fee for the use of railway infrastructure for the traffic and distribution of capacity.

Dependent companies are autonomous in the adoption of professional decisions, budget planning and management in their areas of activity. Requirements of the EU have been met – manager of the railway infrastructure has been separated from the traffic, and independence has been provided for the execution of the significant functions of the manager of the infrastructure.

4<sup>th</sup> Railway Package ‘independent infrastructure management’ (2016)

Completion of the takeover is planned before the end of 2018, and no significant changes in the structure of the LDz group of companies are required.

What do you think your  
business does particularly  
well?

What evidence can you  
provide to support this?

The company has been registered in the Register of Enterprises in 1991. Latvijas dzelzceļš is one of the largest employers and taxpayers nationwide, providing by its economic activity significant contribution to the national economy providing use of railway infrastructure for freight traffic and passenger transport. The company has good management and qualified labour force, which is confirmed by positive financial indicators. Number of dividends paid by LDz in the state budget since 2012 – 24,038 thousand euro.

Equity of LDz on 31 December 2017: 315,244 thousand euro.

Profit before taxes in 2017 is 768 thousand-euro, profit after taxes: 23,184 thousand euro. Every year, the company pays approximately 70,000 thousand euro in taxes in the state budget.

In 2017, experts have positively assessed the performance of LDz. In accordance with the annual list of the most valuable companies of Latvia, compiled by “Prudentia” and “NASDAQ Rīga”, value of LDz has grown by 3.8 times since 2007, and it has been recognized as the fourth most valuable company in Latvia. We have received golden category evaluation in the Sustainability Index.

What do you think your business does not do well? Why is this?

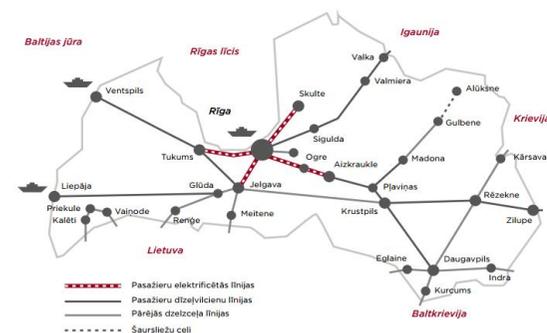
We don't think so.

LDz is one of the oldest companies in Latvia and has been active for over 150 years. LDz is the only company nationwide, which manages, maintains and develops the state public railway infrastructure in Latvia without state subsidies, furthermore, the company is not subsidized by the state (currently being the only railway company – manager of infrastructure in the European Union?, which is not subsidized by the state). The company provides economic activity by its own means, but, in the years, when significant additional funds for the development are required to implement significant infrastructure projects, the company addresses the Cabinet of Ministers for the permission to retain profit of the respective reporting year.

It is important also to accentuate that, in 2017 preparation work was performed for the Cabinet of Ministers to be able to adopt the Indicative Railway Infrastructure Development Plan (provided in the Railway Law) for five years in 2018, and for the Ministry of Transport and LDz to be able to conclude a multi-year contract on the basis thereof. These documents will determine further development of the company and the mechanism for the provision of financial balance of the manager of the infrastructure in case, if traffic volumes and related revenue will not cover the costs required for the maintenance of infrastructure.

What is the size of the network in track km that your organisation is responsible for?

On 1 January 2017, network of LDz includes the following:



137 railway stations	128 stops	1860 km	3170 km	251 km operational length of electrified spans	11 traction sub-stations
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		operational length of railway lines	expanded length of railway lines		
	Electrified passenger lines				
	Diesel passenger lines				
	Other railway lines				
	Narrow gauge tracks				
What is your annual spend on:	Annual expenses for the maintenance and renewal of railway infrastructure:				
-	Investment expenses: 25 million euro;				
Maintenance (€m)	Operational expenses: 95 million euro;				
Renewals (€m)	General expenses: 14 million euro.				
Enhancements (€m)					
How and why do you anticipate this will change over the next 5-10 years?					
How are you funded?	Financial sources:				
	- LDz own funds;				
	- Bank loans (credit funds);				
	- Public financing of the EU funds.				
	Initiatives for the maintenance, renewal and of LDz infrastructure have been developed in accordance with medium-term investment plan, which is developed for the planning period of five years and reviewed on annual basis according to the financial and economic results.				
	Operational expenses:				
	Maintenance and renewal expenses of railway infrastructure are covered by the payments of railway freight traffic and passenger transport operators for the use of public-use railway infrastructure.				
	Public contract of railway passenger transport (financing of the state budget) and extraordinary state financing of the total amount of 36.5–38.0 million euro provides payments of the railway passenger transport JSC (AS) “Pasažieru vilciens” for the use of public-use railway infrastructure.				

	<p>The remaining services provided by the SJSC (VAS) “Latvijas dzelzceļš” are financed by the payments of the service users.</p> <p>Investment expenses: Annual loans on average in the amount of 27.0–37.0 million euro. Average annual co-financing of the projects of the EU structural funds (71 million euro) for the period of up to 2023.</p>
<p>Is this funding proving sufficient to achieve the quality and sustainability performance required for your infrastructure?</p>	<p>Insufficient.</p> <p>Therefore, when significant additional funds for the development are required to implement significant infrastructure projects, the company addresses the Cabinet of Ministers for the permission to retain profit of the respective reporting year.</p> <p>Furthermore, payments for the use of the railway infrastructure for the passenger transport are frequently delayed, and these payments depend on the funds paid by the state to the JSC (AS) “Pasažieru vilciens” as the Management System Operator (PSO) payments.</p> <p>However, despite the above mentioned, we have provided competitive and cost-efficient provision of service and maintenance of infrastructure in unchangeably high technical quality regardless of the volumes of traffic and the related revenue.</p>
<p>Please describe your approach to procurement e.g. supply chain development, use of category management, the use of alliancing, ISO14001 / 9001 accreditation etc.</p>	<p>LDz approves and supports introduction of internationally recognized quality management standards into the company. The abovementioned activities significantly increase the company’s competitiveness and possibilities for further successful development both in local segment and global market.</p> <p>When announcing the procurement procedures, the Procurement Office frequently includes in the documents requirements in relation to the compliance or the offered good / service with ISO standards. This guarantees selection of the offer of the maximum possible quality and fulfilment of the procurement contract relevant to the provision of the company’s needs.</p>
<p>Who do you think we should speak to outside your organisation in order to best understand the optimum model for the Rail Baltica project.</p>	<p>LDz has been the leading sector company for many years (with experience over 100 years), characterized by historically stable forerun, knowledge and technological competences to provide freight flow to and from the main freight traffic regions using 1520 mm gauge track infrastructure.</p> <p>Precisely developed business process and high quality management, high level and technical knowledge human resources, as well as technological knowledge accumulated over the years, while being virtually the only company, which manages, maintains and develops the public railway infrastructure in Latvia, allows us to be the most important involved party and actually the ONLY ONE, which is able to comment and explain matters on the best organizing railway infrastructure management model in Latvia, as well as the possible synergy and operational conditions for successful management of 1435 mm gauge track infrastructure in the territory of Latvia.</p>

What are your organisations top three biggest business risks?

How and where have you identified these?

Geopolitics – its impact on unforeseeable drop of freight volume and growth of geopolitical tension in relations with Russia, and prolongation of the term of international economic sanctions, which cause risks for unforeseeable drop of freight volume entailing unforeseeable impact on the financial balance of the company. Traffic from third countries – reorientation of freight to the ports of third countries.

Insufficiency of state funding.

Lack of experience in conclusion of Multi-annual contract with the state on maintenance and renewal of railway infrastructure; conclusion is planned for the first time for the period of 2018–2022.

Limited loan capacity of LDz in the financial market for the financing of long-term (over 20 years) investment projects.

Uncertainty related to the application of directives and regulations of the European Union – for the foreseen changes in determination of fee for the use of infrastructure – principle of direct costs for the minimum service package and determination of fee for the use of services provided by the service point, especially in the area of passenger transport, paid to the passenger transport operator by the state as PSO.

What things (if any) do you believe are unique about the operation of the railway and railway infrastructure in your Country?

Why?

Efficient 1520 processes as basis for the expansion of functions to 1435 mm gauge track is the competitive advantage of LDz. Precisely developed business process and high quality management, high level and technical knowledge human resources, as well as technological knowledge accumulated over the years, while being the only company, which manages, maintains and develops the public railway infrastructure in Latvia.

Unique basis for the management of 1520 mm gauge track infrastructure, which, by the expansion in terms of the volume of functions, may be used as developed basic model for efficient management structure of 1435 model. LDz has experience for the management of railways of all three Baltic States – Baltic railway as a uniform railway system management structure under the Ministry of Transport of the USSR from 1940 till 1941 and from 1944 till 1991;

In the Soviet era, management of all railways of the Baltic States was centralized in Riga – separate divisions were established in Lithuania and Estonia, subordinated to Riga Railway Authority. Furthermore, LDz has unique geographical location – in the middle of the Baltic States.

The growing role of Europe – Asia, Latvia as an important point of the Eurasian transit corridor to the markets of Northern Europe and Scandinavia. Along with the growth in volume of mutual trade between Europe and Asia, there is an opportunity to attract new freight flows in traffic routes between Europe and China, India, Belarus, including – for further delivery of goods to the solvent market segment of Northern Europe and by promoting the development of returning freights.

More rapid development of local freight traffic – potential for closer friendship with agricultural, timber industry, natural resources extraction companies in Latvia for more intensive traffic of their inland freights over the railway, thus unburdening roads and improving the environmental protection.

Technologies – road to efficiency – introduction of technological innovations – higher level of safety, higher rate of transparency of business processes, more powerful cyber security and anti-terrorist solutions; comparative advantages of railway transport in comparison with other kinds of transport – time, speed, costs, environmental protection and high securitability.

Railway – green, competitive and climate-responsible transport solution – increase of the total volume of electrified lines in railway; use of the potential of the renewable resources (including hydrogen-based) for the reduction of climate changes, thus becoming a best practice company in the transport sector; innovations and technologies as basis for energy- and resource efficient infrastructure and economical business.

### Stakeholder View of Target Operating Model

This section is designed to enable you to describe how you see a high performing infrastructure manager should operate.

We are undertaking benchmarking of international railways. Are there any examples that you think are worth our examining?

It must be taken into account that, at national level, we, LDz in accordance with the functions defined in the Railway Law, are the only nationwide company, which manages, maintains and develops the public railway infrastructure in Latvia – thus, there are no alternatives for national benchmarking.

However, in comparison with the managers of railway infrastructure of the Baltic States and the EU, it must be taken into account that LDz is the only (last) company among the Member States of the EU, which implements economic activity without state subsidies and without subsidizing of the state.

The research “Comparative analysis of railway infrastructure performance of the European countries” conducted by the international auditing company Ernst & Young in 2016 and aimed at the provision of information on the operation of the railway infrastructure in the comparative countries (Finland, Estonia, Latvia, Lithuania, Poland, Czech Republic, Germany, the Netherlands and Belgium) and display of the situation in Latvia in comparison to these countries. Conclusions of the research:

<b>Latvian railway is the most efficient railway in the Baltic States by costs per the expanded length of tracks in 2015 (EUR/km)</b>				
	Lithuania	Estonia	Latvia	Latvia (2016)
Average financing costs	1,683	841	629	545
Average depreciation costs	26,712	17,627	8,943	7,426
Vidējās darbības izmaksas	48,246	39,290	38,501	35,528

<p>What do you think the obligations of any infrastructure manager are?</p> <p>Core (and optional below)</p> <p>Do these include train operations?</p>	<p>Management of the railway infrastructure (maintenance and development of the railway infrastructure), planning, organization and supervision of movement of trains and other rolling stock over the tracks of the railway infrastructure under the management of the infrastructure manager, as well as responsibility for the management of infrastructure control and safety system. In cases, when the law provides for no restrictions – execution of significant functions of the railway infrastructure manager.</p>
<p>What do you think the optional functions are for any infrastructure manager?</p>	<p>Avoidance of dubbing of functions is significant, thus avoiding unnecessary competition in saturated and small market.</p>
<p>What metrics would you use to test the effectiveness of any structure?</p>	<p>Mentioned before.</p>

### Your Vision for Rail Baltica

<p>Can you describe your view of the optimal arrangements for Rail Baltica? Please draw an organisational chart. Please include who operates: Passenger services; Freight services; Infrastructure inspection; Infrastructure standards and systems design; Timetable planning; Civil and system maintenance and renewal; Terminal; Rolling stock (locomotives, wagons and passenger trains)</p>	<p>We believe that, on the basis of the above mentioned, opinion should be substantiated that, on the basis of the model based on the experience of LDz in technological and management processes structure and management related to 1520 mm gauge track, the organizing model of infrastructure management of 1435 mm gauge track should be developed and functionally expanded.</p> <p>LDz is already related to one of the most extensive future cooperation projects among the Baltic States – establishment of the railway line “Rail Baltica”, and it may play important role for the development of Latvia as a regional logistics centre of excellence. LDz is treating this project with hope, since it will provide opportunity to establish connection of two various gauges in Latvia, thus enabling handling of higher freight volume from various regions of the world, as well as establishment of efficient cooperation with the partners in Western Europe using voluminous synergy effects including also the network of 1520 mm.</p> <p>Furthermore, the leading technical experts of LDz have already commenced work with the colleagues of the Rail Baltica project by jointly working on technical solutions related to reconstruction of the Central Railway Station and planning of 1435 mm gauge track infrastructure.</p>
<p>What metrics would you use to test the effectiveness of the future organisation?</p>	<p>Main KPI – non-financial and financial goals.</p>
<p>Can you describe the regulatory regime and common operational processes that you see will or need to be in place to allow Rail Baltica to operate effectively – e.g. does Rail</p>	<p>LDz has already commenced work on the implementation of the Uniform Traffic Control Centre (UTCC) project aiming at the establishment of uniform train traffic and planning control system, which would enable to combine several currently separately operating 1520 mm railway gauge track infrastructure management systems (train traffic control, communication network control, energy distribution network control, passenger information, security and video surveillance etc.), thus significantly increasing the operational efficiency thereof. Completion of the implementation of the project intention before the end of 2023.</p>

<p>Baltica need a common timetable body?</p>	<p>Work on the project planning is in progress at the moment, including identification of the area of the required premises and needs related to the engineering communications, and, since the matters related to train traffic management and control for the train operation on the newly-built 1430 mm gauge tracks will also be resolved within the framework of the Rail Baltica project.</p>
<p>Who do you think shares your vision?</p>	<p>Ministry of Transport, JSC (AS) “RB Rail”, LLC (SIA) “Eiropas dzelzceļa līnijas”.</p> <p>Strategic decisions should be adopted, but we are ready to maintain position with the vision of LDz as a strategic manager of 1520 mm and 1435 mm gauge track infrastructure both at national scale and scale of three Baltic States.</p>
<p>Does the construction of Rail Baltica represent an opportunity to your organisation?</p>	<p>“Rail Baltica” – new challenges for multi-modal development of transport along with deeper integration in the European uniform railway space.</p> <p>By establishing a Rail Baltica management model, which is based on the current management and foreruns in the development and management of infrastructure in the territory of Latvia, developing additional functions, thus resulting in synergy and much more efficient return from the infrastructure as the invested capital. At the same time – minimizing the dubbing and overlapping activities and processes.</p> <p>Furthermore, along with the changes in work organization and new technological solutions, there is a growing demand for highly qualified employees. Along with the implementation of the Rail Baltica project, specialists in construction of high-speed railway will be required; for this purpose, the human resources currently at the disposal of LDz may be used through the retraining.</p> <p>Project will enable to develop efficient multi-modal solutions in the area of transport and logistics and, in the possible synergy with LDz, to provide such a freight passage capacity of the railway infrastructure, as to make it a stimulating development factor for the national economy in general and to enable to handle higher volume of freights from various regions of the world, as well as to develop efficient cooperation with the partners from the Western Europe providing link between the Eastern and Western partners.</p>
<p>Is there a conflict of interest between the commercial/strategic objectives of your organisation and those of Rail Baltica</p>	<p>No, just the opposite – centralized management of both 1520 mm and 1435 mm gauge tracks will provide opportunity to organize train traffic at lower costs, assign experienced employees for the maintenance work coordinating the train traffic – to provide more convenient transfer for passengers, the fastest freight transshipment and implementing synergy of both networks.</p>

<p>What do you think would be the fairest way of balancing any competing objectives amongst the stakeholders?</p>	<p>Avoidance of dubbing of functions.</p>
<p>The European Rail Infrastructure Manager's Association is (one of 10 European railway organisations) recognised by the European Commission as a 'representative body from the railway sector'. Are you familiar with this?</p> <p>Does or will your business be able to endorse the <b>principles</b> of the EIM charter and indicate where, if any you perceive there to be a conflict with your business strategy in the medium term (5 years+) – See Appendix One.</p>	<p>We are not official members of the EIM, but their operational principles are supportable, furthermore, they are not in conflict with our business strategy.</p>
<p>What are the biggest concerns you currently have that you would like to see addressed in the study?</p>	<p>When adopting a national decision on the best management model, we call for the provision of basis in opinions and weighted considerations, objectively assessing the current strengths and foreruns resulted from efficient management of railway track infrastructure in the territory of Latvia.</p>

## F.12. Lithuania Communications Regulatory Authority

### Interviewee Record

Name of Interviewee	Ieva Zilioniene
Job Title of Interviewee	Acting Deputy Director General
Explanation of how this role fits within the wider interviewees organisation structure – reporting lines etc	Acting Deputy Director General, Director of Economic Regulation (Christina), Network Regulation (Rolandas)
Contact Email	leve.zilioniene@rrt.lt
Contact Telephone	+370 5 210 5622
Date of Interview	Thursday 10th May
Location of Interview	Mortos Str. 14

### Information About Your Business

This section is designed to help us identify the structure and capability of your own organisation and its current operating model.

What is the registered name of your business?	Communications Regulatory Authority of the Republic of Lithuania
Please describe the structure of your organisation and how this fits within the rail industry including government and regulatory bodies	<p>Since 2016, new regulator of this sector</p> <p>Active/ functional based</p> <p>EU Requirements</p> <p>Reformed – Max employees is set by government, with the possibility to hire for railways soon. They are multi-section so some experts but many cover a range. There is also a legal department who draft legislation and Railway Transport Code.</p> <p>Independent from the government.</p>
Please describe the financial flows for your business, between the different industry parties – if possible detailing the sums that flow in €m	<p>Currently a financial and headcount issue.</p> <p>Financed by works and services, market players, state budget to RA</p> <p>Railway Transport Law (discussed in Parliament). Simple formula, numeration based on gross, tonne, km</p> <p>Cash Flow – From Infrastructure manager (at the moment it's the same player). Send to state and then they receive it back. 4 pits, every ¼.</p>

130k euros for this function Railways (4 people)

Please describe the functions that your business performs, including whether these are insourced or outsourced.

Main purpose is ensure competition of railways, 3 biggest things – complaint/initiative they investigate, access to the network (minimum access statement), statistics etc from EU data. They are learning and gaining knowledge, new definitions etc.

Purely economic regulation, safety regulation is separate

Don't have power to assess money going in to managing the infrastructure. Do not regulate efficiency of the monopoly of the IM – with no data. In the future they may have the power but at the moment they do not. Could be set in legal requirements?

**Court Case:** Safety institution was responsible for allocation of capacity, competitor to IM went to administration/didn't have resources to provide the services. No capacity for competitor, state company received all the allocation. Established process for understanding if there is or isn't capacity/allocation. IM should do everything to encompass everything. Precise and exact procedure for allocation of capacity.

RB Capacity – reliant on one model, need effective regulation. Capacity location rule created by the ministry. Very complicated rules, 2 allocation procedures. No precise formula for negative impact assessment. Priority Rule: allocated passenger, international, freight.

Effectiveness of timetable: tight red line where their responsibility stands or not, they would ask legal department if they were to investigate.

WL: Scenario 3 IMs, 3 timetables, 3 traffic management systems, "don't worry it will be regulated". Regulated contract? –

Theoretically it is possible but legal acts would have to be changed completely. 3 countries need to be harmonised. Do not have the powers at national level, let alone international. They would need external help and technical experts. Currently only 1 technical university for technical experts for railways, they need more than one. 3 regulators and 1 Traffic

	<p>Manager, if Lithuania said to Latvia they have no obligation to do so. 3 regulators cooperate for 1 traffic operator = Technically able but legal problem. 3 separate IMs – legal simpler if rules similar, would need pre document for every country.</p>
<p>Who are your key stakeholders? What is your relationship with them?</p>	<p>Financial by IM, Major Stakeholder is Lithuania Rail, requirements from legal acts.</p> <p>No one wants to be regulator, difficult to start as a regulator but not difficult relationship, as they are not used to it.</p>
<p>What metrics are used to measure the performance of your business? Who sets these? How has performance been over the last few years?</p>	<p>European regulation, technical document</p> <p>Provision of information and access to the network are two main things – more on legal/technical document. They could request to ministry to change the formula but ministry would have to change not the regulator.</p> <p>Not possible till now to be proactive.</p>
<p>Are there metrics that are missing – for your organisation or others?</p>	<p>No – actual usage of allocated capacity?</p> <p>Not enough experience to say something particular.</p>
<p>Is the structure of your organisation currently aligned with the principles of the 1<sup>st</sup>, 2<sup>nd</sup> 3<sup>rd</sup> and 4<sup>th</sup> Railway Package?</p> <p><i>1<sup>st</sup> Railway Package – ‘non-discriminatory access’ (2001)</i></p> <p><i>2<sup>nd</sup> Railway Package ‘common standards / open access’ (2004)</i></p> <p><i>3<sup>rd</sup> Railway Package ‘international access and cabotage’ (2010)</i></p> <p><i>4<sup>th</sup> Railway Package ‘independent infrastructure management’ (2016)</i></p> <p>What steps are you taking (if any) to change your business to reflect the principles of the 1<sup>st</sup>, 2<sup>nd</sup> 3<sup>rd</sup> and 4<sup>th</sup> Railway package.</p> <p>Do you have a date by which you expect to be compliant?</p>	<p>4<sup>th</sup> on its way – draft legislation written with remarks and suggestions sent to ministry, political priority and main aim to achieve this.</p> <p>Act with changes coming in. Happy with structure of organisation.</p> <p>Role of institution to ensure consistency in legislation.</p> <p>End of year should be ready, active from beginning of next year.</p>
<p>What do you think your business does particularly well? What evidence can you provide to support this?</p>	<p>IM good as working as active railway undertaking</p> <p>IT systems now quite advanced, investing in IT tools.</p> <p>IT systems require twice as much to regulator if 2 IMs but not a large administrative burden.</p> <p>Good safety organisation/regulation</p>

<p>What do you think your business does not do well? Why is this?</p>	<p>Partly procedure of allocation IM: constantly changing, new people come in and they have to learn – this takes time. Currently hard to show fair/full process of allocation of capacity. Regulation is going to come in to adjust to this, in about a year. Changes in act and legislation so by time of 4<sup>th</sup> railway package it should be in place and not be a problem.</p>
<p>How are you funded?</p>	<p>See financial flow question</p>
<p>Is this funding proving sufficient to achieve the quality and sustainability performance required for your infrastructure?</p>	<p>Always need more people and can then do more etc. 3 to 4 people at the moment in railways but more resources would be good to have. If regulator gets more responsibilities and new people could come in but need specialists etc. Financial crisis salaries cut 30%.</p>
<p>Please describe your approach to procurement e.g. supply chain development, use of category management, the use of alliancing, ISO14001 / 9001 accreditation etc.</p>	<p>Value for money = No.</p>
<p>Who do you think we should speak to outside your organisation in order to best understand the optimum model for the Rail Baltica project.</p>	<p>Lithuanian Private Railway Undertaking Association (RB have contact?)</p>
<p>What are your organisations top three biggest business risks? How and where have you identified these?</p>	<p>If infrastructure is underused it needs to be maintained still.</p>
<p>What things (if any) do you believe are unique about the operation of the railway and railway infrastructure in your Country? Why?</p>	<p>Small market so simple competition. If you open market in general the big companies will come in and 'eat' the smaller Lithuanian companies. 3-5 competitors are more than enough. Threat of competition does drive efficiency. If RB run by separate IM, then some competition is created.</p>

### Stakeholder View of Target Operating Model

This section is designed to enable you to describe how you see a high performing infrastructure manager should operate.

<p>We are undertaking benchmarking of international railways. Are there any examples that you think are worth our examining?</p>	<p>France, Germany and Italy not comparable to RB.</p>
<p>What do you think the obligations of any infrastructure manager are?</p>	<p>Efficient management Non-discriminatory and conspiracy</p>
<p>Core (and optional below)</p>	

Do these include train operations?	
What metrics would you use to test the effectiveness of any structure?	Not enough knowledge
<b>Your Vision for Rail Baltica</b>	
<p>Can you describe your view of the optimal arrangements for Rail Baltica? Please draw an organisational chart. Please include who operates: Passenger services; Freight services; Infrastructure inspection; Infrastructure standards and systems design; Timetable planning; Civil and system maintenance and renewal; Terminal; Rolling stock (locomotives, wagons and passenger trains)</p>	Not enough information to produce something with such ideas and they need more background information etc.
What metrics would you use to test the effectiveness of the future organisation?	<ul style="list-style-type: none"> <li>- KPIs – Lithuania so far haven't provided these. This is Safety agency responsibility.</li> </ul> <p>International Working Groups</p>
Can you describe the regulatory regime and common operational processes that you see will or need to be in place to allow Rail Baltica to operate effectively – e.g. does Rail Baltica need a common timetable body?	<ul style="list-style-type: none"> <li>- Same rules and procedures for everybody (RB Lithuania and Lithuania Railways)</li> <li>- Problem in underwriting is 3 nations coming together</li> <li>- 3 different countries has to follow 3 different rules (Need the EU common rules and general legal environment to be created). Therefore, need to be active at EU level.</li> </ul> <p>3 regulators agree instead of EU – As regulator they do not have the power but high political level they could do it. Need to write common procedure and could be done with difficulty. 'Contract Agreement – as part of intergovernmental agreement – common regulation between 3 countries'</p>
Does the construction of Rail Baltica represent an opportunity to your organisation?	Yes
Is there a conflict of interest between the commercial/strategic objectives of your organisation and those of Rail Baltica	New role as regulator so no conflict of interest at the moment that they have seen or experienced.
The European Rail Infrastructure Manager's Association is (one of 10 European railway organisations)	Not precise on them (15 that there is) – active in regulators working group

recognised by the European Commission as a 'representative body from the railway sector'. Are you familiar with this?

Does or will your business be able to endorse the **principles** of the EIM charter and indicate where, if any you perceive there to be a conflict with your business strategy in the medium term (5 years+) – See Appendix One.

What are the biggest concerns you currently have that you would like to see addressed in the study?

- Issues around competency needs
- How to ensure best model is chosen

Find legal acts in 3 different countries and the differences of the 3 countries is critical

## F.13. Latvian Transport Ministry

### Interviewee Record

Name Of Interviewee	Latvian Transport Ministry
Job Title Of Interviewee	<ol style="list-style-type: none"> <li>1. Edgars Rezebergs</li> <li>2. Patriks Markēvičs</li> <li>3. Dins Merirands</li> </ol>
Contact Email	Arranged by RB AS
Contact Telephone	Arranged by RB AS
Date Of Interview	8/5/18
Location of Interview	Riga

### Information About Your Business

This section is designed to help us identify the structure and capability of your own organisation and its current operating model.

What is the registered name of your business?	Ministry of Transport
F.13.1. Please describe the structure of your organisation and how this fits within the rail industry including government and regulatory bodies	F.13.3. This is the view of the railway infrastructure company in Latvia.
<p>What metrics are used to measure the performance of your business?</p> <p>Who sets these?</p> <p>How has performance been over the last few years?</p>	<ul style="list-style-type: none"> <li>• How we measure infrastructure manager:</li> <li>• Under discussion is Multi annual agreement between state and infrastructure managers. The KPI's are still under discussion but will include: Standard KPIs include time, safety, suicide records.</li> <li>• There is a dense network so lots of records available. Cargo is decreasing so there is no capacity issue. There is a risk that the inflow of money for the InfraCo is decreasing.</li> <li>• Financing model 40% of expenses covered under PSO under the Auto-transport directorate.</li> <li>• Financial shortfall. Covered by users, under 4<sup>th</sup> railway Package market can be.</li> <li>• We have to switch from old system where all costs were covered by users to the new system (Rail Baltica). The government should be subsidizing the railways. Struggling in a financial sense.</li> <li>• Biggest question: How are we going to finance?</li> </ul>

<p>Is the structure of your organisation currently aligned with the principles of the 1<sup>st</sup>, 2<sup>nd</sup> 3<sup>rd</sup> and 4<sup>th</sup> Railway Package?</p> <p><i>1<sup>st</sup> Railway Package – ‘non discriminatory access’ (2001) 2<sup>nd</sup> Railway Package ‘common standards / open access’ (2004)</i></p> <p><i>3<sup>rd</sup> Railway Package ‘international access and cabotage’ (2010)</i></p> <p><i>4<sup>th</sup> Railway Package ‘independent infrastructure management’ (2016)</i></p> <p>What steps are you taking (if any) to change your business to reflect the principles of the 1<sup>st</sup>, 2<sup>nd</sup> 3<sup>rd</sup> and 4<sup>th</sup> Railway package.</p> <p>Do you have a date by which you expect to be compliant?</p>	<ul style="list-style-type: none"> <li>• 3<sup>rd</sup> railway package – we have done everything except we are still discussing with the commission a few matters, we have to change a few regulations (not the law). We have only one point that we cannot agree on. The regulator does not believe he is independent enough because of shareholder structure.</li> <li>• 4<sup>th</sup> Railway package – Range of amendments proposed on existing railway law. This is difficult the discussions with stakeholders. They are asking for an extension on the technical parts – next summer.</li> </ul>
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<p>What is your annual spend on:-</p> <p>Maintenance (€m)</p> <p>Renewals (€m)</p> <p>Enhancements (€m)</p> <p>How and why do you anticipate this will change over the next 5-10 years?</p>	<p>Funding. This is changing from next year with new systems of infrastructure charging, except for the 1520 market where full costs will be applied.</p> <ul style="list-style-type: none"> <li>• Different methods of charging:</li> <li>• Infrastructure changes PSO + 1520 to fund.</li> <li>• Vertical integrated company including profit.</li> <li>• State railway undertaking impact. Dividend remains with infrastructure manager.</li> <li>• Vertically integrated infrastructure with dividends used to rebalance (L2 Cargo). State funds should not be used to subsidize state funds. Lots of other services and 2 private railway companies (Baltic express &amp; co) – so competition is fierce. Open Market. Lithuania looks to enter the market.</li> </ul>
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<p>Please describe your approach to procurement e.g. supply chain development, use of category management, the use of alliancing, ISO14001 / 9001 accreditation etc.</p>	
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<p>Who do you think we should speak to outside your organisation in order to best understand the optimum model for the Rail Baltica project.</p>	<ul style="list-style-type: none"> <li>• PSO</li> <li>• BTS Freights</li> <li>• Baltic Express – political misalignment contrary to the ministry.</li> <li>• Speak with infrastructure managers in Europe.</li> <li>• The regulator in Latvia – BSO part has always been budgeted in deficit. 12 million deficit paid year by year by unforeseen funds. It costs 38 million a year (ministry), but in mid-term budgets its budgeted at 23 million a year (government gives as state funding). So every year people know that they need to find 12 million from somewhere. Organisations plan their activities on 38 million as they know the money will be found. The monetary relationships at the moment follow a silent agreement that all the debts will be settled eventually.</li> </ul>
<p>What are your organisations top three biggest business risks? How and where have you identified these?</p>	
<p>What things (if any) do you believe are unique about the operation of the railway and railway infrastructure in your Country? Why?</p>	

### Stakeholder View Of Target Operating Model

This section is designed to enable you to describe how you see a high performing infrastructure manager should operate.

<p>We are undertaking benchmarking of international railways. Are there any examples that you think are worth our examining.</p>	<p>Paris – TGV.</p>
<p>What do you think the obligations of any infrastructure manager are? Core (and optional below) Do these include train operations?</p>	
<p>What do you think the optional functions are for any infrastructure manager?</p>	

<p>What metrics would you use to test the effectiveness of any structure?</p>	<ul style="list-style-type: none"> <li>• Cost side for rail Baltica and synergy with existing infrastructure manager.</li> <li>• Safety standards</li> <li>• Precision standards</li> <li>• Cost per km, cost per train (difficult to get)</li> <li>• Ongoing maintenance costs</li> <li>• Ticket pricing</li> <li>• Lack of knowledge on the inspectorate of things from the guidelines.</li> <li>• It's not just the cost per km, it has to be sustainable and the pricing has to be competitive with other modes of transport.</li> <li>• The biggest concern is that they want to be comfortable that the ongoing costs are affordable and appropriate, and that we should try to save money.</li> </ul>
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Your Vision For Rail Baltica

<p>Can you describe your view of the optimal arrangements for Rail Baltica. Please draw an organisational chart. Please include who operates: Passenger services; Freight services; Infrastructure inspection; Infrastructure standards and systems design; Timetable planning; Civil and system maintenance and renewal; Terminal; Rolling stock (locomotives, wagons and passenger trains)</p>	<ul style="list-style-type: none"> <li>• Would like vertical integrated structure covering costs so the train service would operate this with minimal state subsidy, with dividend.</li> <li>• For IM. Lowest possible costs for operation, using existing personnel from the IMs. Worst case is competing infrastructure managers. Challenge to put the networks together. Synergies e.g. Staff/ feed in services.</li> <li>• Warwick question: What would you do with the outcome if it were not cheaper to use a non-Latvian operator for the IM?</li> <li>• Answer: (no clear answer). You to look at the whole network, how much will it cost the state? I agree that if its open competition we may not get any dividend. But also with open market there is a lot of discussions of how to run this properly. If Estonian railways is cheaper than Latvian, it may cost more to maintain Latvian railways and should balance this. How is this possible?</li> <li>• In Latvia we consider railway network to be united. Implications of a non-united network if a 3<sup>rd</sup> party was to run Rail Baltica. They don't want competing Trans Management Systems.</li> </ul> <p>Interests of Rail Baltica should be balanced with the whole network.</p>
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*Memo : Questions which were not raised (due to the flow of conversation) or for which no answers were given have not been included in this section.*

## F.13.4. DIRECTIVE 2012/34/EU OF THE EUROPEAN PARLIAMENT – SERA

Link: [https://ppp.worldbank.org/public-private-partnership/sites/ppp.worldbank.org/files/documents/DIRECTIVE%202012\\_34EU%20OF%20THE%20EUROPEAN%20PARLIAMENT%20AND%20OF%20THE%20COUNCIL\\_establishing%20a%20single%20Euro%20railway.pdf](https://ppp.worldbank.org/public-private-partnership/sites/ppp.worldbank.org/files/documents/DIRECTIVE%202012_34EU%20OF%20THE%20EUROPEAN%20PARLIAMENT%20AND%20OF%20THE%20COUNCIL_establishing%20a%20single%20Euro%20railway.pdf)

Ref	Text	Analysis
Article 1 (14)	The profit and loss account of an infrastructure manager should be balanced over a reasonable time period, which, once established, might be exceeded under exceptional circumstances, such as a major and sudden deterioration in the economic situation in a Member State affecting substantially the level of traffic on its infrastructure or the level of available public financing. In accordance with international accounting rules, the amount of loans to finance infrastructure projects does not appear in such profit and loss accounts.	Ability of each national infrastructure manager to absorb the potential system shock associated with falling revenues associate with either the whole route or each route section. Use a proxy for route km versus their total exposure for the whole route. Latvia est. 2,269km, Lithuania, 1,766km, Estonia 2,164km
Article 1 (36)	Infrastructure managers should be given incentives, such as bonuses for managing directors, to reduce the level of access charges and the costs of providing infrastructure.	Motivation to maximise utilisation of the existing network versus the new build in the longer term impacting the revenues for utilisation of the RB route e.g. break point risk for early transfer onto other gauge networks or different routings.
Article 1 (49)	In order to take into account the need of users, or potential users, of railway infrastructure capacity to plan their business, and the needs of customers and funders, it is important that infrastructure managers ensure that infrastructure capacity is allocated in a way which reflects the need to maintain and improve service reliability levels.	Challenge of a national organisation would be the fact that each country's national infrastructure manager would not have visibility, engagement or understanding of the customers using the line. Is it realistic to think that if three InfraCo's were in place that for example, Lithuania would understand the market trends and demands from freight operators in Finland?

Article 1 (66)	Investment in railway infrastructure is necessary and infrastructure charging schemes should provide incentives for infrastructure managers to make appropriate investments economically attractive.	The relationship between risk sharing would be key to ensure that infrastructure investment and maintenance is done in a manner which ensures the risk of asset failure, delay and disruption does not pass between InfraCo's. For example, if country 'A' fails to maintain the asset, then delay compensation should not be spread across the other parties. We need to think here about how this is going to work in terms of asset standards.
Article 1 (67)	To enable the establishment of appropriate and fair levels of infrastructure charges, infrastructure managers need to record and establish the value of their assets and develop a clear understanding of the factors which determine the cost of operating the infrastructure.	Establishing the current position here is beyond the scope of the study, but in order to determine accurate pricing and stop the risk of market distortion and associated state aid risk that common accounting practices would need to be in place across individual InfraCos, something made potentially more complex by national legislation and the approach to balance sheet treatments.
Article 1 (71)	Railway infrastructure is a natural monopoly and it is therefore necessary to provide infrastructure managers with incentives to reduce costs and to manage their infrastructure efficiently.	In principle, fully agree, but does the existence of the Amber route alter this? What would it look like if RB was a single entity and the 3 national InfraCo's offered alternative train paths together in competition to undercut the business case?
Article 2 (6)	Member States may decide time periods and deadlines for the schedule for capacity allocation which are different from those referred to in Article 43(2), point 2(b) of Annex VI and points 3, 4 and 5 of Annex VII if the establishment of international train paths in cooperation with infrastructure managers of third countries on a network whose track gauge is different from the main rail network within the Union has a significant impact on the schedule for capacity allocation in general.	
Article 2 (2)	'infrastructure manager' means any body or firm responsible in particular for establishing, managing and maintaining railway infrastructure, including traffic management and control-command and signalling; the functions of the infrastructure manager	Definition to use in document.

	on a network or part of a network may be allocated to different bodies or firms;	
Article 3 (18)	'allocation' means the allocation of railway infrastructure capacity by an infrastructure manager;	
Article 3 (25)	'network' means the entire railway infrastructure managed by an infrastructure manager;	
Article 4 (2)	While respecting the charging and allocation framework and the specific rules established by the Member States, the infrastructure manager shall be responsible for its own management, administration and internal control.	What would this look like for each of the scenarios
Article 7 (2)	Where the infrastructure manager, in its legal form, organisation or decision-making functions, is not independent of any railway undertaking, the functions referred to in Sections 2 and 3 of Chapter IV shall be performed respectively by a charging body and by an allocation body that are independent in their legal form, organisation and decision-making from any railway undertaking.	Need to understand the position in each of the countries and the position they are progressing to and understand the potential complexity of what this could look like in transition, as well as what this would look like for differing positions in each of the states. Potentially could one national body bid to be the charging and allocation body?
Article 7 (3)	3. When the provisions of Sections 2 and 3 of Chapter IV refer to the essential functions of an infrastructure manager, they shall be understood as applying to the charging body or the allocation body for their respective powers.	
Article 8 (1)	1. Member States shall develop their national railway infrastructure by taking into account, where necessary, the general needs of the Union, including the need to cooperate with neighbouring third countries. For that purpose, they shall publish by 16 December 2014, after consultation with the interested parties, an indicative rail infrastructure development strategy with a view to meeting future mobility needs in terms of maintenance, renewal and development of the infrastructure based on sustainable financing of the railway system. That strategy shall cover a period of at least five years and be renewable.	Check to see if this has been developed and published, what was the view in these documents as to whether or not Rail Baltica was seen as a requirement to meet these needs. This must still be in place. What mechanisms do they have which will look at how these areas interact to provide good outcomes.

Article 13 (1)	1. Infrastructure managers shall supply to all railway undertakings, in a non-discriminatory manner, the minimum access package laid down in point 1 of Annex II.	
Article 13 (8)	8. Railway undertakings may request, as ancillary services, further services referred to in point 4 of Annex II from the infrastructure manager or from other operators of the service facility. The operator of the service facility is not obliged to supply these services. Where the operator of the service facility decides to offer to others any of these services, it shall supply them upon request to railway undertakings in a non-discriminatory manner.	If the infrastructure manager is not the provider of the service facility, what are the implications of this? Are there any pre-existing contracts in terms of supply that preclude this occurring with the national providers, or are existing service facilities at capacity which could therefore impact the effectiveness of this provision.
Article 28	Any railway undertaking engaged in rail transport services shall conclude the necessary agreements under public or private law with the infrastructure managers of the railway infrastructure used. The conditions governing such agreements shall be non-discriminatory and transparent, in accordance with this Directive.	This would appear to mean that in the event there are multiple InfraCo's then there would need to be 3 contractual agreements in place, under 3 legal frameworks for the delivery of services. What does this mean in terms of lead-time, issues in signing - this is potentially a major challenge for the supply chain. How would this work for train paths?
Article 29 (1)	The infrastructure manager shall determine and collect the charge for the use of infrastructure in accordance with the established charging framework and charging rules.	3 individual charges into suppliers? Triple the overhead and administrative burden.
Article 29 (3)	Infrastructure managers shall ensure that the application of the charging scheme results in equivalent and non-discriminatory charges for different railway undertakings that perform services of an equivalent nature in a similar part of the market and that the charges actually applied comply with the rules laid down in the network statement.	Individual infrastructure managers would not need to have track access charging on a level playing field with existing (non RB infrastructure). They could non-discriminate on companies wishing to use the route, but still drive traffic elsewhere.
Article 30 (1)	1. Infrastructure managers shall, with due regard to safety and to maintaining and improving the quality of the infrastructure service, be given incentives to reduce the costs of providing infrastructure and the level of access charges.	Probably no major issue, but what would this look like in terms of cross border optimisation. How does this work on an ongoing basis, with regards to further investment?

Article 30 (7)	7. Infrastructure managers shall develop and maintain a register of their assets and the assets they are responsible for managing which would be used to assess the financing needed to repair or replace them. This shall be accompanied by details of expenditure on renewal and upgrading of the infrastructure.	There would be a need for a supranational system coordinator and close working to agreed standards. This is a system - how would the cost apportionment be decided and the associated track access charges - what would be reasonable? What if a national InfraCo decides to gold plate maintenance e.g. lots of headcount with poor utilisation and recover this? How would any central body know that the work being charged for is actually being done? This seems to lead to a central asset management organisation (even if a small one) to ensure VfM. Are we looking at asset based approaches vs geography? How does this play into economies of scale versus geography?
Article 30 (8)	8. Infrastructure managers shall establish a method for apportioning costs to the different categories of services offered to railway undertakings. Member States may require prior approval. That method shall be updated from time to time on the basis of the best international practice.	Could an environment with differing cost apportionment by route across country be acceptable, even though this complexity must exist today? What would be the motivation for effective and accurate cost apportionment to service categories if at a national level as the outcome would always be lowest common denominator.
Article 31 (2)	Member States shall require the infrastructure manager and the operator of service facility to provide the regulatory body with all necessary information on the charges imposed in order to allow the regulatory body to perform its functions as referred to in Article 56. The infrastructure manager and the operator of service facility shall, in this regard, be able to demonstrate to railway undertakings that infrastructure and service charges actually invoiced to the railway undertaking pursuant to Articles 30 to 37 comply with the methodology, rules and, where applicable, scales laid down in the network statement.	This would appear to result in a complex environment, given that some elements of central costs would need to be incurred due to functional separation and would require regulatory bodies to work with each other to have a common position of the truth with regards to central overheads and their apportionment, for example the design of the telecoms network and the number of NOCs etc. The physical location of the assets will impact this.
Article 31 (5)	Any such modification of infrastructure charges to take account of the cost of noise effects shall support the retrofitting of wagons with the most economically viable low-noise braking technology available. Charging of environmental costs which results in an increase in the overall revenue	What are the implications of this if one country has an issue and then unilaterally chooses to impose this? What if this impacts traffic flows and therefore adversely impact traffic and revenues on other areas of the network - what would this look like in terms of compensation events?

	accruing to the infrastructure manager shall however be allowed only if such charging is applied to road freight transport in accordance with Union law.	
Article 31 (9)	Charges may be levied for capacity used for the purpose of infrastructure maintenance. Such charges shall not exceed the net revenue loss to the infrastructure manager caused by the maintenance.	What is the difference (legally) between maintenance and renewal, if any? No profit to be made through maintenance and therefore what is the benefit of local InfraCo's getting more volume - is it economy of scale? What about the different networks, skills, capabilities versus an EU model? Need to check what the existing technologies are in place that are being used. How do we quantify the synergies?
Article 32 (1)	In order to obtain full recovery of the costs incurred by the infrastructure manager a Member State may, if the market can bear this, levy mark-ups on the basis of efficient, transparent and non-discriminatory principles, while guaranteeing optimal competitiveness of rail market segments. The charging system shall respect the productivity increases achieved by railway undertakings.	The challenge here lies around a potential differing approach to the recovery of costs of the infrastructure manager. A differing approach to this could have a significant impact on the traffic patterns of the route as a whole, the consequence of which would be a risk to viability, particularly as some of the risk and impact of this would be transferred onto the other stakeholders. Map this as a diagram!
Article 32 (3)	For specific future investment projects, or specific investment projects that have been completed after 1988, the infrastructure manager may set or continue to set higher charges on the basis of the long-term costs of such projects if they increase efficiency or cost-effectiveness or both and could not otherwise be or have been undertaken. Such a charging arrangement may also incorporate agreements on the sharing of the risk associated with new investments.	This allows for national level cost recovery of the investment and is probably key to any spurs or other developments. How would these dovetail together?
Article 32 (4)	The infrastructure charges for the use of railway corridors which are specified in Commission Decision 2009/561/EC (1) shall be differentiated to give incentives to equip trains with the ETCS compliant with the version adopted by the Commission Decision 2008/386/EC (2) and successive versions. Such differentiation shall not	Common problem for all parties.

	result in any overall change in revenue for the infrastructure manager.	
Article 32 (5)	To prevent discrimination, Member States shall ensure that any given infrastructure manager's average and marginal charges for equivalent use of its infrastructure are comparable and that comparable services in the same market segment are subject to the same charges. The infrastructure manager shall show in the network statement that the charging system meets these requirements in so far as this can be done without disclosing confidential business information.	Is there an increased risk of leakage with multiple infrastructure managers?
Article 32 (1)	Without prejudice to Articles 101, 102, 106 and 107 TFEU and notwithstanding the direct cost principle laid down in Article 31(3) of this Directive, any discount on the charges levied on a railway undertaking by the infrastructure manager, for any service, shall comply with the criteria set out in this Article. 2. With the exception of paragraph 3, discounts shall be limited to the actual saving of the administrative cost to the infrastructure manager. In determining the level of discount, no account may be taken of cost savings already internalised in the charge levied.	
Article 33 (3)	Infrastructure managers may introduce schemes available to all users of the infrastructure, for specified traffic flows, granting time-limited discounts to encourage the development of new rail services, or discounts encouraging the use of considerably underutilised lines.	Check potential for diversion onto other routes? This is permitted, therefore a genuine risk.
Article 35 (1)	PERFORMANCE: Infrastructure charging schemes shall encourage railway undertakings and the infrastructure manager to minimise disruption and improve the performance of the railway network through a performance scheme. This scheme may include penalties for actions which disrupt the operation of the network, compensation for undertakings which suffer from	Schedule 4 and Schedule 8 equivalents. Complexity of delay attribution cascaded across multiple infrastructure managers.

	disruption and bonuses that reward better-than-planned performance.	
Article 36	<p><b>RESERVATION CHARGES:</b> Infrastructure managers may levy an appropriate charge for capacity that is allocated but not used. That non-usage charge shall provide incentives for efficient use of capacity. The levy of such a charge on applicants that were allocated a train path shall be mandatory in the event of their regular failure to use allocated paths or part of them. For the imposition of this charge, the infrastructure managers shall publish in their network statement the criteria to determine such failure to use. The regulatory body referred to in Article 55 shall control such criteria in accordance with Article 56. Payments for this charge shall be made by either the applicant or the railway undertaking appointed in accordance with Article 41(1). The infrastructure manager shall always be able to inform any interested party of the infrastructure capacity which has already been allocated to user railway undertakings.</p>	Complexity of communicating across train paths where these are partial (perhaps within a national region only) and the impact of these on the network as a whole (potential for something novel, like reserved national capacity?)
Article 37	Article 37 - Cooperation in relation to charging systems on more than one network	
Article 37 (1)	Member States shall ensure that infrastructure managers cooperate to enable the application of efficient charging schemes, and associate to coordinate the charging or to charge for the operation of train services which cross more than one infrastructure network of the rail system within the Union. Infrastructure managers shall, in particular, aim to guarantee the optimal competitiveness of international rail services and ensure the efficient use of the railway networks. To this end they shall establish appropriate procedures, subject to the rules set out in this Directive.	This is key, but this also reflects the optimisation of existing structural touchpoints and therefore the question of what is optimal for Rail Baltica should not be constrained for this. A better question is what is better in terms of value for money for the EU. Are we being asked the wrong question?

<p>Article 38 (4)</p>	<p>Where an applicant intends to request infrastructure capacity with a view to operating an international passenger service, it shall inform the infrastructure managers and the regulatory bodies concerned. In order to enable them to assess whether the purpose of the international service is to carry passengers on a route between stations located in different Member States, and what the potential economic impact on existing public service contracts is, regulatory bodies shall ensure that any competent authority that has awarded a rail passenger service on that route defined in a public service contract, any other interested competent authority with a right to limit access under Article 11 and any railway undertaking performing the public service contract on the route of that international passenger service is informed.</p>	<p>The lead time associated with 3 infra, 3 to 6 regulatory bodies could be huge. The more bodies, the less attractive to the supply chain? Who would make the ultimate call? How would there be a guiding mind? Who would create the single point assessment criteria?</p>
<p>Article 41 (2)</p>	<p>The infrastructure manager may set requirements with regard to applicants to ensure that its legitimate expectations about future revenues and utilisation of the infrastructure are safeguarded. Such requirements shall be appropriate, transparent and non-discriminatory. They shall be specified in the network statement as referred to in point 3(b) of Annex IV. They may only include the provision of a financial guarantee that shall not exceed an appropriate level which shall be proportional to the contemplated level of activity of the applicant, and assurance of the capability to prepare compliant bids for infrastructure capacity</p>	<p>National complexity versus supranational models</p>
<p>Article 43 (3)</p>	<p>Infrastructure managers shall agree with the other relevant infrastructure managers concerned which international train paths are to be included in the working timetable, before commencing consultation on the draft working timetable. Adjustments shall only be made if absolutely necessary</p>	<p>There are duties on working together, therefore the issues are around behaviours? Do we reference the event in Lithuania? THE European Commission (EC) has fined Lithuanian Railways (LG) €27.87m for breaching EU competition law by removing a section of track on a cross-border link with Latvia to force a customer to continue using a more circuitous route.</p>

		Contrast this with new cooperation under the Amber Train?
Article 44 (4)	For train paths crossing more than one network, infrastructure managers shall ensure that applicants may apply to a one-stop shop that is either a joint body established by the infrastructure managers or one single infrastructure manager involved in the train path. That infrastructure manager shall be permitted to act on behalf of the applicant to seek capacity with other relevant infrastructure managers. This requirement is without prejudice to Regulation (EU) No 913/2010 of the European Parliament and of the Council of 22 September 2010 concerning a European rail network for competitive freight (1).	This is at the heart of the problem and defines what Rail Baltica could be - a joint board with a representative from each country?
Article 45 (1)	The infrastructure manager shall, as far as possible, meet all requests for infrastructure capacity including requests for train paths crossing more than one network, and shall, as far as possible, take account of all constraints on applicants, including the economic effect on their business.	If they are commercial enterprises, then they should not be in a position of making decisions that could harm their core business. Is the challenge circling around the natural monopoly of the railway in the region?
Article 46 (3)	The infrastructure manager shall attempt, through consultation with the appropriate applicants, to resolve any conflicts. Such consultation shall be based on the disclosure of the following information within a reasonable time, free of charge and in written or electronic form:	Again, the issue is one of interface complexity.
Article 48 (2)	Infrastructure managers shall, where necessary, undertake an evaluation of the need for reserve capacity to be kept available within the final scheduled working timetable to enable them to respond rapidly to foreseeable ad hoc requests for capacity. This shall	Perhaps better locally? Alternative pathing? How does this play to a central system operator? Implications for militarisation and need for centralised analysis capability? Also issue of more touch points in terms of risk? Is there a parallel in terms of

	also apply in cases of congested infrastructure.	how items such as the Royal Train is used?
Article 51 (1)	Capacity-enhancement plan 1. Within six months of the completion of a capacity analysis, the infrastructure manager shall produce a capacity enhancement plan.	What capabilities does the infrastructure manager have to have in house?
Article 53 (3)	The infrastructure manager shall inform, as soon as possible, interested parties about the unavailability of infrastructure capacity due to unscheduled maintenance work.	Multiple customer liaison teams would be required from each Infrastructure Manager? Who is best placed to make the communication, who will the liaison be with? Freight, passengers? Language requirements?
Article 54 (1)	Special measures to be taken in the event of disturbance 1. In the event of disturbance to train movements caused by technical failure or accident the infrastructure manager shall take all necessary steps to restore the situation to normal. To that end, it shall draw up a contingency plan listing the various bodies to be informed in the event of serious incidents or serious disturbance to train movements.	Cost apportionment? Are there specific areas of the infrastructure where there will be a higher risk of failure? Flood areas? Snow drift? Who is best placed to make restitution?
Article 54 (2)	The infrastructure manager may, if it deems this necessary, require railway undertakings to make available to it the resources which it feels are the most appropriate to restore the situation to normal as soon as possible.	No differentiator
Article 55 (1)	Each Member State shall establish a single national regulatory body for the railway sector. Without prejudice to paragraph 2, this body shall be a stand-alone authority which is, in organisational, functional, hierarchical and decision-making terms, legally distinct and independent from any other public or private entity. It shall also be independent in its organisation, funding decisions, legal structure and decision making from any infrastructure manager, charging body, allocation body or applicant. It shall furthermore be functionally independent from any competent authority involved in the award of a public service contract.	Regardless, the regulator applies at a national level.

Article 56 (2)	2. Without prejudice to the powers of the national competition authorities for securing competition in the rail services markets, the regulatory body shall have the power to monitor the competitive situation in the rail services markets and shall, in particular, control points (a) to (g) of paragraph 1 on its own initiative and with a view to preventing discrimination against applicants. It shall, in particular, check whether the network statement contains discriminatory clauses or creates discretionary powers for the infrastructure manager that may be used to discriminate against applicants.	There is no obligation for the national regulator to ensure that there is not a distortion of the market outside their own boundaries? Where does the law lie for this?
Article 57 (8)	8. The regulatory body shall have the power to request relevant information from the infrastructure manager, applicants and any third party involved within the Member State concerned	How will they get supranational information? Where is the single source of the truth and what are the cost implications of developing this?
Article 56 (12)	12. The regulatory body shall have the power to carry out audits or initiate external audits with infrastructure managers, operators of service facilities and, where relevant, railway undertakings, to verify compliance with accounting separation provisions laid down in Article 6. In this respect, the regulatory body shall be entitled to request any relevant information. In particular the regulatory body shall have the power to request infrastructure manager, operators of service facilities and all undertakings or other entities performing or integrating different types of rail transport or infrastructure management as referred to in Article 6(1) and (2) and Article 13 to provide all or part of the accounting information listed in Annex VIII with a sufficient level of detail as deemed necessary and proportionate.	What would a regulatory accounting schedule look like? Would a supranational body end up getting audited every year? How would a legal relationship need to be established in order to manage this? What would the differences in accounting treatments mean? What would the obligations be around establishing value for money? Who controls the procurement function
Article 57 (9)	Regulatory bodies shall review decisions and practices of associations of infrastructure managers as referred to in Article 37 and Article 40(1) that implement provisions of this Directive or otherwise facilitate international rail transport.	Does this imply regulatory reach into other nation states?

(4)

Member States with an important share of rail traffic with third countries which have the same railway gauge which is different from the main rail network within the Union should be able to have specific operational rules ensuring both coordination between their infrastructure managers and those of the third countries concerned and fair competition between railway undertakings.

What does this mean in practice.

## F.13.5. C1 DIRECTIVE 2004/49/EC OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 29 April 2004

Link: <https://eur-lex.europa.eu/legal-content/EN/TXT/HTML/?uri=CELEX:02004L0049-20091218&from=EN>

Ref	Text	Analysis
5	All those operating the railway system, infrastructure managers and railway undertakings, should bear the full responsibility for the safety of the system, each for their own part. Whenever it is appropriate, they should cooperate in implementing risk control measures. Member States should make a clear distinction between this immediate responsibility for safety and the safety authorities' task of providing a national regulatory framework and supervising the performance of the operators.	All safety authorities must supervise on a national basis
6	The responsibility of infrastructure managers and railway undertakings for operating the railway system does not preclude other actors such as manufacturers, maintenance suppliers, wagon keepers, service providers and procurement entities from assuming responsibility for their products or services in accordance with the provisions of Council Directive 96/48/EC of 23 July 1996 on the interoperability of the trans-European high-speed rail system (1) and of Directive 2001/16/EC of the European Parliament and of the Council of 19 March 2001 on the interoperability of the trans-European conventional rail system (2) or of other relevant Community legislation.	There is no material difference in impact on either a single IM or a multiple IM scenario.
13	In carrying out their duties and fulfilling their responsibilities, infrastructure managers and railway undertakings should implement a safety management system, fulfilling Community requirements and containing common elements. Information on safety and the implementation of the safety management system should be submitted to the safety authority in the Member State concerned.	For Draft Report: - How will submission be managed? – Common safety method
17	Every infrastructure manager has a key responsibility for the safe design, maintenance and operation of its rail network. In parallel to safety certification of railway undertakings the infrastructure manager should be subject to safety authorisation by the safety authority concerning its safety management system and other provisions to meet safety requirements.	There is no material difference in impact on either a single IM or a multiple IM scenario.

Article 3 (b)	'infrastructure manager' means any body or undertaking that is responsible in particular for establishing and maintaining railway infrastructure, or a part thereof, as defined in Article 3 of Directive 91/440/EEC, which may also include the management of infrastructure control and safety systems. The functions of the infrastructure manager on a network or part of a network may be allocated to different bodies or undertakings;	For Draft Report: Confirm flexibility of models
Article 3 (i)	'safety management system' means the organisation and arrangements established by an infrastructure manager or a railway undertaking to ensure the safe management of its operations;	There is no material difference in impact on either a single IM or a multiple IM scenario.
Article 4 (3)	3. Member States shall ensure that the responsibility for the safe operation of the railway system and the control of risks associated with it is laid upon the infrastructure managers and railway undertakings, obliging them to implement necessary risk control measures, where appropriate in cooperation with each other, to apply national safety rules and standards, and to establish safety management systems in accordance with this Directive.	There is no material difference in impact on either a single IM or a multiple IM scenario.
Article 4 (3)	Without prejudice to civil liability in accordance with the legal requirements of the Member States, each infrastructure manager and railway undertaking shall be made responsible for its part of the system and its safe operation, including supply of material and contracting of services, vis-à-vis users, customers, the workers concerned and third parties.	For Draft Report: This is an obligation. This impacts contracting models.
Article 8 (1)	In application of this Directive, Member States shall establish binding national safety rules and shall ensure that they are published and made available to all infrastructure managers, railway undertakings, applicants for a safety certificate and applicants for a safety authorisation in clear language that can be understood by the parties concerned.	There is no material difference in impact on either a single IM or a multiple IM scenario.
Article 9 (1)	1. Infrastructure managers and railway undertakings shall establish their safety management systems to ensure that the railway system can achieve at least the CSTs, is in conformity with the national safety rules described in Article 8 and Annex II and with safety requirements laid down in the TSIs, and that the relevant parts of CSMs are applied.	

Article 9 (3)	3. The safety management system of any infrastructure manager shall take into account the effects of operations by different railway undertakings on the network and make provisions to allow all railway undertakings to operate in accordance with TSIs and national safety rules and with conditions laid down in their safety certificate. It shall furthermore be developed with the aim of coordinating the emergency procedures of the infrastructure manager with all railway undertakings that operate on its infrastructure.	There is no material difference in impact on either a single IM or a multiple IM scenario.
Article (9) 4	4. Each year all infrastructure managers and railway undertakings shall submit to the safety authority before 30 June an annual safety report concerning the preceding calendar year. The safety report shall contain: (a) information on how the organisation's corporate safety targets are met and the results of safety plans; (b) the development of national safety indicators, and of the CSIs laid down in Annex I, as far as it is relevant to the reporting organisation;	There is no material difference in impact on either a single IM or a multiple IM scenario.
Article 11 (1)	1. In order to be allowed to manage and operate a rail infrastructure the infrastructure manager must obtain a safety authorisation from the safety authority in the Member State where he is established.	For Draft Report: Does this mean that the 3rd party (i.e. RB if it were to be a national company would require 3 safety cases)?
Article 13 (1)	Member States shall also ensure that infrastructure managers and their staff performing vital safety tasks have fair and non-discriminatory access to training facilities.	For Draft Report: Need to confirm the implications of this. In terms of economies of scale, there is a need for the existing InfraCos to provide access to RB
Article 13 (2)	If the training facilities are available only through the services of one single railway undertaking or the infrastructure manager, Member States shall ensure that they are made available to other railway undertakings at a reasonable and non-discriminatory price, which is cost related and may include a profit margin.	For Draft Report: Opportunity: Rail Baltica could use these for efficiency?
Article 14a (2)	2. A railway undertaking, an infrastructure manager or a keeper may be an entity in charge of maintenance.	There is no material difference in impact on either a single IM or a multiple IM scenario.
Article 17 (1)	In the process of developing the national regulatory framework, the safety authority shall consult all persons involved and interested parties, including infrastructure managers, railway undertakings, manufacturers and maintenance providers, users and staff representatives.	For Draft Report: If RB a national authority, would mean that more consultation would be needed and hence as a consequence there would be an increase in costs. The downside would be external regulatory cost and a smaller regulator may incur double the cost.

Article 21 (3)	Member States shall make provision that railway undertakings, infrastructure managers and, where appropriate, the safety authority, are obliged immediately to report accidents and incidents referred to in Article 19 to the investigating body.	There is no material difference from the (perspective of the infrastructure manager) in impact on either a single IM or a multiple IM scenario, in that while the Agency has the final decision for issuing the vehicle authorisation when the intended route involves more than one member state and while the National Safety Authority of the member state has final authorisation where a unique member state is involved, this remains an external point of contact.
Pg. 35	The safety management system must be documented in all relevant parts and shall in particular describe the distribution of responsibilities within the organisation of the infrastructure manager or the railway undertaking. It shall show how control by the management on different levels is secured, how staff and their representatives on all levels are involved and how continuous improvement of the safety management system is ensured.	

## F.13.6. Directive (EU) 2016/2370 of the European Parliament and of the Council of 14 December 2016

Link: <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32016L2370&from=EN>

Ref	Text	Analysis
(5)	The operation of railway infrastructure on a network includes control-command and signalling. So long as a line is in operation, the infrastructure manager should ensure in particular that the infrastructure is suitable for its designated use.	For Draft Report: There is no material difference in impact on either a single IM or a multiple IM scenario.
(6)	In order to establish whether an undertaking should be considered to be vertically integrated, the notion of control within the meaning of Council Regulation (EC) No 139/2004 (3) should be applied. Where an infrastructure manager and a railway undertaking are fully independent of one another, but both are controlled directly by the State without an intermediary entity, they should be considered to be separate. A government ministry exercising control over both a railway undertaking and an infrastructure manager should not be considered to be an intermediary entity.	For Draft Report: Important from a compliance perspective.
(7)	This Directive introduces further requirements to ensure the independence of the infrastructure manager. Member States should be free to choose between different organisational models, ranging from full structural separation to vertical integration, subject to appropriate safeguards to ensure the impartiality of the infrastructure manager as regards the essential functions, traffic management and maintenance planning. Member States should ensure that, within the limits of the established charging and allocation frameworks, the infrastructure manager enjoys organisational and decision-making independence as regards the essential functions	For Draft Report: No obligation to agree a common position?
(9)	Member States should put in place a national framework for the assessment of conflict of interests. Within this framework, the regulatory body should take into account any personal financial, economic or professional interests which could improperly influence the impartiality of the infrastructure manager. Where an infrastructure manager and a railway undertaking are independent of one another the fact that they are directly controlled by the same Member State authority should not be considered to give rise to a conflict of interest within the meaning of this Directive.	
(10)	Decision-making by infrastructure managers with respect to train path allocation and decision-making with respect to infrastructure charging are essential functions that are vital for ensuring equitable and non-discriminatory access to rail infrastructure. Stringent safeguards should be put in place to avoid any undue influence being brought to bear on decisions taken by the infrastructure	

	manager relating to such functions. Those safeguards should be adapted to take into account the different governance structures of railway entities.	
(11)	Appropriate measures should also be taken to ensure that the functions of traffic management and maintenance planning are exercised in an impartial manner to avoid any distortion of competition. Within this framework, infrastructure managers should ensure that railway undertakings have access to relevant information. In this context, where railway undertakings have been granted further access to the traffic management process by the infrastructure managers, such access should be granted on equal terms to all railway undertakings concerned.	There is no material difference in impact on either a single IM or a multiple IM scenario.  For Draft Report: Except potentially through the concession process if the RV gets privileged into?
(12)	Where the essential functions are performed by an independent charging and/or allocation body, the impartiality of the infrastructure manager as regards the functions of traffic management and maintenance should be ensured without the need for transferring these functions to an independent entity	
(14)	Member States should, as a general rule, ensure that the infrastructure manager is responsible for the operation, maintenance and renewal on a network and is entrusted with the development of the railway infrastructure on that network. Where those functions are outsourced to different entities, the infrastructure manager should nevertheless retain supervisory power and bear ultimate responsibility for their exercise.	
(15)	Infrastructure managers that are part of a vertically integrated undertaking may outsource within that undertaking functions other than the essential functions subject to the conditions set out in this Directive, provided that this does not give rise to a conflict of interest and that the confidentiality of commercially sensitive information is guaranteed. Essential functions should not be outsourced to any other entity of the vertically integrated undertaking, unless such entity exclusively performs essential functions.	
(16)	Where appropriate, in particular for reasons of efficiency, including in cases of public-private partnerships, the functions of infrastructure management may be shared between different infrastructure managers. Infrastructure managers should each bear full responsibility for the functions they exercise.	For Draft Report: Option to split responsibility may exist within the IMs examples: only Latvia does TM
(17)	Financial transfers between the infrastructure manager and railway undertakings, and in vertically integrated undertakings between the infrastructure manager and any other legal entity of the integrated undertaking, should be prevented, where they could lead to a distortion of competition on the market, in particular as a result of cross-subsidisation.	For Draft Report: There is no material difference in impact on either a single IM or a multiple IM scenario.

(18)	<p>Infrastructure managers may use income from infrastructure network management activities that involve the use of public funds to finance their own business or to pay dividends to their investors, as a return on their investments in railway infrastructure. Such investors may include the State and any private shareholders, but may not include undertakings which are part of a vertically integrated undertaking and which exercise control over both a railway undertaking and that infrastructure manager. Dividends generated by activities that do not involve the use of public funds or revenues from charges for the use of railway infrastructure may also be used by undertakings which are part of a vertically integrated undertaking and which exercise control over both a railway undertaking and that infrastructure manager</p>	<p>For Draft Report: There is no material difference in impact on either a single IM or a multiple IM scenario.</p>
(20)	<p>Where in a vertically integrated undertaking the infrastructure manager does not have distinct legal personality and the essential functions are externalised by assigning them to an independent charging and/or allocation body, the relevant provisions regarding financial transparency and the independence of the infrastructure manager should apply mutatis mutandis at the level of certain divisions within the undertaking</p>	<p>Not Applicable</p>
(21)	<p>In order to achieve efficient network management and an efficient use of infrastructure, better coordination between infrastructure managers and railway undertakings should be ensured through the use of appropriate coordination mechanisms.</p>	<p>This reflects the core premise of this study.</p>
(22)	<p>With a view to facilitating the provision of efficient and effective rail services within the Union, a European Network of Infrastructure Managers should be established, building on existing platforms. For the purpose of participating in this network, Member States should be free to determine which body or bodies should be considered to be their main infrastructure managers</p>	<p>For Draft Report: PRIME? Even if RB exists a member state may not.</p>
(24)	<p>Granting Union railway undertakings the right of access to railway infrastructure in all Member States for the purpose of operating domestic passenger services might have implications for the organisation and financing of rail passenger services provided under a public service contract. Member States should have the option of limiting such right of access where it would compromise the economic equilibrium of those public service contracts based on a decision by the relevant regulatory body</p>	<p>For Draft Report: Does this mean that member states will always have veto rights on passenger concession activity.</p>
(36)	<p>Infrastructure managers should cooperate concerning incidents or accidents with an impact on cross-border traffic with a view to sharing any relevant information enabling swift restoration of normal traffic.</p>	<p>Reflected in MCA.</p>
Pg 9	<p>Member States may decide that infrastructure charging and path allocation shall be performed by a charging body and/or by an allocation body that are independent in their legal form, organisation and decision-making</p>	<p>There is no material difference in impact on either a single IM or a multiple IM scenario.</p>

	<p>from any railway undertaking. In such a case, Member States may decide not to apply the provisions of Article 7(2) and points (c) and (d) of Article 7(3).</p>	
Pg 9	<p>Outsourcing and sharing the infrastructure manager's functions</p> <p>1. Provided that no conflicts of interest arise and that the confidentiality of commercially sensitive information is guaranteed, the infrastructure manager may:</p> <p>(a) outsource functions to a different entity, provided the latter is not a railway undertaking, does not control a railway undertaking, or is not controlled by a railway undertaking. Within a vertically integrated undertaking, essential functions shall not be outsourced to any other entity of the vertically integrated undertaking, unless such entity exclusively performs essential functions;</p> <p>(b) outsource the execution of works and related tasks on development, maintenance and renewal of the railway infrastructure to railway undertakings or companies which control the railway undertaking, or are controlled by the railway undertaking. The infrastructure manager shall retain the supervisory power over, and bear ultimate responsibility for, the exercise of the functions described in Article 3(2). Any entity carrying out essential functions shall comply with Articles 7, 7a, 7b and 7d.</p> <p>2. By way of derogation from Article 7(1), infrastructure management functions may be performed by different infrastructure managers, including parties to public-private partnership arrangements provided that they all fulfil the requirements of Article 7(2) to (6) and Articles 7a, 7b and 7d and assume full responsibility for the exercise of the functions concerned.</p> <p>3. Where essential functions are not assigned to a power supply operator, it shall be exempted from the rules applicable to infrastructure managers, provided that compliance with the relevant provisions concerning development of the network, in particular Article 8, is ensured.</p> <p>4. Subject to supervision by the regulatory body or any other independent competent body determined by the Member States, an infrastructure manager may conclude cooperation agreements with one or more railway undertakings in a non-discriminatory way and with a view to delivering benefits to customers such as reduced costs or improved performance on the part of the network covered by the agreement.</p> <p>That body shall monitor the execution of such agreements and may, where justified, advise that they should be terminated.</p>	<p>a – This precludes some activity such as a RU conducting traffic management or maintenance</p> <p>b – Statement: We need to consider the interaction of the RB models responsibility cannot exist without control.</p> <p>2 -This means a composite model can be created.</p> <p>3 – Does this mean that we can have an outsourced/private DNO?</p> <p>4 – This is the section of legislation that permits deep alliancing.</p>
Pg 10	<p>Financial transparency</p> <p>1. While respecting national procedures applicable in each Member State, income from infrastructure network</p>	<p>For Draft Report: The development of commercial activities must effectively be at arms length.</p>

	<p>management activities, including public funds, may be used by the infrastructure manager only to finance its own business, including the servicing of its loans. The infrastructure manager may also use such income to pay dividends to owners of the company, which may include any private shareholders, but excludes undertakings which are part of a vertically integrated undertaking and which exercise control over both a railway undertaking and that infrastructure manager.</p>	
Pg 10	<p>2. Infrastructure managers shall not grant loans to railway undertakings, either directly or indirectly.</p>	<p>There is no material difference in impact on either a single IM or a multiple IM scenario.</p>
Pg 10	<p>3. Railway undertakings shall not grant loans to infrastructure managers, either directly or indirectly.</p>	<p>There is no material difference in impact on either a single IM or a multiple IM scenario.</p>
Pg 10	<p>4. Loans between legal entities of a vertically integrated undertaking, shall only be granted, disbursed and serviced at market rates and conditions which reflect the individual risk profile of the entity concerned.</p>	<p>There is no material difference in impact on either a single IM or a multiple IM scenario.</p>
Pg 10	<p>5. Loans between legal entities of a vertically integrated undertaking granted before 24 December 2016 shall continue until their maturity, provided that they were contracted at market rates and that they are actually disbursed and serviced.</p>	<p>There is no material difference in impact on either a single IM or a multiple IM scenario.</p>
Pg 10	<p>6. Any services offered by other legal entities of a vertically integrated undertaking to the infrastructure manager shall be provided on the basis of contracts and be paid either at market prices or at prices which reflect the cost of production, plus a reasonable margin of profit.</p>	<p>For Draft Report: Any commercial activity must be at market rates e.g. cheaper telecoms cannot be provided to government (market distortion risk)</p>
Pg 10	<p>7. Debts attributed to the infrastructure manager shall be clearly separated from debts attributed to other legal entities within vertically integrated undertakings. Such debts shall be serviced separately. This does not prevent the final payment of debts being made via an undertaking which is part of a vertically integrated undertaking and which exercises control over both a railway undertaking and an infrastructure manager, or via another entity within the undertaking.</p>	<p>There is no material difference in impact on either a single IM or a multiple IM scenario.</p>
Pg 10	<p>8. The accounts of the infrastructure manager and of the other legal entities within a vertically integrated undertaking shall be kept in a way that ensures the fulfilment of this Article and allows for separate accounting and transparent financial circuits within the undertaking.</p>	<p>There is no material difference in impact on either a single IM or a multiple IM scenario.</p>

Pg 10	<p>9. Within vertically integrated undertakings, the infrastructure manager shall keep detailed records of any commercial and financial relations with the other legal entities within that undertaking.</p>	<p>There is no material difference in impact on either a single IM or a multiple IM scenario.</p>
Pg 10	<p>10. Where essential functions are performed by an independent charging and/or allocation body in accordance with Article 7a(3) and Member States are not applying Article 7(2), the provisions of this Article shall apply mutatis mutandis. References to infrastructure manager, railway undertaking and other legal entities of a vertically integrated undertaking in this Article shall be understood as referring to the respective divisions of the undertaking. Compliance with the requirements set out in this Article shall be demonstrated in the separate accounts of the respective divisions of the undertaking</p>	<p>There is no material difference in impact on either a single IM or a multiple IM scenario.</p>
Pg 11	<p>Coordination mechanisms</p> <p>Member States shall ensure that appropriate coordination mechanisms are put in place to ensure coordination between their main infrastructure managers and all interested railway undertakings as well as applicants referred to in Article 8(3). Where relevant, representatives of users of the rail freight and passenger transport services, and national, local or regional authorities, shall be invited to participate. The regulatory body concerned may participate as an observer. The coordination shall concern inter alia:</p> <ul style="list-style-type: none"> <li>(a) the needs of applicants related to the maintenance and development of the infrastructure capacity;</li> <li>(b) the content of the user-oriented performance targets contained in the contractual agreements referred to in Article 30 and of the incentives referred to in Article 30(1) and their implementation;</li> <li>(c) the content and implementation of the network statement referred to in Article 27;</li> <li>(d) issues of intermodality and interoperability;</li> <li>(e) any other issue related to the conditions for access, the use of the infrastructure and the quality of the services of the infrastructure manager.</li> </ul> <p>The infrastructure manager shall draw up and publish guidelines for coordination, in consultation with interested parties. Coordination shall take place at least annually and the infrastructure manager shall publish on its website an overview of the activities undertaken pursuant to this article.</p> <p>Coordination under this Article shall be without prejudice to the right of applicants to appeal to the regulatory body and the powers of the regulatory body as set out in Article 56</p>	<p>For Draft Report: Permits more than one main IM – potential for positive performance competition</p> <p>A single IM will need a communications function (external engagement)</p> <p>Significant resource implications</p>

Pg 11 | European Network of Infrastructure Managers

1. With the view to facilitating the provision of efficient and effective rail services within the Union, Member States shall ensure that their main infrastructure managers participate and cooperate in a network, that meets at regular intervals to:

- (a) develop Union rail infrastructure;
- (b) support the timely and efficient implementation of the single European railway area;
- (c) exchange best practices;
- (d) monitor and benchmark performance;
- (e) contribute to the market monitoring activities referred to in Article 15;
- (f) tackle cross-border bottlenecks; and
- (g) discuss the application of Articles 37 and 40.

For the purpose of point (d), the network shall identify common principles and practices for the monitoring and benchmarking of performance in a consistent manner.

Coordination under this paragraph shall be without prejudice to the right of applicants to appeal to the regulatory body and the powers of the regulatory body as set out in Article 56.

For Draft Report: What happens if one member state would not recognise its RB route IM as a main IM?

Potential conflict and risk here, RB could run the route but only if recognised as a 'main' IM.

F.13.7. Regulation (EU) 2016/796 on the European Union Agency for Railways and repealing Regulation (EC) n° 881/2004

Link: <https://eur-lex.europa.eu/legal-content/EN/TXT/HTML/?uri=CELEX:32016R0796&from=EN>

Little relevance to IM structure

F.13.8. Directive (EU) 2016/797 on the interoperability of the rail system within the European Union (Recast of Directive 2008/57/EC)

Link: <https://eur-lex.europa.eu/legal-content/EN/TXT/HTML/?uri=CELEX:32016L0797&from=EN>

Ref	Text	Analysis
	<p>Vehicle authorisation for placing on the market</p> <p>...</p> <p>3. The application for a vehicle authorisation for placing on the market shall be accompanied by a file concerning the vehicle or vehicle type and including documentary evidence of:</p>	<p>There is no material difference in impact on either a single IM or a multiple IM scenario.</p>
Article 21	<p>(a) the placing on the market of the mobile subsystems of which the vehicle is composed in accordance with Article 20, on the basis of the 'EC' declaration of verification;</p>	<p>There is no material difference in impact on either a single IM or a multiple IM scenario.</p>
	<p>(b) the technical compatibility of the subsystems referred to in point (a) within the vehicle, established on the basis of the relevant TSIs, and where applicable, national rules;</p>	
	<p>(c) the safe integration of the subsystems referred to in point (a) within the vehicle, established on the basis of the relevant TSIs, and where applicable, national rules, and the CSMs referred to in Article 6 of Directive (EU) 2016/798;</p>	<p>There is no material difference in impact on either a single IM or a multiple IM scenario.</p>
	<p>(d) the technical compatibility of the vehicle with the network in the area of use referred to in paragraph 2, established on the basis of the relevant TSIs and, where applicable, national rules, registers of infrastructure and the CSM on risk assessment referred to in Article 6 of Directive (EU) 2016/798.</p>	<p>There is no material difference in impact on either a single IM or a multiple IM scenario.</p>
	<p>1. That application and information about all applications, the stages of the relevant procedures and their outcome, and, where applicable, the requests and decisions of the Board of Appeal, shall be submitted through the one-stop shop</p>	<p>There is no material difference in impact on either a single IM or a multiple IM scenario.</p>

referred to in Article 12 of Regulation (EU) 2016/796.

Whenever tests are necessary in order to obtain documentary evidence of the technical compatibility referred to in points (b) and (d) of the first subparagraph, the national safety authorities involved may issue temporary authorisations to the applicant to use the vehicle for practical verifications on the network. The infrastructure manager, in consultation with the applicant, shall make every effort to ensure that any tests take place within three months of receipt of the applicant's request. Where appropriate, the national safety authority shall take measures to ensure that the tests take place.

...

5. The Agency shall issue vehicle authorisations for placing on the market in respect of vehicles having an area of use in one or more Member States. In order to issue such authorisations, the Agency shall:

- (a) assess the elements of the file specified in points (b), (c) and (d) of the first subparagraph of paragraph 3 in order to verify the completeness, relevance and consistency of the file in relation to the relevant TSIs; and
- (b) refer the applicant's file to the national safety authorities concerned by the intended area of use for assessment of the file in order to verify its completeness, relevance and consistency in relation to point (d) of the first subparagraph of paragraph 3 and to the elements specified in points (a), (b) and (c) of the first subparagraph of paragraph 3 in relation to the relevant national rules.

As part of the assessments pursuant to points (a) and (b) and in the case of justified doubts, the Agency or the national safety authorities may request that tests be conducted on the network. In order to facilitate those tests, the national safety authorities involved may issue temporary authorisations to the applicant to use the vehicle for tests on the network. The infrastructure manager shall make every effort to ensure that any such test takes place within three months of the request of the Agency or the national safety authority.

Article 23	Checks before the use of authorised vehicles	Important – easier for single IM
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1. Before a railway undertaking uses a vehicle in the area of use specified in its authorisation for placing on the market, it shall check:
    - (a) that the vehicle has been authorised for placing on the market in accordance with Article 21 and is duly registered;
    - (b) that the vehicle is compatible with the route on the basis of the infrastructure register, the relevant TSIs or any relevant information to be provided by the infrastructure manager free of charge and within a reasonable period of time, where such a register does not exist or is incomplete; and
    - (c) that the vehicle is properly integrated in the composition of the train where it is intended to operate, taking into account the safety management system set out in Article 9 of Directive (EU) 2016/798 and the TSI on operation and traffic management.
  2. For the purposes of paragraph 1, the railway undertaking may carry out tests in cooperation with the infrastructure manager.
- The infrastructure manager, in consultation with the applicant, shall make every effort to ensure that any tests take place within three months of receipt of the applicant's request.

### F.13.9. Directive (EU) 2016/798 on railway safety (Recast of Directive 2004/49/EC)

Link: <https://eur-lex.europa.eu/legal-content/EN/TXT/HTML/?uri=CELEX:32016L0798&from=EN>

Ref	Text	Analysis
(7)	The main actors in the Union rail system, infrastructure managers and railway undertakings should bear full responsibility for the safety of the system, each for their own part. Whenever appropriate, they should cooperate in implementing risk control measures.	There is no material difference in impact on either a single IM or a multiple IM scenario.
(9)	Each railway undertaking, infrastructure manager and entity in charge of maintenance should ensure that its contractors and other parties implement risk control measures. To that end, each railway undertaking, infrastructure manager and entity in charge of maintenance should apply the methods for monitoring set out in the common safety methods ('CSMs'). Their contractors should apply	There is no material difference in impact on either a single IM or a multiple IM scenario.

	<p>this process through contractual arrangements. In view of the fact that such arrangements are an essential part of the safety management system of railway undertakings and infrastructure managers, railway undertakings and infrastructure managers should disclose their contractual arrangements on request of the European Union Agency for Railways ('the Agency') established by Regulation (EU) 2016/796 of the European Parliament and of the Council (6) or the national safety authority in the context of supervision activities.</p>	
(15)	<p>In view of the gradual approach to eliminating obstacles to the interoperability of the Union rail system and of the time consequently required for the adoption of TSIs, steps should be taken to avoid a situation where Member States adopt new national rules or undertake projects that increase the diversity of the present system except in the specific situations as provided for in this Directive. The safety management system is the recognised tool for controlling risks, whereas infrastructure managers and railway undertakings are responsible for taking immediate corrective action to prevent recurrence of accidents. Member States should avoid establishing new national rules immediately after an accident, unless such new rules are required as an urgent preventive measure.</p>	<p>There is no material difference in impact on either a single IM or a multiple IM scenario.</p>
(17)	<p>In carrying out their duties and fulfilling their responsibilities, infrastructure managers and railway undertakings should implement a safety management system meeting Union requirements and containing common elements. Information on safety and on the implementation of the safety management system should be submitted to the Agency and to the national safety authority in the Member State concerned.</p>	<p>There is no material difference in impact on either a single IM or a multiple IM scenario.</p>
(32)	<p>Infrastructure managers should have a key responsibility for the safe design, maintenance and operation of their rail network. Infrastructure managers should be subject to a safety authorisation by the national safety authority concerning their safety management system and to other provisions so as to meet safety requirements.</p>	
(34)	<p>The entity in charge of maintenance should be certified for freight wagons. Where the entity in charge of maintenance is an infrastructure manager, this certification should be included in the procedure for safety authorisation. The certificate issued to such an entity should guarantee that the maintenance requirements of this Directive are met for any freight wagon for which it is responsible. That certificate should be valid throughout the Union and should be issued by a body able to audit the maintenance system established by the entity. As freight wagons are frequently used in</p>	

international traffic, and as the entity in charge of maintenance may want to use workshops established in more than one Member State, the certification body should be able to implement its controls throughout the Union. The Agency should evaluate the system of certification of the entity in charge of maintenance for freight wagons and should, if appropriate, recommend its extension to all rail vehicles.

<p>Article 4</p>	<p>1. With the aim of developing and improving railway safety, Member States, within the limits of their competences, shall:</p> <ul style="list-style-type: none"> <li>(a) ensure that railway safety is generally maintained and, where reasonably practicable, continuously improved, taking into consideration the development of Union law and international rules and of technical and scientific progress, and giving priority to the prevention of accidents;</li> <li>(b) ensure that all applicable legislation is enforced in an open and non-discriminatory manner, fostering the development of a single European rail transport system;</li> <li>(c) ensure that measures to develop and improve railway safety take account of the need for a system-based approach;</li> <li>(d) ensure that the responsibility for the safe operation of the Union rail system and the control of risks associated with it is laid upon the infrastructure managers and railway undertakings, each for its part of the system, obliging them to: <ul style="list-style-type: none"> <li>(i) implement necessary risk control measures as referred to in point (a) of Article 6(1), where appropriate in cooperation with each other;</li> <li>(ii) apply Union and national rules;</li> <li>(iii) establish safety management systems in accordance with this Directive;</li> </ul> </li> <li>(e) without prejudice to civil liability in accordance with the legal requirements of the Member States, ensure that each infrastructure manager and each railway undertaking is made responsible for its part</li> </ul>
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of the system and its safe operation, including supply of materials and contracting of services vis-à-vis users, customers, the workers concerned and other actors referred to in paragraph 4;

- (f) develop and publish annual safety plans setting out the measures envisaged to achieve the CSTs; and
- (g) where appropriate, support the Agency in its work to monitor the development of railway safety at Union level.

**2.**

3. Railway undertakings and infrastructure managers shall:

- (a) implement the necessary risk control measures referred to in point (a) of Article 6(1), where appropriate in cooperation with each other and with other actors;
- (b) take account in their safety management systems of the risks associated with the activities of other actors and third parties;
- (c) where appropriate, contractually oblige the other actors referred to in paragraph 4 having a potential impact on the safe operation of the Union rail system to implement risk control measures; and
- (d) ensure that their contractors implement risk control measures through the application of the CSMs for monitoring processes set out in the CSMs on monitoring referred to in point (c) of Article 6(1), and that this is stipulated in contractual arrangements to be disclosed on request of the Agency or of the national safety authority.

**3.**

5. Railway undertakings, infrastructure managers and any actor referred to in paragraph 4 who identifies or is informed of a safety risk relating to defects and construction non-conformities or malfunctions of technical equipment, including those of structural subsystems, shall, within the limits of their respective competence:

	<ul style="list-style-type: none"> <li>(a) take any necessary corrective measure to tackle the safety risk identified;</li> <li>(b) report those risks to the relevant parties involved, in order to enable them to take any necessary further corrective action to ensure continuous achievement of the safety performance of the Union rail system. The Agency may establish a tool that facilitates this exchange of information among the relevant actors, taking into account the privacy of the users involved, the results of a cost-benefit analysis as well as the IT applications and registers already set up by the Agency.</li> </ul>	
<p>Article 9</p>	<p>1. Infrastructure managers and railway undertakings shall establish their respective safety management systems to ensure that the Union rail system can achieve at least the CSTs, that it is in conformity with the safety requirements laid down in TSIs, and that the relevant parts of CSMs and national rules notified in accordance with Article 8 are applied.</p> <p>2. The safety management system shall be documented in all relevant parts and shall in particular describe the distribution of responsibilities within the organisation of the infrastructure manager or the railway undertaking. It shall show how control is ensured by the management on different levels, how staff and their representatives on all levels are involved and how continuous improvement of the safety management system is ensured. There shall be a clear commitment to consistently apply human factors knowledge and methods. Through the safety management system, infrastructure managers and railway undertakings shall promote a culture of mutual trust, confidence and learning in which staff are encouraged to contribute to the development of safety while ensuring confidentiality.</p> <p>...</p> <p>4. The safety management system shall be adapted to the type, extent, area of operations and other conditions of the activity pursued. It shall ensure the control of all risks associated with the activity of the infrastructure manager or railway undertaking, including the supply of maintenance,</p>	

without prejudice to Article 14, and material, and the use of contractors. Without prejudice to existing national and international liability rules, the safety management system shall also take into account, where appropriate and reasonable, the risks arising as a result of activities by other actors referred to in Article 4.

5. The safety management system of any infrastructure manager shall take into account the effects of operations by different railway undertakings on the network and shall provide for all railway undertakings to be able to operate in accordance with TSIs and national rules and with the conditions laid down in their safety certificate.

Safety management systems shall be developed with the aim of coordinating the emergency procedures of the infrastructure manager with all railway undertakings that operate on its infrastructure, and with the emergency services, so as to facilitate the rapid intervention of rescue services, and with any other party that could be involved in an emergency situation. For cross-border infrastructure, the cooperation between the relevant infrastructure managers shall facilitate the necessary coordination and preparedness of the competent emergency services on both sides of the border.

Following a serious accident, the railway undertaking shall provide assistance to victims helping them in complaints procedures under Union law, in particular Regulation (EC) No 1371/2007 of the European Parliament and of the Council (13), without prejudice to the obligations of other parties. Such assistance shall use channels for communicating with victims' families and include psychological support for accident victims and their families.

6. Before 31 May of each year, all infrastructure managers and railway undertakings shall submit to the national safety authority an annual safety report concerning the preceding calendar year. The safety report shall contain:

- (a) information on how the organisation's corporate safety targets are met and the results of safety plans;
- (b) an account of the development of national safety indicators, and of the CSIs referred

	<p>to in Article 5, in so far as it is relevant to the reporting organisation;</p> <ul style="list-style-type: none"> <li>(c) the results of internal safety auditing;</li> <li>(d) observations on deficiencies and malfunctions of railway operations and infrastructure management that might be relevant for the national safety authority, including a summary of information provided by the relevant actors in accordance with point (b) of Article 4(5); and</li> <li>(e) a report on the application of the relevant CSMs.</li> </ul>	
<p>Article 12</p>	<p>Safety authorisation of infrastructure managers</p> <p>1. In order to be allowed to manage and operate a rail infrastructure, the infrastructure manager shall obtain a safety authorisation from the national safety authority in the Member State where the rail infrastructure is located.</p> <p>The safety authorisation shall comprise an authorisation confirming acceptance of the infrastructure manager's safety management system as provided for in Article 9, and shall include the procedures and provisions fulfilling the requirements necessary for the safe design, maintenance and operation of the railway infrastructure, including, where appropriate, the maintenance and operation of the traffic control and signalling system.</p> <p>The national safety authority shall explain the requirements for the safety authorisations and the documents required, where appropriate in the form of an application guidance document.</p> <p>2. The safety authorisation shall be valid for 5 years and may be renewed upon application by the infrastructure manager. It shall be wholly or partly revised whenever substantial changes are made to the infrastructure, signalling or energy subsystems or to the principles of their operation and maintenance. The infrastructure manager shall inform the national safety authority of all such changes without delay.</p> <p>The national safety authority may require that the safety authorisation be revised following substantial changes to the safety regulatory framework.</p>	

	<p>3. The national safety authority shall take a decision on an application for safety authorisation without delay and in any event not more than 4 months after all the information required and any supplementary information requested has been submitted by the applicant.</p> <p>4. The national safety authority shall inform the Agency without delay, and in any event within 2 weeks, of the safety authorisations that have been issued, renewed, amended or revoked. It shall state the name and address of the infrastructure manager, the issue date, scope and period of validity of the safety authorisation and, in the event of revocation, the reasons for its decision.</p> <p>5. In the case of cross-border infrastructure, the competent national safety authorities shall cooperate in order to issue the safety authorisations.</p>	
Article 17	<p>7. The national safety authority shall supervise the trackside, control-command and signalling, energy and infrastructure subsystems and ensure that they are in compliance with the essential requirements. In the case of cross-border infrastructures, it will perform its activities of supervision in cooperation with other relevant national safety authorities. If the national safety authority finds that an infrastructure manager no longer satisfies the conditions for its safety authorisation, it shall restrict or revoke that authorisation, giving reasons for its decision.</p>	
Article 22	<p>1. Each Member State shall ensure that investigations of the accidents and incidents referred to in Article 20 are conducted by a permanent body, which shall comprise at least one investigator able to perform the function of investigator-in-charge in the event of an accident or incident. That body that is responsible shall be independent in its organisation, legal structure and decision-making from any infrastructure manager, railway undertaking, charging body, allocation body and conformity assessment body and from any party whose interests could conflict with the tasks entrusted to the investigating body. It shall, furthermore, be functionally independent from the national safety authority, from the Agency and from any regulator of railways.</p>	

### F.13.10. Regulation (EU) 2016/2338 amending Regulation (EU) 1370/2007, which deals with the award of public service contracts for domestic passenger transport services by rail ('PSO Regulation')

Link: <https://eur-lex.europa.eu/legal-content/EN/TXT/HTML/?uri=CELEX:32016R2338&from=EN>

Nothing about IM directly – lots about ‘competent authorities’, i.e. ‘any public authority or group of public authorities of a Member State or Member States which has the power to intervene in public passenger transport in a given geographical area or any body vested with such authority’

Ref	Text	Analysis
(6)	Services at cross-border level provided under public services contracts, including public transport services covering local and regional transport needs, should be subject to the agreement of the competent authorities of the Member States on whose territory the services are provided.	
(7)	Competent authorities should define specifications of public service obligations in public passenger transport. Such specifications should be consistent with the policy objectives as stated in public transport policy documents in the Member States.	

### F.13.11. Directive 2016/2370/EU amending Directive 2012/34/EU, which deals with the opening of the market of domestic passenger transport services by rail and the governance of the railway infrastructure ('Governance Directive')

Link: <https://eur-lex.europa.eu/legal-content/EN/TXT/HTML/?uri=CELEX:32016L2370&from=EN>

Ref	Text	Analysis
(1)	Directive 2012/34/EU of the European Parliament and of the Council (4) establishes a single European railway area with common rules on the governance of railway undertakings and infrastructure managers, on infrastructure financing and charging, on conditions of access to railway infrastructure and services and on regulatory oversight of the rail market. The completion of the single European railway area should be achieved by extending the principle of open access to domestic rail markets and reforming the governance of infrastructure managers with the objective of ensuring equal access to the infrastructure.	There is no material difference in impact on either a single IM or a multiple IM scenario.
(6)	In order to establish whether an undertaking should be considered to be vertically integrated, the notion of control within the meaning of Council Regulation (EC) No 139/2004 (7) should be applied. Where an infrastructure manager and a railway undertaking are fully independent of one another, but both are controlled directly by the State without an intermediary entity, they should be considered to be separate. A government ministry exercising control	There is no material difference in impact on either a single IM or a multiple IM scenario.

	over both a railway undertaking and an infrastructure manager should not be considered to be an intermediary entity.	
(7)	This Directive introduces further requirements to ensure the independence of the infrastructure manager. Member States should be free to choose between different organisational models, ranging from full structural separation to vertical integration, subject to appropriate safeguards to ensure the impartiality of the infrastructure manager as regards the essential functions, traffic management and maintenance planning. Member States should ensure that, within the limits of the established charging and allocation frameworks, the infrastructure manager enjoys organisational and decision-making independence as regards the essential functions.	
(10)	Decision-making by infrastructure managers with respect to train path allocation and decision-making with respect to infrastructure charging are essential functions that are vital for ensuring equitable and non-discriminatory access to rail infrastructure. Stringent safeguards should be put in place to avoid any undue influence being brought to bear on decisions taken by the infrastructure manager relating to such functions. Those safeguards should be adapted to take into account the different governance structures of railway entities.	There is no material difference in impact on either a single IM or a multiple IM scenario.
(11)	Appropriate measures should also be taken to ensure that the functions of traffic management and maintenance planning are exercised in an impartial manner to avoid any distortion of competition. Within this framework, infrastructure managers should ensure that railway undertakings have access to relevant information. In this context, where railway undertakings have been granted further access to the traffic management process by the infrastructure managers, such access should be granted on equal terms to all railway undertakings concerned.	There is no material difference in impact on either a single IM or a multiple IM scenario.
(12)	Where the essential functions are performed by an independent charging and/or allocation body, the impartiality of the infrastructure manager as regards the functions of traffic management and maintenance should be ensured without the need for transferring these functions to an independent entity.	There is no material difference in impact on either a single IM or a multiple IM scenario.
(14)	Member States should, as a general rule, ensure that the infrastructure manager is responsible for the operation, maintenance and renewal on a network and is entrusted with the development of the railway infrastructure on that network. Where those functions are outsourced to different entities, the infrastructure manager should nevertheless retain supervisory power and bear ultimate responsibility for their exercise.	There is no material difference in impact on either a single IM or a multiple IM scenario.
(15)	Infrastructure managers that are part of a vertically integrated undertaking may outsource within that	N/A

	undertaking functions other than the essential functions subject to the conditions set out in this Directive, provided that this does not give rise to a conflict of interest and that the confidentiality of commercially sensitive information is guaranteed. Essential functions should not be outsourced to any other entity of the vertically integrated undertaking, unless such entity exclusively performs essential functions.	
(16)	Where appropriate, in particular for reasons of efficiency, including in cases of public-private partnerships, the functions of infrastructure management may be shared between different infrastructure managers. Infrastructure managers should each bear full responsibility for the functions they exercise.	There is no material difference in impact on either a single IM or a multiple IM scenario.
(17)	Financial transfers between the infrastructure manager and railway undertakings, and in vertically integrated undertakings between the infrastructure manager and any other legal entity of the integrated undertaking, should be prevented, where they could lead to a distortion of competition on the market, in particular as a result of cross-subsidisation.	There is no material difference in impact on either a single IM or a multiple IM scenario.
(18)	Infrastructure managers may use income from infrastructure network management activities that involve the use of public funds to finance their own business or to pay dividends to their investors, as a return on their investments in railway infrastructure. Such investors may include the State and any private shareholders, but may not include undertakings which are part of a vertically integrated undertaking and which exercise control over both a railway undertaking and that infrastructure manager. Dividends generated by activities that do not involve the use of public funds or revenues from charges for the use of railway infrastructure may also be used by undertakings which are part of a vertically integrated undertaking and which exercise control over both a railway undertaking and that infrastructure manager.	There is no material difference in impact on either a single IM or a multiple IM scenario.
(19)	The principles of charging should not preclude the possibility that revenues from infrastructure charges transit through State accounts.	There is no material difference in impact on either a single IM or a multiple IM scenario.
(20)	Where in a vertically integrated undertaking the infrastructure manager does not have distinct legal personality and the essential functions are externalised by assigning them to an independent charging and/or allocation body, the relevant provisions regarding financial transparency and the independence of the infrastructure manager should apply mutatis mutandis at the level of certain divisions within the undertaking.	There is no material difference in impact on either a single IM or a multiple IM scenario.
(21)	In order to achieve efficient network management and an efficient use of infrastructure, better coordination between infrastructure managers and	There is no material difference in impact on either a single IM or a multiple IM scenario.

	<p>railway undertakings should be ensured through the use of appropriate coordination mechanisms.</p>	
(22)	<p>With a view to facilitating the provision of efficient and effective rail services within the Union, a European Network of Infrastructure Managers should be established, building on existing platforms. For the purpose of participating in this network, Member States should be free to determine which body or bodies should be considered to be their main infrastructure managers.</p>	<p>There is no material difference in impact on either a single IM or a multiple IM scenario.</p>
(36)	<p>Infrastructure managers should cooperate concerning incidents or accidents with an impact on cross-border traffic with a view to sharing any relevant information enabling swift restoration of normal traffic.</p>	<p>There is no material difference in impact on either a single IM or a multiple IM scenario.</p>
Article 7	<p>Independence of the infrastructure manager</p> <p>1. Member States shall ensure that the infrastructure manager is responsible for operation, maintenance and renewal on a network and is entrusted with the development of the railway infrastructure of that network in accordance with national law.</p> <p>Member States shall ensure that none of the other legal entities within the vertically integrated undertaking has a decisive influence on the decisions taken by the infrastructure manager in relation to the essential functions.</p> <p>Member States shall ensure that the members of the supervisory board and of the management board of the infrastructure manager and the managers directly reporting to them act in a non-discriminatory manner and that their impartiality is not affected by any conflict of interest.</p> <p>2. Member States shall ensure that the infrastructure manager is organised as an entity that is legally distinct from any railway undertaking and, in vertically integrated undertakings, from any other legal entities within the undertaking.</p> <p>3. Member States shall ensure that the same individuals cannot be concurrently appointed or employed:</p> <ul style="list-style-type: none"> <li>(a) as members of the management board of an infrastructure manager and as members of the management board of a railway undertaking;</li> <li>(b) as persons in charge of taking decisions on the essential functions and as members of the management board of a railway undertaking;</li> </ul>	<p>There is no material difference in impact on either a single IM or a multiple IM scenario.</p>

	<p>(c) where a supervisory board exists, as members of the supervisory board of an infrastructure manager and as members of the supervisory board of a railway undertaking;</p> <p>(d) as members of the supervisory board of an undertaking which is part of a vertically integrated undertaking and which exercises control over both a railway undertaking and an infrastructure manager and as members of the management board of that infrastructure manager.</p> <p>4. In vertically integrated undertakings, the members of the management board of the infrastructure manager and the persons in charge of taking decisions on the essential functions shall not receive any performance-based remuneration from any other legal entities within the vertically integrated undertaking, nor shall they receive any bonuses principally related to the financial performance of particular railway undertakings. They may however be offered incentives related to the overall performance of the railway system.</p>	
	<p>5. Where information systems are common to different entities within a vertically integrated undertaking, access to sensitive information relating to essential functions shall be restricted to authorised staff of the infrastructure manager. Sensitive information shall not be passed on to other entities within a vertically integrated undertaking.</p>	
	<p>6. The provisions of paragraph 1 of this Article shall be without prejudice to the decision-making rights of Member States as regards the development and funding of railway infrastructure and the competences of Member States as regards infrastructure financing and charging, as well as capacity allocation, as defined in Article 4(2), and Articles 8, 29 and 39.';</p>	
<p>Article 7a</p>	<p>Independence of the essential functions</p> <p>1. Member States shall ensure that the infrastructure manager has organisational and decision-making independence within the limits set out in Article 4(2), and Articles 29 and 39, as regards the essential functions.</p> <p>2. For the application of paragraph 1, Member States shall ensure in particular that:</p> <p>(a) a railway undertaking or any other legal entity does not exercise a decisive influence on the infrastructure manager in relation to</p>	

the essential functions, without prejudice to the role of the Member States as regards the determination of the charging framework and the capacity allocation framework and specific charging rules in accordance with Articles 29 and 39;

- (b) a railway undertaking or any other legal entity within the vertically integrated undertaking has no decisive influence on appointments and dismissals of persons in charge of taking decisions on the essential functions;
- (c) the mobility of persons in charge of the essential functions does not create conflicts of interest.

3. Member States may decide that infrastructure charging and path allocation shall be performed by a charging body and/or by an allocation body that are independent in their legal form, organisation and decision-making from any railway undertaking. In such a case, Member States may decide not to apply the provisions of Article 7(2) and points (c) and (d) of Article 7(3).

Point (a) of Article 7(3) and Article 7(4) shall apply mutatis mutandis to the heads of divisions in charge of management of the infrastructure and provision of railway services.

4. The provisions of this Directive referring to the essential functions of an infrastructure manager shall apply to the independent charging and/or allocation body.

Article 7b

Impartiality of the infrastructure manager in respect of traffic management and maintenance planning

1. Member States shall ensure that the functions of traffic management and maintenance planning are exercised in a transparent and non-discriminatory manner and that the persons in charge of taking decisions in respect of those functions are not affected by any conflict of interest.

2. As regards traffic management, Member States shall ensure that railway undertakings, in cases of disruption concerning them, have full and timely access to relevant information. Where the infrastructure manager grants further access to the traffic management process, it shall do so for the railway undertakings concerned in a transparent and non-discriminatory way.

	<p>3. As regards the long-term planning of major maintenance and/or renewal of the railway infrastructure, the infrastructure manager shall consult applicants and, to the best possible extent, take into account the concerns expressed.</p> <p>The scheduling of maintenance works shall be carried out by the infrastructure manager in a non-discriminatory way.</p>	
<p>Article 7c</p>	<p>Outsourcing and sharing the infrastructure manager's functions</p> <p>1. Provided that no conflicts of interest arise and that the confidentiality of commercially sensitive information is guaranteed, the infrastructure manager may:</p> <ul style="list-style-type: none"> <li>(a) outsource functions to a different entity, provided the latter is not a railway undertaking, does not control a railway undertaking, or is not controlled by a railway undertaking. Within a vertically integrated undertaking, essential functions shall not be outsourced to any other entity of the vertically integrated undertaking, unless such entity exclusively performs essential functions;</li> <li>(b) outsource the execution of works and related tasks on development, maintenance and renewal of the railway infrastructure to railway undertakings or companies which control the railway undertaking, or are controlled by the railway undertaking. The infrastructure manager shall retain the supervisory power over, and bear ultimate responsibility for, the exercise of the functions described in Article 3(2). Any entity carrying out essential functions shall comply with Articles 7, 7a, 7b and 7d.</li> </ul> <p>2. By way of derogation from Article 7(1), infrastructure management functions may be performed by different infrastructure managers, including parties to public-private partnership arrangements provided that they all fulfil the requirements of Article 7(2) to (6) and Articles 7a, 7b and 7d and assume full responsibility for the exercise of the functions concerned.</p> <p>3. Where essential functions are not assigned to a power supply operator, it shall be exempted from the rules applicable to infrastructure managers, provided that compliance with the relevant provisions concerning development of the network, in particular Article 8, is ensured.</p>	

4. Subject to supervision by the regulatory body or any other independent competent body determined by the Member States, an infrastructure manager may conclude cooperation agreements with one or more railway undertakings in a non-discriminatory way and with a view to delivering benefits to customers such as reduced costs or improved performance on the part of the network covered by the agreement.

That body shall monitor the execution of such agreements and may, where justified, advise that they should be terminated.

Article 7d

Financial transparency

1. While respecting national procedures applicable in each Member State, income from infrastructure network management activities, including public funds, may be used by the infrastructure manager only to finance its own business, including the servicing of its loans. The infrastructure manager may also use such income to pay dividends to owners of the company, which may include any private shareholders, but excludes undertakings which are part of a vertically integrated undertaking and which exercise control over both a railway undertaking and that infrastructure manager.

2. Infrastructure managers shall not grant loans to railway undertakings, either directly or indirectly.

3. Railway undertakings shall not grant loans to infrastructure managers, either directly or indirectly.

4. Loans between legal entities of a vertically integrated undertaking, shall only be granted, disbursed and serviced at market rates and conditions which reflect the individual risk profile of the entity concerned.

5. Loans between legal entities of a vertically integrated undertaking granted before 24 December 2016 shall continue until their maturity, provided that they were contracted at market rates and that they are actually disbursed and serviced.

6. Any services offered by other legal entities of a vertically integrated undertaking to the infrastructure manager shall be provided on the basis of contracts and be paid either at market prices or at prices which reflect the cost of production, plus a reasonable margin of profit.

7. Debts attributed to the infrastructure manager shall be clearly separated from debts attributed to

other legal entities within vertically integrated undertakings. Such debts shall be serviced separately. This does not prevent the final payment of debts being made via an undertaking which is part of a vertically integrated undertaking and which exercises control over both a railway undertaking and an infrastructure manager, or via another entity within the undertaking.

8. The accounts of the infrastructure manager and of the other legal entities within a vertically integrated undertaking shall be kept in a way that ensures the fulfilment of this Article and allows for separate accounting and transparent financial circuits within the undertaking.

9. Within vertically integrated undertakings, the infrastructure manager shall keep detailed records of any commercial and financial relations with the other legal entities within that undertaking.

10. Where essential functions are performed by an independent charging and/or allocation body in accordance with Article 7a(3) and Member States are not applying Article 7(2), the provisions of this Article shall apply mutatis mutandis. References to infrastructure manager, railway undertaking and other legal entities of a vertically integrated undertaking in this Article shall be understood as referring to the respective divisions of the undertaking. Compliance with the requirements set out in this Article shall be demonstrated in the separate accounts of the respective divisions of the undertaking.

### F.13.12. Regulation (EU) 2016/2337 repealing Regulation (EEC) 1192/69 on the normalisation of the accounts of railway undertakings

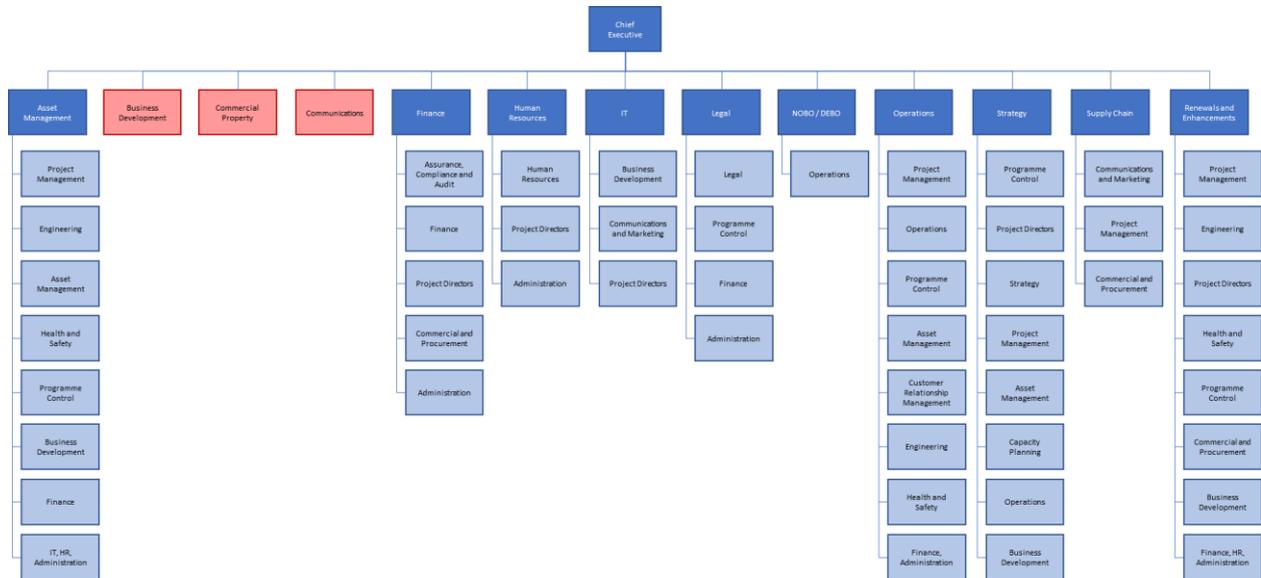
Link: <https://eur-lex.europa.eu/legal-content/EN/TXT/HTML/?uri=CELEX:32016R2337&from=EN>

Ref	Text	Analysis
(2)	A series of Union legal acts has been adopted opening up the rail freight and international rail passenger markets to competition and establishing, in the case of Directive 2012/34/EU of the European Parliament and of the Council (5), certain fundamental principles, which include: that railway undertakings are to be managed in accordance with the principles that apply to commercial companies; that entities responsible for the allocation of capacity and charging for rail infrastructure are to be separate from entities which	

operate rail services, and that there is to be a separation of accounts; that any railway undertaking licensed in accordance with Union criteria is to have access to railway infrastructure on a fair and non-discriminatory basis; and that infrastructure managers may benefit from State financing.

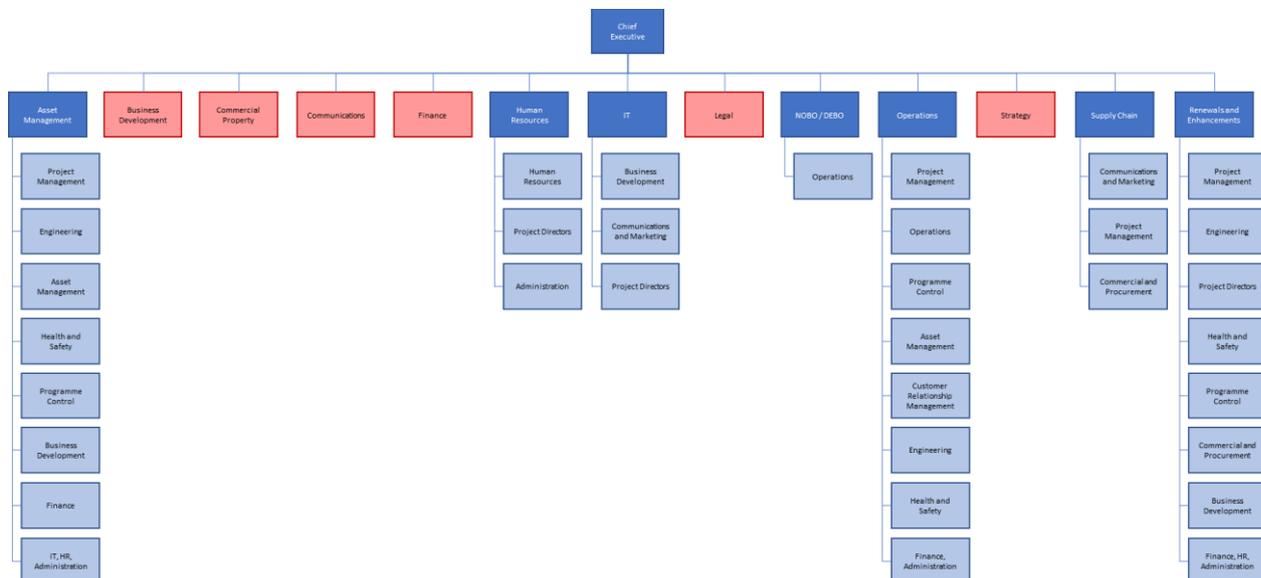
# Appendix G. Organisation Charts

Figure 4-1 - Option 57 - Organisation Chart



Please note this organisation chart shows roles within each option, but does not show the number of positions.

Figure 4-2 - Option 63 - Organisation Chart



Please note this organisation chart shows roles within each option, but does not show the number of positions.

The following table describes each of the functions listed above:

**Table 4-1 - Organisation Structure Functions**

Function	Description
Project Management	Responsible for the planning, organisation, execution, control and closure of the work of a team to achieve specific goals at the specified time.
Engineering	Responsible for the design and construction of railway systems, including managing structures and railway machinery.
Asset Management	Responsible for monitoring and maintaining the railway assets, implementing systems, methods, procedures and tools to optimise costs, performance and risks for the complete rail infrastructure life cycle.
Health and Safety	Responsible for ensuring that the railway is safe for passengers and provides a safe place for staff to work.
Programme Control	Responsible for data gathering, management and analytical processes used to predict, understand and constructively influence the time and cost outcomes of a project or program.
Business Development	Responsible for pursuing strategic opportunities to create long-term value from customers, markets, and relationships.
Finance	Responsible for managing the organisation's money, including planning, organising, accounting for and controlling the company finances.
IT	Responsible for establishing, monitoring and maintaining information technology systems and services.
Human Resources	Responsible for finding, screening, recruiting and training job applicants, as well as administering employee-benefit programs.
Administration	Responsible for day-to-day activities that are related to financial planning, record keeping & billing, personnel, physical distribution and logistics, within an organisation.
Project Directors	Responsible for strategic oversight, monitoring and management of a project from an executive level, including managing team members and allocated resources.
Comms and Marketing	Responsible for branding, internal communications, design, printing and digital communications.
Operations	Responsible for delivering the services that ensure safe performance of the railway, including managing the systems and processes that keep the rail network working, such as signalling operations and incident response teams.
Customer Relationship Management	Responsible for the practices, strategies and technologies that enable the railway to manage and analyse customer interactions and data, with the goal of improving customer services relationships and assisting in customer retention.
Commercial / Procurement	Responsible for the process of finding, agreeing terms and acquiring goods, services or works from external sources, including management of tendering and competitive bidding processes.
Assurance, Compliance and Audit	Responsible for ensuring that the railway adheres to external rules and internal controls.

Legal	Responsible for maintaining and preventing any legal issues that could arise, including reviewing and drafting contracts, employee policies, and handling court cases.
Strategy	Responsible for surveying those responsible for railway operations to gather information on challenges and objectives, including consolidating individual strategic aims into an overall approach and inviting feedback from the departments concerned.
Capacity Planning	Responsible for the assessment and allocation of railway capacity, including optimising timetables to achieve increased capacity, better performance and lower journey times.

## Appendix H. Key Performance Indicators

Dimensions	Categories	Primary KPIs
Safety, Security and Environment	Safety	<b>Killed and Seriously injured per train km</b>
		Significant accidents per million train-km
		RBNE related precursors to accidents (relative number of system failures etc) per million train-km
	Security	Delays caused by security incidents in minutes per train-km
		Train cancellations caused by security incidents by percentage of scheduled trains
	Environment	Share of electric trains, by electric train-km compared to train-km for both passenger and freight trains
Performance	Punctuality	<b>Passenger trains on time by percentage of trains less than or equal to 5 minutes delay</b>
		<b>Freight trains on time by percentage of freight trains less than or equal to 15 minutes delay</b>
		Minutes of delays caused by RBNE per train-km – IMs responsibility
		Percentage of train cancellations caused by the RBNE
	Robustness	<b>Average delay minutes per asset failure</b>
Delivery	Capacity	<b>Share of possession time for RBNE activities (% of main track km-days)</b>
		Rejected path allocations by percentage of path allocation requests
	Condition	<b>Asset failures per main track km</b> <b>Track with permanent speed restrictions per main track km</b>
Financial	Costs	<b>OPEX per main track km or per train-km</b>
		<b>CAPEX per main track km or per train-km</b>
	Revenues	<b>Total non-TAC revenue per main track km</b>
		<b>Total TAC per main track km</b>
Growth	Utilisation	<b>Use of network (train-km per main track-km)</b>

# Appendix I. Stakeholder Landscape

Stakeholder engagement was conducted across Latvia, Lithuania and Estonia. The stakeholder landscape is important because there were many opposing and differentiating views, however, Atkins is confident that all stakeholders are committed to delivering an effective outcome for the project, which is to deliver the most effective Infrastructure Management model.

Moreover, it is crucial to understand the stakeholder's views and position because many of those spoken to will either be involved or affected in one way or another by the Rail Baltica Global Project.

Additionally, these stakeholder interviews were taken into account for the overall development of the optimum model and gave a deeper insight in to the current operations in the Baltic nations.

Their feedback has been reflected in our assessment of the options throughout the main body of this document.

**Table 4-2 - Stakeholder Landscape**

	Option 5	Option 57	Option 63	Option 85
<b>Lithuania Railways</b>	No (But do support Single capacity allocation and single TM across all three countries)	No	No – but they would support themselves as international rail lead	Yes
<b>Lithuanian Railways RBNE Board</b>	No – but will support SPOC for pricing.	No	No	Yes
<b>Lithuanian Private Railways Association</b>	Yes – Support single RBNE and RBNE separate from existing RBNE, alongside SPOC to act coherently across all functions	Yes – Support single RBNE and RBNE separate from existing RBNE, alongside SPOC to act coherently across all functions	Yes – Support single RBNE and RBNE separate from existing RBNE, alongside SPOC to act coherently across all functions	No – no SPOC, no single capacity allocation, significant legal challenges to overcome
<b>Estonian Regulatory Authority/ Ministry of Economic Affairs</b>	Yes - Easier to regulate one body/entity	Yes - Easier to regulate one body/entity	Yes - Easier to regulate one body/entity	No – significant legal/regulation challenges to overcome, no accountability for train performance
<b>RB Estonia</b>	Yes – support single RBNE and a body that acts	Yes – support single RBNE and a body that acts	Yes – support single RBNE and a body that acts	No – No single vision

	coherently across all functions	coherently across all functions	coherently across all functions	
<b>DB Schenker/ Lineka</b>	Yes – Support single RBNE and SPOC	Yes – Support single RBNE and SPOC	Yes – Support single RBNE and SPOC	No
<b>Lithuanian Railways/ Ministry of Transport of Lithuania</b>	No	No	No	Yes
<b>Latvian Safety and Technical State Inspectorate</b>	Yes – Support SPOC and single TM and capacity allocation, countries should all have same share in RBNE	Yes – Support SPOC and single TM and capacity allocation, countries should all have same share in RBNE	Yes – Support SPOC and single TM and capacity allocation, countries should all have same share in RBNE	No – Would be huge risk to safety due to contract and different safety management systems
<b>Latvian State Joint Stock Company (Latvijas dzelzceļš)</b>	Yes – Single RBNE with single TM, enables coordination of maintenance to assign experienced employees.	Yes - Single RBNE with single TM, enables coordination of maintenance to assign experienced employees.	Yes - Single RBNE with single TM, enables coordination of maintenance to assign experienced employees.	No
<b>Communications Regulatory Authority of the Republic of Lithuania</b>	Yes – SPOC	Yes – some control for Public Authorities although they are seen less efficient	Yes – Full control for Public Authorities although they are seen less efficient	No – No accountability for train performance given the split of TM, Timetabling and route maintenance

# Appendix J. Draft Final Feedback

Response Log		
Organisation	Query	Atkins Response
RB AS	To my understanding the presented model is not an optimum as it presents RBNE as a “post box” only with very limited capacity and competencies.	Atkins has identified the full range of competencies are identified for the operation of an IM and validated this with sensitivity analysis versus a range of other European Infrastructure Managers with regards to the total headcount per track km. This has now been added to the report.
	Descriptions are too general, it is very hard to understand who shall do what, how and by which means. If it is explained in detail elsewhere in the report, please provide clear references (example – Page 325, reference to the chapter of the capacity allocation model)	Atkins has expanded the executive summary and provided links to the relevant page numbers in the document to improve clarity.
	Chapter 3.2. (WP 7.2.): I cannot consider this chapter being in-depth description of the proposed infrastructure management model. It tends to remain general (examples: references to “required EU standards”, “relevant EU regulations”, etc.)	Reference to required standards and EU regulation is appropriate form for a report of this nature; these will need to be revisited before RNBE is created and appropriate legislation mapped, this being required to cover all aspects of railway operations, not just those related to Infrastructure Management, the relevant review of which is attached as an appendix to the main document.
	<p>Pg 315 the Overview – it is considered RBNE will be “the authority for maintenance, renewals and enhancements (even if construction is outsourced)...” Later in the text the options are presented as the ones where everything is outsourced, even daily inspection (?).</p> <p>Such an approach...creates... risks to infrastructure management.</p>	Atkins disagreed with this position and provided evidence that outsourced maintenance models can be effective (something supported by ProRail who were more bullish that Atkins about this opportunity). Atkins initial view was that the utilisation of outsourced maintenance services (a full service supplier type option) would have been viable and could have potentially leveraged some synergies with the other national infrastructure managers if intelligently procured. RB Rail AS disagreed with this position. Atkins has therefore reworked this position to reflect a hybrid management model that strengthens the RBNE management capability; this remains a strong option which potentially alleviates both RB AS concerns and

	still retains the potential for lower cost blue collar labour. Atkins is comfortable endorsing this solution.
Figure 3-1 Safety Authority – some of the functions seem to be part of ERA and / or NSA business. Please explain in the report details / the difference in order to avoid possible misunderstandings / misinterpretations	The responsibility to act as a safety authority for the route, for absolute clarity, is not the same as acting as a regulatory safety authority. For example, RBNE will need to support Rolling Stock Approvals by being able to confirm and validate gauging assumptions for the route or check on the EMC compliance of the same. Similarly, RBNE will need to assure itself that the plant (e.g. Road Rail Vehicles) used is safe and fit for purpose, so that it does not pose a risk to its employees and in a similar vein, it will need to put in place appropriate permits to work to ensure that those working on the infrastructure are competent and fit to work with regards to issues such as fatigue management. We would expect RBNE to develop these in further depth as the shape of the organisation is developed.
Suggest to present not only the functions which are part of the option (RBNE) but as well present all other functions which have to be in place but is being done then by someone else (by whom? In what way?)	This is out of scope of the commission
To my understanding infrastructure management model s not only description of RBNE functions / responsibilities but in-depth description of all necessary functions for Rail Baltica infrastructure management clearly indicating who does what and what and how the functions shall be defined in infrastructure management model (contractual model description)	Atkins has expanded on this in the executive summary.
page 316 – Table 3-1 on Page 318 presents 17 staff members to deal with asset management. Later an asset management models presented.	This reference misunderstands the differences in the model between function/ competencies and dedicated roles. Atkins has added further text in this area to aid clarification.
Page 318 – reference #93 in footnote. Just an article in media is not sufficient to support the statement. Please revise the statement and refer to more relevant sources (as example Eurostat demographic forecasts)	The source of the article is Latvian Public Broadcasting who are a reputable source of information and who clearly state their underlying analysis is based on the released Eurostat data.

<p>Page 318 headcounts are extremely low overall, in particular there are 0's in Option 63 for Legal, Finance, Board, Strategy – which makes the particular Option non-feasible (no resources for company management allocated). Appendix H of the report is not consistent with the report.</p>	<p>Function versus dedicated role explanation added.</p>
<p>Page 318 – In Figure 3-1 there are 78 staff members allocated for Renewals and Enhancement. Further in the text it is stated that “for maintenance a total headcount has been calculated”. 78 seems non-feasible, it is heavily underestimated</p>	<p>This is a misinterpretation of headcount assumptions. Atkins has expanded on the maintenance section to improve clarity including detailing the total headcount estimated for the route as a whole.</p>
<p>Table 3-1 For operations there are 23 staff members allocated. Does it include traffic management staff and incident management staff? If yes, it is extremely low, thus non-feasible number of staff. If not included, where can I see who does traffic management?</p>	<p>Reference explaining top down modelling has been included, with regards to total headcount sensitivity analysis. Incident management staff are not included in these specific figures but are assumed to form part of the maintenance team headcount. This does include the staff for traffic management. For clarity, as per our tender offer, Atkins has generated a top down generation of required headcount, not bottom up based on individual role requirements which will need to be influenced by the details of the operational plan and systems procured.</p>
<p>Chapter 3.3. (WP 7.3): The proposed contractual model seems to be unexplained. Overall only 13 items have been identified to be addressed in the contract, mainly related to passenger service operations, which, in fact should not be part of RBNE as infra manager. The chapter does not deliver the set requirements in the ToR neither in the scope nor quality</p>	<p>There are very few references with regards to passenger services operations in the document and these tend to be with regards to managed stations. At no point in the document does Atkins assume passenger service operations are the responsibility of RBNE (our view being that this is precluded under the 4th Railway Package). WP7.3 is describing the relationships which will need to exist between RBNE and needs to be read in the context of WP2.3.1. This area of the document has also been deliberately simplified (as stated) to ensure that the key points are readily understood. Other elements, such as the implications of potential subsidy and the need for a network grant are detailed in section 2.3.1.5.</p>

<p>Chapter 3.4. (KPI's): This chapter remains very general and captures RNBE business only from some dimensions. The proposed KPI's can be applied to every IM. No target values have been defined.</p>	<p>At this stage, Atkins does not believe it is possible to define more detailed KPIs - targets will need to be set by the business based upon both a detailed understanding of the network performance and design post construction. Atkins has added a section to explain the logic at this point into the main document (Section 3.4)</p>
<p>Many points are about outsourcing, specifically to existing IMs rather than in general; for example one area I don't think the report addresses in any detail is whether those existing IMs have the "capacity, capability and culture" to expand to manage elements of a new system without themselves needing more staff, more resources, and therefore needing to seek additional funding?</p>	<p>Atkins recognises that the existing Infrastructure Managers may not have all the capacity (in terms of technical skills) for all aspects of the Rail Baltica route (as previously detailed) and also recognise that as per the Boston Consulting Group report, they have a significant challenge to reach world class and that while transformation programmes are in place (at least for Lithuania), the outcome of this is not assured. Nonetheless, we have started from a positive position with regards to the existing Infrastructure Managers improving their performance and that they will have an acceptable level of competencies. This means that the MCA identifies items related to structural differences and not just existing capabilities which we would expect to improve over time, save for in those areas where they are unlikely to gain experience in the timeframes proscribed (e.g. ETCS)</p> <p>Atkins believes that given the greater scale of their networks, their greater overall turnover, the national IMs have greater intrinsic potential for economic resilience than the Rail Baltica route as it stands, given their ability to absorb cost overruns for activities on their own elements of the network. However, we believe that an equivalent effect can be created through appropriate contractual structuring.</p>

<p>RB AS</p>	<p>There are other areas where I may misunderstand the political / legal positioning: for example EU Directive 2016/2370 has “decision making concerning infrastructure charging .. including determination” (within the framework set out by Member State) as one of the “essential functions” of an Infrastructure Manager, and a number of the options presented do not seem to give RBNE that authority?</p> <p>It is also interesting to note, as an aside, that for example the Polish Rail Transport Act has the task/role of “managing property included in the railway infrastructure” as part of the operation of an IM, with no apparent exclusion of acquiring land for rail purposes provided “designed for management, passenger or freight transport”.</p>	<p>RBNE will have a monopoly with regards to access to the route. The access charges which will be levied by RBNE must be sufficient to enable RBNE to recover the costs of operating, maintaining and renewing its network. The recommended components of this are laid out in section 2.3.3.</p> <p>These charges will however be regulated; due to our expectation that passenger service levels will be stipulated as part of a franchise process and there should be a potential for Open Access operators to operate, due to the significant stakeholder concerns with regards to subsidy risk, we cannot see an environment where RBNE sets the charges in isolation.</p> <p>With regards to the example cited for Poland, this is not relevant - there are many models of Infrastructure Management, we have endeavoured to find the correct model for Rail Baltica and selected multiple alternatives with varying degrees of commercialisation.</p>
	<p><b>Exec Summary (p6) refers to “commercial freedom to grow as organisation matures” but document then seems to recommend placing constraints on that freedom before any discussions take place?</b></p>	<p>Correct - because this is about establishing a framework for operation; internal processes to enable changes (either to increase commercialisation or to constrain it) will be needed as the business evolves over time.</p>
	<p>In section 1.1.1 there is the quote (ref 5) about IMs not cooperating across borders may neglect cross-border impact of decision: in practise, how well do the three IMs cooperate today – including Estonian &amp; Lithuanian? Is this something that is a “daily” BAU exercise, or is it less typical (which would seem to strengthen the case for an RBNE that is independent and not reliant on existing IMs)</p>	<p>This is covered in the benchmarking. Issues exist and this is one of the reasons we are recommending a single entity.</p>
	<p>The report referenced in that section (“The Performing Rail Infrastructure Manager”) also includes the following points: “The current legislation provides that the two essential functions of path allocation and track access must be performed by an independent undertaking, whilst all other functions may be performed by an infrastructure manager. However,</p>	<p>The key functions are not being distributed to different market players, but the opportunity for different actors to win work under competitive tender is.</p>

<p>there are substantial interactions between these essential functions and other key functions of the infrastructure manager, in particular traffic management, infrastructure maintenance and development. Their distribution among different market players can lead to inconsistencies in management and increased coordination costs.” This seems to support a position that these key functions should not be distributed across different market players – and outsourcing to national IMs would certainly seem to be distributing functions to “market players”</p>	
<p>“Core network corridors will be created as a way to promote the coordinated development of infrastructure and resource-efficient ways of using it. Rail infrastructure managers will need to fully take part in their development. The new policy focuses the most critical elements: cross-border projects, interoperability and intermodality between different means of transport. European coordinators will support Member States and project promoters so as to reap optimal benefit from all investments.” This seems to suggest a genuine cross-border, interoperable and intermodal view is needed from infrastructure manager – i.e., “vision” ? Option 85 should not form a part of the comparison on that basis, even as a point of reference, yet it is at times treated (notably in Appendix J) as a viable option?</p>	<p>Option 85 is completely compatible with EU policy and the general approach from member states and as such remains a viable option - the challenge is one of relative efficiency and the extent to which separate Infrastructure Managers could unlock the benefits of the route as a whole, versus their own geographies. The consultant recognises that under Option 85 there would however be no ‘unified’ vision for the route.</p>
<p>The quote from “Delivering Ten-T” on p9 refers to the importance of decarbonisation, digitalisation, and innovation, but the rest of this report does not seem to discuss how the scope for those things might be affected by the IM model? It says digitalisation is important (in following paragraph) and also “people’s benefits”, but does not discuss innovation? From my perspective, constraining commercial opportunities for RBNE also constrains scope for innovation and digitalisation, and thus for efficiency gains / cost savings in the future (as well as any potential</p>	<p>There appears to be little detail available about Ten-T and the DDI agenda; Reference to the Communication from the Commission to the European Parliament, The Council, The European Economic and Social Committee and the Committee of the Regions – Europe on the Move Sustainable Mobility for Europe: safe, connected, and clean’ COM/2018/293 final only mentions rail twice. Constraining commercial opportunities <b>must</b> not however adversely impact any reasonable scope to support innovation and digitalisation on the route.</p>

<p>cost offsets from commercialisation). [Will come to the Risk section later.]</p>	
<p>On p11, there is a quote from Siim Kallas that is treated somewhat dismissively (“a worthy aspiration .. that does not ..”) – going to the source of that quote, later in that same paragraph Mr Kallas talks about the importance of independence from railway operators, and in the preceding paragraph, “Rail infrastructure managers also need to cooperate with airports and ports, which are the gateways to the EU transport network.” – again, vision would seem to be a requirement, but also greater commercial freedom (including, if appropriate, the ability to use extra land for railway associated services)</p>	<p>The recommended option reflects appropriate separation from the railway undertakings and the infrastructure managers.</p> <p>The position with regards to vision and the levels of commercial freedom reflected in the final proposed option reflect a balanced position that we believe to be appropriate for the organisation.</p>
<p>Moving on to section 1.1.8, “Benchmarking Common Themes Emerging” (p32), there is a key point about the “capacity, capability and culture to deliver”, and the potential for open access; what “capacity, capability and culture” would the proposed entity have – bearing in mind capacity would be constrained if staffing levels those of p318, possible outsourcing of key operational capabilities, etc?</p>	<p>Capacity will be naturally be constrained, but it is also natural for organisations to evolve. This should not impact capability or culture. Atkins does not accept that capacity should be constrained based upon the organisational design.</p>
<p>There are many important points raised in the discussions around PRIME 10. On p45, the authors present a list of four “ambitions”, notably digitalisation and the opening up of a more competitive passenger market (but also multimodality, raising the “vision” and commercial freedom points again). As far as digitalisation is concerned, they raise the extremely valid point that this is a new signalling architecture, which when combined with opportunities for open data and innovation represents a “new reality” for IMs. On top of that, there is the point about passenger service changes could bring financial challenges for existing IMs.</p>	

<p>P45, the Strategic Discussion by Trafikverket also raises interesting points, closely related to both vision and innovation (the scope of which is constrained in the recommended option and discussion).</p>	<p>The function of the MCA is to provide a balanced outcome, not to necessarily provide a relaxed outcome in terms of governance and control.</p>
<p>In the discussion on p48, two key points arise: first that operators across borders may have different priorities and this may increase complexity for operators, so the IMs need seamless systems and compatible technologies. The point made about ProRail and a “game simulation session” is perfectly valid – but from an IT / innovation perspective this is not something that should be seen as an (implied) exception, but as something the IM should be able to do (or if outsourced, the outsourcing partner able to do “day one” based on their experience of doing it for an existing railway)?</p>	<p>The Infrastructure Manager can have this capability (subject to investment and business case), but the route is relatively simple and with traffic volumes, this may well not prove necessary.</p>
<p>Turning to the more detailed discussions in section 2, on p260 the point is made that a railway undertaking “or any other legal entity” cannot exercise a decisive influence, thus strengthening the case for independence from existing RUs, IMs, with no reliance on them as more than subcontractors for works managed by RBNE? That does not fit with the “Country C” statement on p53.</p>	<p>This is not incompatible. Country 'C' favoured option 85, in which case there would be no conflict as an outcome.</p>
<p>The addendum on p269 fails to take into account Innovation and any developments such as deriving information without requiring dedicated measurement trains (something that ProRail and others have discussed in the past); it is very difficult to see how the two main models presented combine the flexibility to be innovative and to make the most effective use of digitalisation, within the constraints placed, the staffing proposed and the level of outsourcing discussed?</p>	<p>This is a worthwhile point to raise for the business, though should not have an impact on the Infrastructure Management model. There is nothing within the model that would prohibit RBNE acquiring data from RUs (for example of train information about OLE performance) under normal commercial relationships, although such systems do not typically provide data on track condition e.g. wear, profile, cant movement etc. The only block to innovation within the model proposed are the checks and balances put in place about the commercial activity that is permitted. As previously discussed, Atkins believes the level of headcount for the route to be sufficient for a high performing organisation to exist.</p>

<p>The commercialisation options presented in Table 2-9 (p306) represent a subset of those possible – especially when taking into account possible innovation – and will constrain RBNE: if it starts out as an organisation subject to those constraints, it is difficult to see how it is expected that “other opportunities [will be] gradually opened up” successfully to the same extent as they could without those constraints. There does not seem to be an analysis of this.</p>	<p>Atkins anticipates that further future commercialisation will need to have beneficiary approval as this will alter the risk profile they are exposed to.</p> <p>Atkins is proposing constraints on commercial activity by RBNE - this is deliberate and should also help foster a primary focus on delivery of operational rail activities.</p>
<p>. In Table 3-1, in addition to comments from Artūrs, I'd add Insufficient IT, Legal, Supply Chain given the responsibilities laid on in Appendix H</p>	<p>Appendix H does not show the number of roles in each area, just functional distribution. As demonstrated in the document, we believe the total headcount to be sufficient for RBNE and have used data from external IMs to generate the distribution of roles in this report. As per our tender response, this is a top down, rather than a bottom up analysis and more detailed work on construction of specific organisational details will undoubtedly be needed as the project progresses. It should also be noted that for areas which typically have both variable workload and low headcount requirements e.g. legal (once initial long-term framework contracts are established), outsourcing of services is a cost effect way to balance demand and the costs associated.</p>
<p>If evaluation of new technologies (e.g. 5G) within scope, another reason why insufficient engineering, IT staff</p>	<p>Evaluation of new technologies will obviously be within scope, but Atkins would temper this with regards to the nature of the route. Once built, the infrastructure technology footprint will be established and is unlikely to change materially until such time as renewals cycles commence. Even then, innovation will need to be in the context of interoperability of EU standards and so will have some natural constraints. The scale of the organisation and revenues is not likely to be sufficient to fund large numbers of staff on technology innovation. For RBNE we would recommend that the use of supplier forums and participation in European working groups on the same would present a pragmatic way forward to unlock innovation without large standing costs being incurred.</p>

<p>If extensive use of outsourcing for (e.g.) maintenance, I suspect both Supply Chain and Legal need to be far stronger?</p>	<p>This is differentiated between 57 and 63. We would also refer to the basis of our headcount calculations for the organisational structures.</p>
<p>In Table 3-4 (p313) there are references to the Asset Management Policy and the Asset Management Strategy, but I did not find a reference to how these are formulated (RBNE internally, as part of “vision”, or in conjunction with national IMs, etc? How should they align with all of the existing national policies for asset management in the rail sector?</p>	<p>Atkins believes this to be out of the scope of our commission. We have made recommendations for the creation of an asset management strategy, but this is a practical approach as to the implementation of the same. We do not see any requirement for RBNE to align with national policies for asset management (except for with regards to manifestly common areas, such as where stations are jointly managed).</p>
<p>My understanding of the Railways Act in Estonia is that any cross-border agreement cannot discriminate between different IM/RUs when it comes to providing services, and so – this is an example only – if a Latvian company is free to offer/provide IM services in Estonia that would have to be reciprocal, same for Lithuanian? I’m not sure how that fits with some of the stakeholder comments; it was noticeable that extra questions around this subject were put to RB Rail Estonia (p364) that were not reflected in similar questions to all other participants, and I did not see an explanation for this?</p>	<p>In theory, a national Infrastructure Manager from one country can establish itself in another territory, subject to regulatory approval, but needs to have an asset in order to provide services. Railway Undertakings cannot be blocked from offering services, except for practical reasons e.g. insufficient network capacity; with regards to Estonia, there were core questions provided to all parties, though different areas were expanded on, dependent upon the direction of discussion.</p>
<p>Appendix I covering KPIs is extremely light on detail, reflects very limited range of factors, and does not address KPIs RBNE itself would have to monitor (for example in terms of how potential outsourcing activities / partners would be measured, and their impact on these KPIs)?</p>	<p>Agreed, there are a whole range of potential subset KPIS for outsourcing solutions that would need to be developed. These cannot be sensible be proposed until the detail of each procurement exercise is developed. Atkins has provided further detail on KPI selection in the document.</p>
<p>Appendix J seems to show three clear outliers in some areas of the discussion. That may be an unfair interpretation, of course, but in the Appendix itself there is no commentary on this imbalance and how Atkins suggests it should be addressed (a similar point to 11, why is this not discussed in more detail within the report?)</p>	<p>Text amended: Extra detail included in the executive summary.</p>

	<p>This report is definitively not accessible to most of the readers which will need to use it as per their various responsibility of decision-making. The complexity of the topics, the various competences needed to deeply understand the content, the very dissertive form of the report make me fear that this material will be very difficult to use. For such complex, multidisciplinary and politically sensitive topic, we would need a very didactic report allowing to bring all stakeholders at necessary level before starting discussions. The structure of the report is not sufficiently clear, that in this particular case is problematic. The risk is high to have this report misinterpreted, or even instrumentalized by different stakeholders for different purpose. Other possibility is to see it ignored, and IM decision made only on a basis of an a minima political consensus.</p>	<p>Comment not incorporated: Atkins believes that the report balances the technical requirements with general readability in an appropriate manner. The subject matter is technical, but we believe that all key areas are accessible to a generally informed reader with some experience of railway infrastructure.</p> <p>Atkins has expanded on the executive summary to make this clearer.</p>
RB AS	<p>Many valuable considerations are made by Atkins, with many references but not really clear benchmarking (maybe in other parts of the report) that we could reuse to get decisions on some specific issues</p>	<p>Atkins agreed on this point, but the benchmarking exercise indicated predominantly that there was no 'cookie cutter' template which RBNE could readily follow. Information regarding poor performance and challenges identified in the benchmarking process were used to help inform the structure and scoring of the MCA.</p>
	<p>I cannot judge the question of governance and of independence from various state institutions or national IM. I understand that Atkins tried to find a balanced position according different criteria, not always very clear. Atkins trend to over evaluate the capacities and the usable competences of the nationals IMs, as our operational concept will be very different, our technologies up to date and our common language English. Disagreements start with recommendation to outsource the maintenance, possibly to national IMs which are according Atkins fully competent for this purpose</p>	<p>Comment not incorporated: With regards to the claim that Atkins has over-evaluated the capacities and the usable competencies of the national IMs, we have assumed that there will be by capability (as indicated in the MCA) in areas where the assets are common to those deployed today (even if the applicable maintenance standards are likely to differ). An example of this would be in track or in vegetation management.</p> <p>Where asset types are new or not common in the region e.g. electrification or ETCS, then we have not assumed that the existing IMs have any competence. We recognise that while all existing IMs have some performance challenges (as indicated in our benchmarking challenges), we also recognise that they are working to improve their current position e.g. the</p>

		<p>transformation programme recently announced by Lithuanian Railways - given the timescale prior to the IM being created, we believe this means we have provided a balanced and measured approach. We are therefore assuming a high level of competence, but not complete competence with regards to management of the RBNE asset base.</p> <p>With regards to the technology position of the asset, Atkins view remains that it will likely not be economic for the route to purchase dedicated large yellow plant for asset monitoring and that this will therefore need to be an outsourced service, meaning that there would be negligible benefit in terms of required in house capability, though we are anticipating that the fact such data is available (reflecting the capabilities of a modern digital railway), will lead to headcount efficiencies already built into our forecasts.</p>
	<p>Disagreements start with recommendation to outsource the maintenance, possibly to national IMs which are according Atkins fully competent for this purpose</p>	<p>Atkins has previously stated that it has assumed the National IMs as being competent in core areas of infrastructure management, except where those assets are relatively uncommon or new (e.g. OLE and ETCS). We recognise however that the scale of challenge with transformation programmes is however significant and the baseline for this is evident in the current performance statistics shown for the existing regional Infrastructure Managers. Had Options 80 – 85 emerged as preferred options, the analysis of the transformation plans in detail and the feasibility of becoming best in class would undoubtedly have needed more detailed scrutiny, but we do not believe this impacts the outcome of our analysis.</p>
	<p>Regarding heavy maintenance no question, it is general practice in Europe and such operation are not expected in the first years of operations. But to outsource daily maintenance including also inspection in the first years of operation (page 281-282) would be very dangerous, as it would prevent the RBNE to take control of the railway infrastructure and systems by staffs, during the</p>	<p>This position was flagged as a risk in section 2.3.1.3 along with mitigation options, but Atkins did not believe this to be an insurmountable risk provided the outsourced management contracts are appropriately structured. This concern should however be removed given the recommendation for a hybrid option for maintenance. It should also be noted that in the review by ProRail of this document, they were even more</p>

<p>critical DNP and warranty periods where major technical problem occurs and when organization of operation and maintenance is proofed.</p>	<p>positive than Atkins in the use of an outsourced maintenance model.</p>
<p>This period is critical for staff to get trained and to reach the right level to operate and maintain the infrastructure properly, this is the time when competence are aggregated and team built. On the opposite, Atkins recommend to bring this competence to the national IMs, arguing that it could be insourced any time later on. This is a kind of perversion of the objective, as once the national IMs will be trained to maintains the railway in a decentralized way, in no way a come back to a centralized RVBN would be possible</p>	<p>Atkins also disagrees that this is the natural outcome of this position as we believe that future insourcing should be feasible under the European Acquired Rights directive, under which the trained personnel would thereafter become RBNE employees. There is also an assumption that such outsourced maintenance contracts would automatically be won by the national IMs, which we do not believe to be the case.</p>
<p>• Situation worsen regarding operation. In the organization structure page 318, operation staff are limited to 23, where is it not clear what are the functions. But field operation is clearly out, that mean that OCC and other control facilities will be staffed and controlled by a RU, with all the possible conflicts as the operator is in charge of managing priorities on a daily basis between different Rus, freight and passengers. What could be the articulation between the operation department of RBNE and the RU effectively in charge of the operation is not specified.</p>	<p>Memo: As previously stated, Atkins has performed top down modelling. Within these figures, field operations are excluded, these being covered by the maintenance headcount. We are not assuming that the OCC and other control facilities are being staffed by a RU, but rather by RBNE. While we would expect that RU(s) may wish to collocate staff, particularly if deep alliancing is adopted as mooted in section 2.3.3.2.</p>
<p>Finally, where in the team “Renewal and Enhancement” one could guess that would be located the technical know-how of the RBNE, it appears that only 11% of 78 employee are in engineering department. This is absolutely insufficient to warranty a minimum of competence maintenance in-house, that is mandatory to warranty independence toward suppliers, whether they are engineering company or industrial suppliers.</p>	<p>This is a misunderstanding of function versus competency in the model. Atkins has added significant text to explain the difference regarding function/competency and role within our modelling process.</p>

<p>In fine, Atkins recommendation is to set up for RB which will have no control of the operation of its railway, nor able to get knowledge of it by insuring daily maintenance and inspection. This was the model of RFF in France, who was IM when SNCF was in charge of operation and maintenance. This proved to be a disaster, with deficient organizations, duplication of responsibilities, and finally over cost of such scheme was about 1, bEUR per year, that caused its dismantlement</p>	<p>As detailed previously, Atkins has proposed a solution which includes a level of headcount which is within a reasonable distribution of headcount seen in other European infrastructure managers when compared on a Track Km basis. As such, we believe that sufficient headcount is allowed for to permit RBNE to act as an informed client, particularly in light of the innovation and technology position which RBNE is looking to adopt for the route (Remote Condition Monitoring etc.).</p> <p>The consultant was not familiar with the detail behind Réseau ferré de France (RFF) that is outlined, but according to RFF's entry on Wikipedia, "RFF was mainly a financial structure focusing on debt refinancing and contracted the majority of its infrastructure management to SNCF. Signalling on RFF infrastructure was implemented and maintained by SNCF." As such, Atkins believes that the model which is described in this report is not similar in nature to that of RFF.</p>
<p>Furthermore, Atkins does not include in organization engineering department at sufficient level to have a minimal knowledge. This is the model of Banedanmark, where only managerial support were kept in house, that request costly contract with engineering companies for any kind of technical studies. That is something that Rail Baltica will probably not able to afford.</p>	<p>Atkins disagrees with this interpretation, but will note RB Rail AS's concerns. Atkins believe that sufficient headcount is allowed for within the model to permit RBNE to act as an informed client, particularly in conjunction with the view that the assets will be designed under BIM and that extensive use will be made of modern, best in class technologies such as remote condition monitoring.</p>
<p>Legal framework (charging, appealing) and governance structure: Regulator (regulatory body) as a crucial role in governance framework – does the consultant mean regulatory body (according to the EU directive)? If yes, would it be one single body or separate bodies in each country?</p>	<p>The structure and role of regulation for RBNE is outside the scope of this study, but where the term 'regulator' is used, this should be taken to mean the relevant regulatory body for each country. However, Atkins believes that for regulation to be effective on each route, there will need to be close working relationships established between the national regulators who in many cases will need to act as a single national body</p>

	<p>Charging framework – according to the recommended option 57 RBNE does not set track access fees. In that case who will act as a charging body? We do not see realistic that one single body will be formed for those reasons</p>	<p>RBNE will not be setting track access fees as we believe the pricing for this will need to be regulated, but will act as the charging body. Atkins believes that there are many options for the economic regulators to establish how this could be done; the benchmarking work which details the structures associated with the Channel Tunnel Intergovernmental Commission would appear to provide positive advice in this area.</p>
Estonia	<p>Shareholder structure/Contractual model – whether the beneficiary holding company is the same as the Beneficiary Owner?</p>	<p>Text amended.</p>
	<p>Market price for passenger and freight traffic – would it be still possible for RBNE to handle it under certain regime? Are there any strong factors (in addition to the transparency argument) why RBNE can not set the track access fees for example for the freight?</p>	<p>Market pricing passenger traffic is difficult because of key risks: 1. Subsidy from government where commercial case marginal; 2. Cross-subsidy as less transparent. Market pricing of freight is complex because of reduced transparency (risk of cross-subsidy) and risks volume at cost of wider economic case. Note the difference in approach is one of the differentiating factors between the options, so adding market pricing to Option 57 is making it more like other options.</p>
	<p>Commercial flexibility – it includes train maintenance and train cleaning which can not be pure RBNE functions. Please explain it in more detail</p>	<p>This was a minor example of a low risk ancillary service which could be performed in the event that RBNE controls train depots.</p>
	<p>Level of commercial freedom – consultant's distinction is a little bit unclear (land related). We would suggest to make it more simpler – infrastructure related services and service facilities (according to the EU directive) and non infrastructure related services.</p>	<p>Consultant's 'land distinction' offers extra granularity (albeit at cost of more options).</p>
	<p>NOBO/DEBO – how these functions can be part of the RBNE organizational structure? Notified body or designated body is a separate entity who conducts conformity assessment under the relevant EU directives</p>	<p>This resource is only required to support and interface with NOBO/DEBO bodies. It is not conducting NOBO/DEBO activity directly.</p>
	<p>BUISNESS CASE: Revenue model – assumption that no subsidy for the infrastructure manager required in the future. Is it in line with the results from the Business Plan study?</p>	<p>This assumption taken from business case, but the wording in the report points out that the options need to take into account that this assumption might not be practical. However, there is no</p>

	distinction here between the options tested, and no impact on the results.
BUISNESS CASE: Further value added services – are these already included in the scope of option 57 (as partial commercial services freedom)?	Correct. Table 2.9 defines which services could be undertaken under which option.
Cost model: Cost structure – there have been a recognizable decrease in annual total cost of RBNE. As there is no detailed layout of the cost model included in the report, we were not able to track all the changes made during the process. More precise explanations are needed with the detailed layout of the cost model (for example around 12 MEUR per annum spend on purchasing utilities has been removed);	Extra detail included in the presentation has now been added to the report.
Cost model: Infrastructure manager financial statement – whether the table on page 46 describes the financial statement of RBNE? In that case total cost numbers does not match.	The table is an extract from the EY CBA for Rail Baltica provided to the consultant as part of this study.
Is the cost model in line with the on going studies like Business Plan and Operational Plan?	The consultant has conducted a number of meetings with RB Rail AS to support the alignment of the Business Plan and Operational Plan with the Cost Model, and the feedback from these meetings is that the narratives are consistent.
As a general comment, it would be interesting to have a look on the feedback given by ERA, RBR and other parties during the process.	This detail has been included in this log file.
What would be the motivation for the potential shareholder... of the remaining 49% of shares?	Memo: The motivation is designed to be commercial and financial, and 49% is suggested to avoid the motivation of political control. There are multiple contractual and structural mechanisms that could be employed to have this effect.
“[The] business case of Rail Baltica would require to change and accommodate the same variety of topics and regulations (timetabling, capacity allocation, TAC rules, etc.), regardless of the selected legal and organizational setup. Therefore, the argument that multiple infrastructure managers option would be more difficult to implement and would require more complexed legal arrangements is not a valid point	Having 3 IMs would require 3 sets of agreements for each subject area (timetabling, capacity allocation, TAC rules, etc.) and gives the power of veto to every party. Having a single IM means that there is no agreement required for timetabling and capacity allocation for train services. Note that no trains are assumed to operate across both the 1435mm and the 1520mm networks.

	<p>Any new entity would be operating alongside 3 existing infrastructure managers, therefore either 3 separate agreements would be needed with each of the national IMs, or a joint multilateral contract would be needed with aligned positions among all parties. This topic would be very relevant for usage of existing railway infrastructure (intermodal terminals, stations, etc.) on the Rail Baltica railway route</p>	<p>Transfer of goods traffic and passengers by operators will require agreement in all options, because of separation of railways operations and IM required by the 4th Railway Package.</p>
Lithuania	<p>consultant proposes that the new entity's 'team comprised of ... long term secondments from the existing Infrastructure Managers'. Any such scenario would require additional arrangements, therefore, an agreement would be needed</p>	<p>Proposed as an option only in the report. Anyhow, all options require a method for creating a common vision for the route, which will be simpler where there is a single entity.</p>
	<p>Due to the future development of 1435 mm and 1520 mm networks and a need of cross-acceptance of rail vehicles, mutual agreement would be needed by Member States and close cooperation and working relationship established between any new entity and the existing national infrastructure managers. Any guidelines, partnership platforms and formats, sharing responsibilities and financial flow management of such close cooperation and working relationship, could only be ensured by specific agreements.</p>	<p>No vehicles are proposed to work on both 1435mm and 1520mm networks. Under a single IM model, vehicle acceptance should therefore fall to ERA rather than the national bodies.</p>
	<p>Section 'Legal structures' (p. 314 of the Final Report) identifies that for the new entity to remain state aid compliant and to avoid cross subsidizing, new entity would likely need to establish separate legal sister or daughter entities, which would then need complex arrangements for, as identified, transfer pricing, services and information barriers. Let alone the complexity of arrangements between new entity and its affiliated entities, any services, provided by such entities in the joint 1435 mm and 1520 mm infrastructure area (Vilnius, Kaunas, Riga, Tallinn, etc.) would also have to be agreed with 1520 mm infrastructure managers. Moreover, current Lithuanian public procurement regulation prohibits in-house procurements for state owned companies, meaning that any relations</p>	<p>This is opposite to the intent of the wording, which has now been amended to emphasise that separate legal entities are not required for the purpose of delivering Option 57.</p>

	<p>between new entity and its affiliated companies would be a subject to such limitations.</p>	
	<p>Section 'Subsidy challenge' (p. 319 of the Final Report) proposes that due to some aspects of competition between the existing infrastructure managers and any new entity could create a need for regulatory responsibility to balance and adjust the track access prices on the other train paths (1520 mm network)</p>	<p>This point, while accurate is deemed a very low risk in light of the fact that Rail Baltica is designed to serve new markets (mainly North-South). However, in the event that this situation emerged, then we do anticipate a regulatory obligation could emerge.</p>
	<p>Any arrangement to regulate 1520 mm access charge depending on the performance of 1435 mm manager could potentially have legal limitations, be contested by various parties, or as a minimum, would require amendments to legal acts, arrangements and agreements between various parties (Beneficiary, Regulatory Authority, both infrastructure managers, etc.)</p>	<p>The methodology for the management of this (low probability) scenario should be considered as part of the legal study.</p>
	<p>Complex arrangements and multilateral agreements would be a necessity for any infrastructure management option with no reasonable justifications, at least provided in this study, to say that one options has clear advantages in this respect over any other options</p>	<p>Having three IMs rather than one IM requires more legal agreements and gives the power of veto to any single entity.</p>
	<p>Competition between 1435mm and] 1520 mm network... would result in a relatively lower (per train or per freight kg / passenger) income for 1520mm infrastructure manager and subsidy needs</p>	<p>Rail Baltica is designed to serve new markets (mainly North-South) and as such, competition is likely to be limited. Notwithstanding this, competition should be viewed as a positive force in the marketplace, driving costs down for end users.</p>
	<p>Implementation of the study recommendations would create a divide and two-tier development of the Baltic 1435 mm and 1520 mm gauge railway networks, instead of having strong and effective national railway IMs which would focus on a streamlined and cost-effective development of the entire national railway network. For the States to make a decisions to step aside and shift the focus away from the potential of existing successful and sustainable current infrastructure managers, and to support foundation of a new entity, which brings many new issues (risk of</p>	<p>The report makes no proposed changes to the existing 1520mm networks. Scope of services was for consultant to advise on optimum organisational structure, not one where 'the benefits of such scenario should be overwhelming'.</p>

	<p>state aid occurrences, need for subsidies, potential competition for costumers (RUs) resulting in loss of revenue, limited institutional control and oversight of a public entity supported by public funds, etc.), the benefits of such scenario should be overwhelming, which is not the case</p>	
	<p>The main pros and advantages of the recommended Option 57 (p. 7 of the Final Report) are at the best of a secondary importance and do not justify the complexity of having and maintaining two different infrastructure managers within a single country with all the risks involved</p>	<p>Scope of services was for consultant to advise on optimum organisational structure, and methodology includes operational and contractual costs of complexity. Please note, however, that the majority of EU nations have more than one railway Infrastructure Manager, and the same applies in Estonia and Latvia.</p>
	<p>[The] nature of the study is highly speculative as the Consultant includes specific disclaimers for uncertain assumptions (e.g. for operational cost assessment the consultant identified the potential annual costs, but also asserts that “at the point RBNE is established, sufficient flexibility and budget headroom is granted to allow the business to operate effectively”. This potentially voids any conclusions...</p>	<p>The consultant has followed the methodology set out in accordance with the terms of reference and the RfP and believes that they have taken a balanced approach to cost and risk, in a manner that is professionally appropriate.</p>
	<p>The consultant gave much effort to prepare and present cost model in the Interim Report with justified result of ~74-81 mill. EUR per year (Figure 1-27 in section 1.4.), which was more or less in line with findings of the Global Project Cost-Benefit Analysis. However, Final Report additionally presents updated annual cost amount of ~57 mill. EUR determined ‘following alignment discussions with the client’</p>	<p>Differences in approach explained in detail in Section 1.4.11. This section goes on to explain why the differential is not material in terms of the modelled cost output, and therefore, insofar that costs are a factor in the final option assessment.</p>
	<p>many of the identified potential findings and advantages of a new IM are presented in a declarative fashion without any clear justifications or grounds for such assertions, i.e. “highly ethical and transparent framework, structured to present the best chance of success at delivering the business case, but with the governance regime that will allow commercial freedom to evolve as the organization matures” (p. 7), “a single, coherent entity controlling the railway across all three countries will perform significantly better than multiple IMs” (p. 7), etc. There is no clear</p>	<p>These quotations taken from the Executive Summary. The rest of the report provides evidence to justify these findings.</p>

	justification as to why these assertions are applicable to uniquely the recommended Option 57	
	Viability of Option 85 and the need to have it analysed in more detail is supported by the sensitivity testing under section 1.4.7. of the Final Report... Had the Life-Cycle Model been extended from 10 years to 30 years (so as to match the Global Project Cost-Benefit Analysis) or if the assumptions for costs/individual scores under the Multi-Criteria Analysis had been analysed and reviewed in more detail, it is likely that the final scores of the option evaluation would be different or had even favoured the Option 85	Sensitivity testing has been undertaken as requested and is included in this draft.
	Cost assumptions for the Life-Cycle Model provide for very limited synergies in case of multiple infrastructure managers: (i) headcount... does not include others organizational elements (Strategy, PR, HR, etc.)...(ii) various procurements (iii) the availability of synergies and possible use of existing resources under multiple IMs option is supported by the recommendation of the study itself as it suggests employee secondment arrangements from the existing infrastructure managers in case a new, single infrastructure manager is established	Item (i) included in report (e.g. Table 1.6). Item (ii) also included. Item (iii) included.
	Infrastructure manager financial statement – whether the table on page 46 describes the financial statement of RBNE? In that case total cost numbers does not match	The CBA figures were produced separately and, while not exactly the same, are consistent with the narrative of this report, and this is noted in the report in Section 1.4.3.
	Is the cost model in line with the on going studies like Business Plan and Operational Plan?”	The consultant has conducted a number of meetings with RB Rail AS to support the alignment of the Business Plan and Operational Plan with the Cost Model, and the feedback from these meetings is that the narratives are consistent.
	It is worth pointing out that certain level of alignment for cross-border operations between the different infrastructure managers is already achieved in the formats mentioned under comment No. 1. (e.g. procedure for capacity allocation on Rail Freight	Rail Baltica is designed to serve new markets (mainly North-South), while a single IM model will reduce the number of interfaces on borders required. <i>All infrastructure management models under consideration will be expected to comply fully with EU regulations.</i>

	Corridors in accordance with Regulation (EU) No 913/2010).	
	For the State and Beneficiary to support any findings of the study, it should be assumed that the proposed infrastructure management option would present a setup which not only clearly meets the aspirations and requirements set out by the State and the Beneficiary, but also exceeds them... From the point of view of the Beneficiary, this proposition is flawed as the Beneficiaries represent sovereign States and express their requirements for the infrastructure management model... and what should be considered as optimal.	The Terms of Reference require the consultant to identify and set out an optimal organisation for the Rail Baltica route. The scope of services does not require the consultant to meet the express requirements of the beneficiaries, not least of all because these expressed wishes are not necessarily aligned. <i>The lack of alignment between the beneficiaries which became evident during the stakeholder consultation process was clearly indicated to all parties at the time of the interim report.</i>
	Consultant has noted the potential risk of cross-subsiding, but at the same, acknowledged that this is a complex area that is still to be agreed (p. 317 of the Final Report), meaning that this risk is not fully mitigated under the recommended final Options 57&63... The study has assumed that income which is expected from Track Access Charges will be accrued centrally.	Options 57 and 63 are defined in part by the fact that income is accrued centrally, unlike in some other options. The risk of cross-subsidy is greater where there is less transparency and more commercial agreements are required for a given flow of traffic, which will follow from an operator having to negotiate with more than one IM (particularly where part of another bigger organisation), directly or indirectly through the agency powers of the first approached IM. The consultant agrees that cross-subsidy is a complex area, will need careful consideration under the political process and that particular care will be required at any legal drafting stage.
	One of the main disadvantages of the multiple infrastructure managers' option is believed to be the implementation difficulty due to various different interfaces which could otherwise be successfully managed by a central, single institution. However, the legal/organizational setup (be it different managers or a single manager) is only a secondary aspect	Complexity is only one factor, and its weight within the assessment is set out clearly in the report.

	<p>During the few meetings with the stakeholders it was clearly stated to the Consultant that any proposals to establish new legal entities for the railway infrastructure management would be step away from current effort to: (i) integrate isolated 1520 mm gauge railway network of the Baltic States into European railway network via interoperability of Rail Baltica Global Project and (ii) develop and modernize current Baltic railway infrastructure managers to meet the requirements of effectiveness, sustainability and transparency</p>	<p>The scope of services does not include any recommendation that should impact on any initiatives on the 1520mm network.</p>
	<p>In case the Polish/Finish sides would not be involved in the joint infrastructure management model that is proposed in the study, it is questionable what added value such joint model would then have as interfaces and need for co-operation between the different entities would still remain. The study did not consider the aspect of (non)involvement of Polish and Finish sides at all.</p>	<p>The report conclusions that some options have reduced interfaces within the Baltic states holds true even for traffic that is carried through other nations (Poland, Russia, Belarus, and even Finland by ferry). The fact that there will be further complexity for traffic beyond the Baltic states does not reduce the value of reduced complexity within the Baltic states.</p>
	<p>As noted throughout the study preparation process, the model of multiple national infrastructure managers is the only feasible option for Rail Baltica infrastructure management in Lithuania... [and this was] not taken into consideration</p>	<p>The shortlist included the Option of multiple IMs. However, it is important to note the scope of services and the study terms of reference and the agreed methodology explicitly required the consultant to test more than one "option for Rail Baltica infrastructure management".</p>
	<p>It was requested to include Option 85 for an in-depth analysis under all of the WPs of the study, not limiting it only to the purposes of comparison</p>	<p>The shortlist includes Option 85. If the consultant were to undertake a much deeper analysis of this option, it would have also been necessary to have undertaken such analysis of all of the shortlisted options, in contradiction to the methodology in the agreed terms of reference for the study.</p>
	<p>It was requested to provide examples of successful and comparable multi-national infrastructure management cases with the emphasis to the European Union experience, particularly when there would be more than 2 participating countries or the jointly managed infrastructure would not be limited only to a cross-border section (as tunnels, bridges, etc.). As it can be seen from the outcomes of the benchmarking exercise, such examples were not provided</p>	<p>There are few NEW and INTERNATIONAL lines in the EU. The benchmarking included the examples of the Fehrman Belt (via Øresund), Lyon-Turin and Eurostar via the Eurotunnel, as well as the Dublin-Belfast service where the new infrastructure is limited. In the case of Eurotunnel, a new IM was required. In all the other examples, the railways were extensions of the existing networks, where there were longstanding and high-volume cross-border arrangements in place, and no</p>

		<p>significant EU subsidy was required. That is not the case for Rail Baltica. Non-European examples were also provided, where an IM with international overreaching authority was established.</p>
	<p>Despite the existing measures and frameworks for cross-border operations (Rail Freight Corridor North Sea-Baltic (C-OSS), RailNetEurope (Path Coordination System, Train Information System, Charging Information System), PRIME) which would provide a “valid option for managing the Rail Baltica network” (p. 14 of Final Report), the study does not provide any further considerations on how these measures could actually be used or what could be the implications towards the proposed infrastructure management models (Option 85 in particular, as it is believed that this option would face most interfaces in cross-border operations</p>	<p>The benefits of the RailNetEurope systems and the benefits of membership of PRIME were included as a base assumption in all options. Acting as a OSS is expected from all infrastructure managers under all options.</p>
	<p>Study lacks any added value and may not be used for further considerations on the infrastructure management topic as it goes against the principle position at least of one of the stakeholders, despite this position being communicated in the very beginning of the study preparation</p>	<p>The scope of study and terms of reference were not to agree with a single stakeholder, but to identify the optimum option for the Rail Baltica route. Stakeholder opinions were manifestly divergent from an early stage in the stakeholder consultation process and will need to be reconciled as part of the political process. This does not alter the recommendations being made which are developed using a robust, balanced and transparent methodology.</p>
	<p>A the outset we should point out that we are clearly not in a position at ERA to comment on the choice of Options for the structure of the Infrastructure Manager that have been made in this study as it is not our remit to do so. The creation of an Infrastructure Manager covering a railway across 3 member states will require work to establish how an authorization for the use of the infrastructure in these circumstances could be granted – it would need to involve all 3 involved National Safety Authorities in some way. This issue is not dealt with in this report.</p>	<p>This is correct, but is out of scope from the consultants remit, but is referenced with regards to the creation of a potential model.</p>

	<p>On page 293 there is a reference in the Section on Interoperability to Directive EU 2008/57 as governing Interoperability. Later on page 295 there is reference in the section on Cross-Acceptance to Directive EU 2016/797. These references need to be resolved. Logically EU 2016/797 should apply in both sections given the timescales that Rail Baltica is working to.</p>	<p>Text amended.</p>
<p>ERA</p>	<p>On page 301 there is a section on the Regulatory Relationship (Safety). I believe that this section should be revisited. Firstly there is reference here to the need for RBNE to establish a Common Safety Method. This is an unfortunate choice of wording as Common Safety Methods are legislation which cover many aspects of the railway safety area e.g. Monitoring CSM 1078/2012, CSM on Risk Evaluation and Assessment 402/2013, CSM on SMS Requirements 2018/762 and on Supervision 2018/761 so the wording here is unfortunate since the meaning is not this but have a common approach to safety related matters across Rail Baltica</p>	<p>Text amended.</p>
	<p>This brings forward another point – the key emphasis in this section should be on the importance of the Rail Baltica Infrastructure Manager having a Safety Management System which meets the requirements of the CSM on SMS Requirements referred to above. Without this they will not get a Safety Authorisation and therefore the Infrastructure cannot be used, so this is critical.</p>	<p>Text amended.</p>
	<p>The Safety Management System should bring the common approach to safety related matters that is referred to here since under this that all the arrangements the Infrastructure Manager has in place to meet the legal requirements set out in the EU legal framework for railways will be covered. The Safety Management System is also what the National Safety Authorities of the Baltic States will be looking to assess when they carry out supervision of the infrastructure manager after the award of a safety authorization.</p>	<p>Noted.</p>

<p>“The creation of an Infrastructure Manager covering a railway across 3 member states will... involve all 3 involved National Safety Authorities in some way. This issue is not dealt with in this report”</p>	<p>This is true for all options, and therefore has no impact on results.</p>
<p>choice of wording [Common Safety Methods]”, which, in legislation, covers many specific “aspects of the railway safety CSM 1078/2012, CSM on Risk Evaluation and Assessment 402/2013, CSM on SMS Requirements 2018/762 and on Supervision 2018/761</p>	<p>Text amended.</p>
<p>the key emphasis in this section should be on the importance of the Rail Baltica Infrastructure Manager having a Safety Management System which meets the requirements of the CSM on SMS Requirements referred to above. Without this they will not get a Safety Authorisation..., so this is critical</p>	<p>Agreed, but methodology assumes that any competent entity should be capable of securing required safety authorization.</p>
<p>The Safety Management System is also what the National Safety Authorities of the Baltic States will be looking to assess when they carry out supervision of the infrastructure manager after the award of a safety authorization</p>	<p>No impact on results.</p>
<p>Reference in the Section on Interoperability to Directive EU 2008/57 as governing Interoperability. Later... there is reference in the section on Cross-Acceptance to Directive EU 2016/797. These references need to be resolved. Logically EU 2016/797 should apply in both sections given the timescales that Rail Baltica is working to</p>	<p>Text amended.</p>
<p>Cross Acceptance – page 295. This text will be voted in January. Please, keep in mind that new processes are expected to be added in the Appendix D1 – OPE TSI that will affect directly the ‘Route Compatibility’ process under the Article 23 - 2016/797 – ‘Article 23 Checks before the use of authorised vehicles’. This new process gives to the RU all the responsibility when checking if the already authorized vehicle (Article 21) is compatible with the route. (Process totally apart of the path contracting).</p>	<p>Noted: But Atkins cannot take into account legislation that has not yet been approved in its assessment methodology.</p>

	<p>Article 21 – page 431 – When saying ‘There is no material difference in impact on either a single IM or a multiple IM scenario’ . I do not agree as there is difference in the new process: When the area of use of the intended route involves more than one MS, the Agency has the final decision for issuing the VA. On the contrary, when the area of use involves a unique Member State, the NSA of the MS has the final decision for the vehicle authorization.</p>	<p>This may be technically correct but is not material in that it sits outside the core scope of this study (safety regulation rather than Infrastructure Management. It is however important in that it emphasises that a single Infrastructure Management model would have less complexity for vehicle acceptance versus a multiple Infrastructure Manager model.</p>
EIM	<p>As a further suggestion, I recommend you to contact ADIF and try to get the information from them related to the Hathramain High Speed Project (Saudi Arabia High Speed Train) where they are in charge of the maintenance of the line for 20 years (or 25 I am not sure) and they did a study when tendering for the contract that a Spanish Consortia won (Phase 2 of the project). It will be interesting for you to compare some figures, numbers, and deviation from the original budget.</p>	<p>Note: This was not undertaken as the benchmarking phase of the project was already closed out.</p>
	<p>Drivers [and other staff] who have to communicate with the infrastructure manager on critical safety issues must have [a common] language [with the] infrastructure manager... [so] they can communicate actively and effectively in routine, degraded and emergency situations.” (Directive 2016/2370)</p>	<p>True for all options.</p>
	<p>Cross Acceptance [regulatory text]... will be voted in January. Please, keep in mind that new processes are expected to be added in the Appendix D1 – OPE TSI that will affect directly the ‘Route Compatibility’ process under the Article 23 - 2016/797 – ‘Article 23 Checks before the use of authorised vehicles’. This new process gives to the Railway Undertaking all the responsibility when checking if the already authorized vehicle (Article 21) is compatible with the route. (Process totally apart of the path contracting)</p>	<p>No material difference between options.</p>
	<p>When the area of use of the intended route involves more than one Member State, the Agency has the final decision for issuing the Vehicle Acceptance. On the contrary, when the area of use involves a unique Member State, the National Safety</p>	<p>Wording amended. Whilst there is a difference in process, there is no material impact on the results for the IM but a single option would reduce workload for the agency</p>

	Authority of the Member State has the final decision for the vehicle authorization	
	As a further suggestion, I recommend you to contact ADIF and try to get the information from them related to the Hathramain High Speed Project (Saudi Arabia High Speed Train) where they are in charge of the maintenance of the line for 20 years (or 25 I am not sure) and they did a study when tendering for the contract that a Spanish Consortia won (Phase 2 of the project). It will be interesting for you to compare some figures, numbers, and deviation from the original budget	The consultant is familiar with the Haramain High Speed Line. This line is not international, and has recently encountered significant commercial difficulties, but, from feedback from the PTA KSA, this was due largely to ambitious revenue forecasts and capital costs uplifts from unexpected terrain difficulties.
	Prior Draft - Page:8 - This might not be the case since some models are under more scrutiny from the EC than others. Text amended.	Text amended.
	Prior Draft - Page:8 - maybe the PRIME benchmark can be of help?	Text amended.
ProRail	Prior Draft - Page:10 - unfortunately, I cannot read the figures...	Clearer Graphic Added
	Prior Draft - Page:10 - describe the current state of play	Clarification of the use of RailNetEurope added.
	Prior Draft - Page:10 - maybe good to elaborate a bit more on this important notion	Text amended.
	Prior Draft - Page:11 - we endorse this observation	Text amended.
	Prior Draft - Page:11 - also here a reference to the PRIME benchmark could be included	Data not made available to Atkins.
	Prior Draft - Page:12 - and how about freight?	Text amended.
	Prior Draft - Page:13 - just to be sure: please note that the mechanism also works in the other direction. If economy grows with %x, transport will grow with %X+	Comment not incorporated.
	Prior Draft - Page:13 - ?	Typo - corrected.
	Prior Draft - Page:16 - Brexit?	Comment not incorporated.
	Prior Draft - Page:27 - ?	Typo - corrected.
	Prior Draft - Page:28 - note that the Swedish IM, Trafikverket, is multimodal	Text amended.
	Prior Draft - Page:28 - and the Swedish?	Covered elsewhere in section.

Prior Draft - Page:29 - demonstrate the high performance of both IM's (benchmark PRIME?)	Note prior comment on access to PRIME data.
Prior Draft - Page:29 - Puttgarden	Language description only Puttgarten / Puttgarden.
Prior Draft - Page:29 - idem	Language description only Puttgarten / Puttgarden.
Prior Draft - Page:30 - why differing?	Text amended.
Prior Draft - Page:30 - reference to Brexit?	Comment not incorporated.
Prior Draft - Page:31 - for pax this is not a common definition (see PRIME benchmark)	Text amended.
Prior Draft - Page:33 - One could read this as the IM being the only factor to the long term success, quod non.	Text amended.
Prior Draft - Page:33 - why is there a need to introduce national (safety) rules and not just adopt EU standards?	Comment not incorporated - misunderstanding of text.
Prior Draft - Page:38 - refer to current EU wide decision on summer and wintertime	Comment not incorporated - not referenced in research.
Prior Draft - Page:39 - please note that the Dutch HSL is an outlier in the network: it is the only part that has not been built by the current IM (ProRail) or its predecessor nor is it maintained directly by ProRail.	Text amended.
Prior Draft - Page:40 - please note that Thalys is the operator not an infrastructure project	Text amended.
Prior Draft - Page:41 - not familiar with regional markets, I seems striking to me that freight revenues are so much higher than pax revenues. Maybe good to explain.	Covered by Rail Baltica CBA.
Prior Draft - Page:43 - Please note that the influence of the state not necessarily coincides with the status public or private.	Text amended.
Prior Draft - Page:44 - NL:	Comment not incorporated.
Prior Draft - Page:44 - please note that for ProRail this is not a debt which has to be repaid, but so called 'overflowing passiva'	Comment not incorporated.
Prior Draft - Page:46 - Trafikverket	Typo - corrected.
Prior Draft - Page:48 - please note that in aviation this does not seem to be such a big problem...	Comment not incorporated.
Prior Draft - Page:48 - in 1995, NS was the only operator in NL. Please	Comment not incorporated.

note that NS still holds the concession for the main network and that regional lines are tendered.	
Prior Draft - Page:50 - how would this modal look like if the infrastructure operator and the system operator would be the same body?	Comment not incorporated - not referenced in research.
Prior Draft - Page:52 - enhancements?	Text amended.
Prior Draft - Page:52 - (facilitating)	Text amended.
Prior Draft - Page:53 - this requires reflection. Without it, these themes do not seem to be of much value.	Text amended.
Prior Draft - Page:57 - This requires explanation as to what the stakeholders mean. They do not deem it necessary for IM's to cooperate?	Text amended.
Prior Draft - Page:58 - ?	Comment not incorporated.
Prior Draft - Page:75 - is this supported by examples from other countries?	Comment not incorporated - part of Option construction methodology.
Prior Draft - Page:75 - one?	Text amended.
Prior Draft - Page:222 - why, there are currently also risks...	Comment not incorporated - part of Option construction methodology.
Prior Draft - Page:224 - please note that the IM can never be held accountable solely for train performance	Comment not incorporated.
Prior Draft - Page:228 - why is there a baseline performance if RB is a new international project?	Comment not incorporated - Option 85 effectively the baseline performance that could be expected by the national infrastructure managers today, incorporating their use of best practices, such as RailNet, PRIME and continuous improvement over time.
Prior Draft - Page:229 - why route length?	Memo: To provide a scalable, comparable methodology.
Prior Draft - Page:230 - figures not readable...	Clearer Graphic Added
Prior Draft - Page:238 - why does this show a line instead of dots?	Comment not incorporated.
Prior Draft - Page:254 - why exclude this?	Memo : See Section Enhancements (Upgrades)
Prior Draft - Page:254 - Please note that ProRail and EIM are available to share best practices	Memo : Noted, EIM consulted on study outcome (Draft Final)
Prior Draft - Page:254 - is this necessarily the case?	Comment not incorporated - part of Option construction methodology.
Prior Draft - Page:260 - why only as end destinations?	Comment not incorporated.

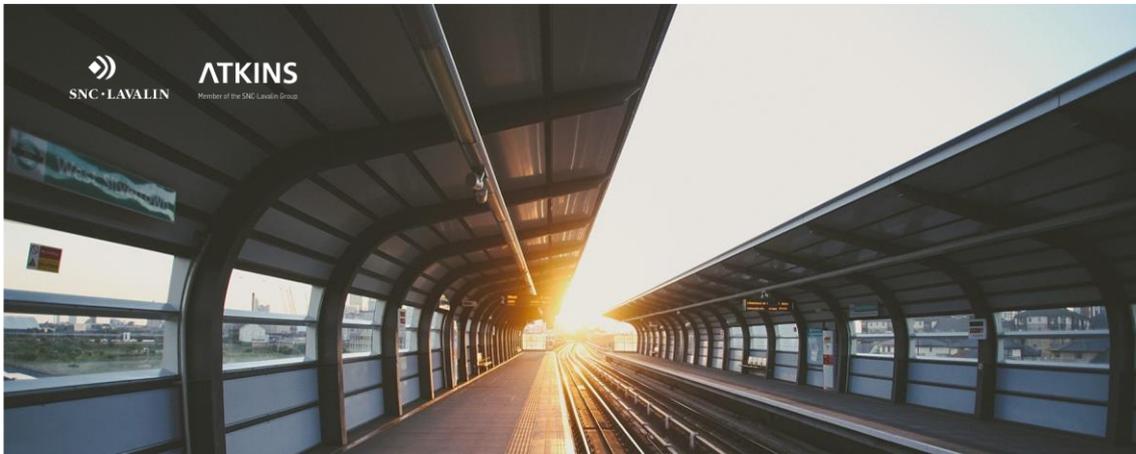
Prior Draft - Page:261 - can't the RBNE be the asset owner?	Memo : Understood to be a base assumption the project.
Prior Draft - Page:263 - and their customers, the shippers	Comment not incorporated.
Prior Draft - Page:266 - At ProRail, we see a tendency from find and fix to predict and prevent	Comment not incorporated.
Prior Draft - Page:267 - or at the trains	Comment not incorporated.
Prior Draft - Page:269 - why not?	Comment not incorporated. Memo : AM seen as a core competence.
Prior Draft - Page:269 - why? In NL we have good experience in terms of performance related to costs with outsourcing maintenance by tendering	Text amended.
Prior Draft - Page:270 - maybe subsidizing retrofitting of locs?	Comment not incorporated.
Prior Draft - Page:272 - somewhere in the study, it might be useful to pay attention to the number of flights currently taking place between the cities along the RB route and more general the EU-wide discussion	Comment not incorporated - out of scope.
Prior Draft - Page:272 - about replacing flights up to 500-800 km by railway connections...	Comment not incorporated - out of scope.
Prior Draft - Page:272 - the Dutch HSL case proves the opposite	Text amended.
Prior Draft - Page:273 - maybe good to explain	Comment not incorporated.
Prior Draft - Page:273 - I would say competitive. Low could implicate a race to the bottom when it comes to the state of the assets	Text amended.
Prior Draft - Page:274 - idem	Text amended.
Prior Draft - Page:275 - this is not the case for NL where state ownership has not gone as far as management of the network	Comment not incorporated.
Prior Draft - Page:276 - depends not just on terminals	Text amended.
Prior Draft - Page:277 - maybe good to look at (air)ports?	Comment not incorporated.
Prior Draft - Page:278 - depending on the choice, RBNE can also raise extra revenues by operating the stations	Text amended.
Prior Draft - Page:278 - seems a bit like jumping to conclusion, since the operator it not yet known or there could be more than one operator. in NL, there have been issues with the stations being operated by the	Comment not incorporated - text deemed to be reasonable assumption based upon known scheme information.

Prior Draft - Page:278 - incumbent operator, although more than 100 stations are not served anymore by the incumbent. The responsibility at stations is currently under review in NL.	Comment not incorporated.
Prior Draft - Page:280 - In principle this is true, however since maintenance requires capacity, we experience in NL a high interest in our strategy. Also in the main concession, a frequency and timing of trains is	Comment not incorporated.
Prior Draft - Page:280 - prescribed, so the IM cannot just decide when and how maintenance is done.	As above.
Prior Draft - Page:280 - innovations don't come from the market	Text amended.
Prior Draft - Page:281 - WE cannot confirm this from the Dutch experience. Since outsourcing and tendering maintenance, performance (including safety) has improved significantly and costs have gone down,	Text amended.
Prior Draft - Page:281 - For this reasons, one might recommend to have the same entity responsible for building and maintaining the RB line (experience from NL HSL)	Text amended.
Prior Draft - Page:288 - for what reason?	Text amended.
Prior Draft - Page:289 - no normal annual timetabling process?	Text amended.
Prior Draft - Page:290 - we recommend to use the experience of Rail Freight Corridors on dealing with these issues	Text amended.
Prior Draft - Page:291 - and the characteristics of the infra and the interface	Text amended.
Prior Draft - Page:294 - not just RB, this is an issue all over the EU	Comment not incorporated - Atkins views this as a greater challenge for RB due to the need to have long distance coverage in a single drivers shift.
Prior Draft - Page:294 - please note that EIM is strongly in favour of one single operational language (just like in aviation) as a goal which can be reached in a step by step approach	Comment not incorporated.
Prior Draft - Page:294 - lessons from Rastatt incident?	Comment not incorporated- Consultant's familiarity with Rastatt

	incident is limited with regards to response. RBNE to review lessons learned as required.
Prior Draft - Page:294 - prove of this statement?	Text amended.
Prior Draft - Page:298 - is this an issue for RBNE?	Comment not incorporated - Client advised this to be a concern.
Prior Draft - Page:298 - societal benefits could also occur to have these goods transported in the most sustainable and safe way	Comment not incorporated.
Prior Draft - Page:300 - a fourth factor could be noise emission by trains	Text amended.
Prior Draft - Page:301 - maybe IRG/ENRRB could be of use?	Text amended.
Prior Draft - Page:302 - seems self evident	Comment not incorporated.
Prior Draft - Page:302 - ProRail can share its experiences with the coordination mechanisms it is part of	Comment not incorporated.
Prior Draft - Page:306 - can power generation only be done in option 5? Assets can be easily used for that purpose...	Comment not incorporated - of the Options under consideration, this is the case.
Prior Draft - Page:313 - other?	Comment not incorporated.
Prior Draft - Page:315 - please elaborate, seems not to be the case all over the EU	Comment not incorporated.
Prior Draft - Page:316 - we would recommend EIM too	Text amended.
Prior Draft - Page:317 - is this a RBNE task or for the government?	Text amended.
Prior Draft - Page:317 - which compliance?	Text amended.
Prior Draft - Page:318 - are these numbers of fte's?	Text amended.
Prior Draft - Page:321 - hybrid option?	Comment not incorporated.
Prior Draft - Page:450 - not readable	Clearer Graphic Added
Prior Draft - Page:452 - where is the function of stakeholder management /public and international affairs positioned?	Comment not incorporated (covered in executive summary).

# Appendix K. Slides IMWG 12/12/18

These slides were presented to the IMWG in Riga, Latvia on the 12<sup>th</sup> December 2018.



## Rail Baltica Infrastructure Management Study – Draft Final Report

Wednesday 12th December 2018



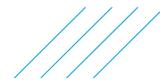
### Context

- The objective of the Infrastructure Management Study is to enable the timely determination and selection of a suitable infrastructure management model for Rail Baltica.
- The strategic purpose of this study is to provide a comprehensive, independent analysis of feasible infrastructure management models for Rail Baltica, aiding and **promoting a diligent, well-informed and substantiated future political decision-making process** with regards to Rail Baltica Infrastructure Management.



## What did we learn from Benchmarking and Stakeholder Consultation?

It was apparent that while there is no specific **need** to create a dedicated Infrastructure Management Company for Rail Baltica, there is an imperative to create something better than the status quo, particularly in regards to ensuring the freight business case is facilitated.



## Existing Landscape - PRIME

All the existing infrastructure management companies across Lithuania, Latvia and Estonia are signatories to the 'Rules of Procedure of the European Network of Infrastructure Managers'

This covers the key elements of any infrastructure manager and embodies PRIME (Platform of Rail Infrastructure Managers in Europe).

The aim of PRIME is to facilitate the provision of efficient and effective rail services within the Union, with the parties to take up the role of the European Network of Infrastructure Managers as foreseen in Article 7f of Directive 2012/34/EU, as amended by Directive (EU) 2016/23707. By December 2018, all the main IMs in Europe will be participating.

### OBJECTIVES

- Develop Union rail infrastructure
- Implement SERA
- Exchange best practices
- Monitor and benchmark performance
- Contribute to the market monitoring
- Tackle cross-border bottlenecks
- Discuss application of charging systems and allocation of capacity on more than one network

**All national infrastructure managers are actively engaging to try to improve the performance of their networks in line with the 4<sup>th</sup> railway package.**

**Benefits of PRIME apply in all potential options**



## Existing Landscape - RailNet Europe

RailNetEurope ('RNE') was formed in 2004 and is an umbrella organisation comprised of Infrastructure Managers and Allocation Bodies which looks to support the planning, selling and management of international train paths – at this stage it does not cover the Baltic states in full;

Lithuania, Estonia and Latvia seeking to implement after 2015.

The majority of Railway Undertakings are active across multiple TEN-T corridors and that the majority of rail freight traffic does not start or end on a specific rail freight corridor.

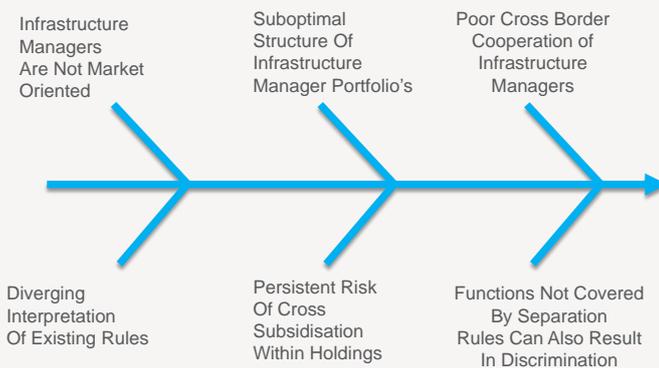
To manage this complexity, RNE has developed an IT system called RNE PCS ('Path Coordination System') which 'handles the communication and coordination process for international path requests and path offers'.

## OUTCOMES

*Any infrastructure manager working on the Rail Baltica route will likely have to use the same systems for freight management and coordination as the existing national rail infrastructure managers*

**Benefits of RailNet Europe apply in all potential options**

## Real World Performance



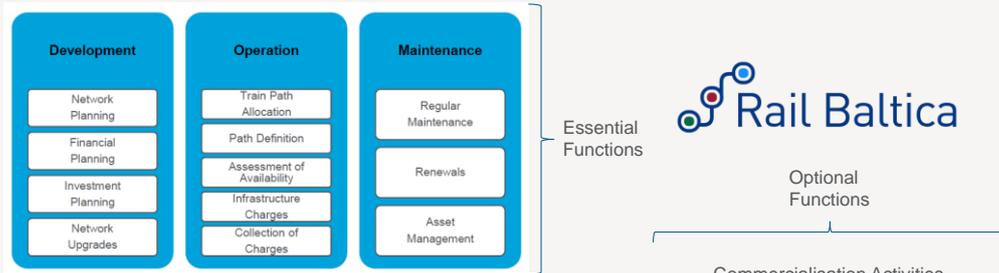
## OBJECTIVES

**The processes and systems for cross border management are in place. The Rail Baltica route, if operated by the national Infrastructure Management companies would certainly function – but the EU itself recognizes that the current performance of Infrastructure Managers is not optimal.**

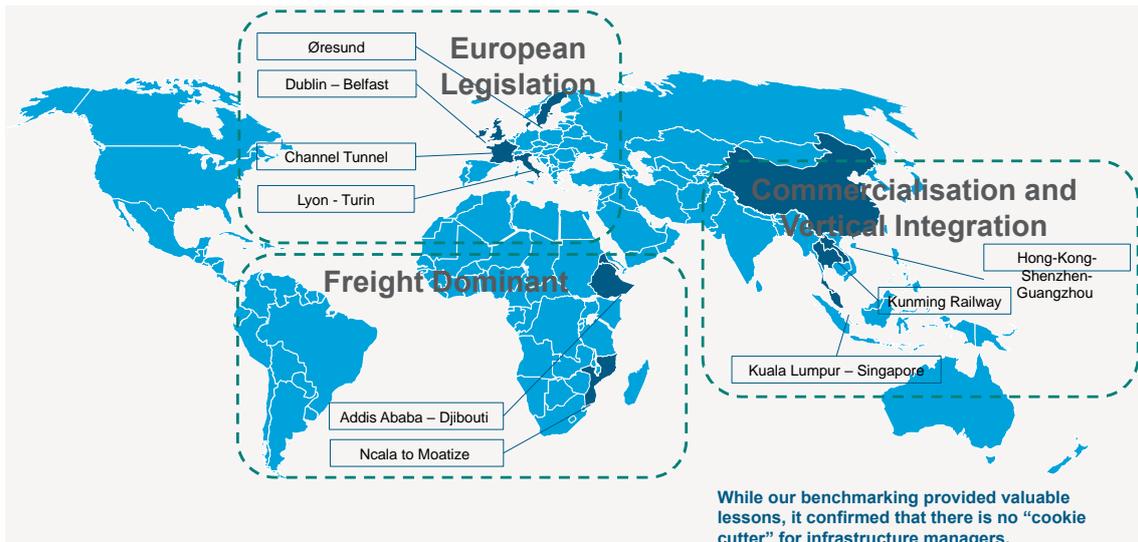
**Our aim is to look for the most effective option.**

**This option will therefore build upon the best practice of PRIME and RailNet**

## Core Pillars of Infrastructure Management



Our work has looked to understand how a model can both effectively deliver the core functions of an infrastructure model and how alternative functions can support the delivery of the business case.

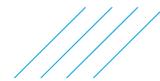
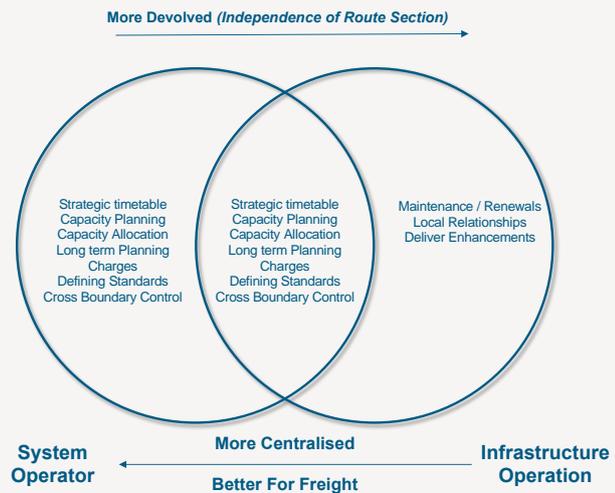


While our benchmarking provided valuable lessons, it confirmed that there is no “cookie cutter” for infrastructure managers.

## Voice of Freight Customers

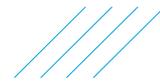
Consultees including DB Schenker have emphasised the need for the integration of railway functions (reducing the risk of boundary conflicts)

- Models which place more functions within a system operator role are likely to lead to better outcomes for customers in their view.
- Possession planning is a central and fundamental part of system operation, with overnight freight operating and key routes and diversions are planned in synchronisation
- Supporting the development of an effective freight market must be key to the success of Rail Baltica.



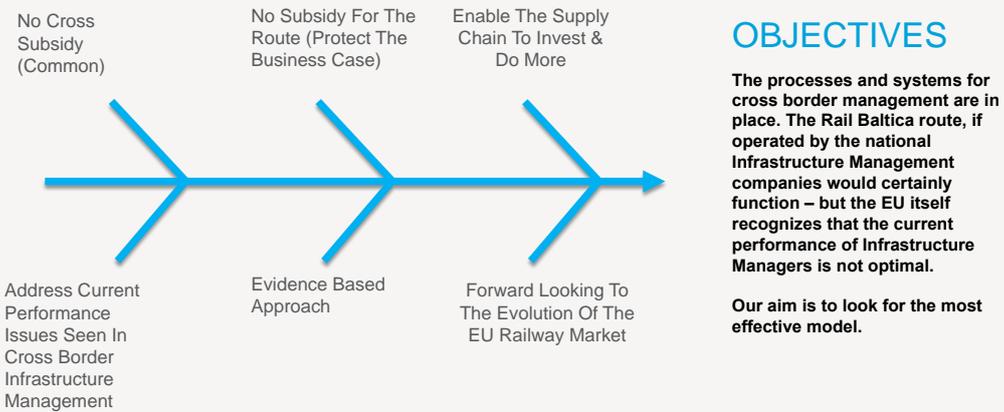
## Common Themes From Benchmarking

- 1 Passenger numbers tend to be considerably lower than forecasted and construction cost higher than budgeted.
- 2 Rail freight often to exceed forecasts if there is a powerful influence from a freight operator in the running of the railway, long term success of the route may be tied to how well freight usage can be fostered.
- 3 The Infrastructure Manager will need to have the flexibility and independence to adjust to potential shifts in the business case.
- 4 Safety regulation regimes all hand over at the border although Common Safety Methods may apply.



# Multi-Criteria Analysis

## Structuring The MCA From Stakeholder Consultation



## Option Selection

There are thousands of potential options for infrastructure management. A representative spread of 85 options was chosen to investigate the relative benefits of single and multiple infrastructure management, with varying levels of commercialisation

Versus the tender requirements Atkins analysed 44 incremental criteria while ensuring that the distribution of categories to be assessed remained consistent with our commission.

Option Number only	A	B	C	D	E	F	G	H	I	J
Freedom to set market rate for FREIGHT track access										
Traffic Management										
Capacity allocation										
Inspection and maintenance across all routes										
Vision Author										
International Rail Relations Lead										
Passenger Concession Letting agency										
Commercial Services - no new commercial freedom										
Commercial Services Freedom (minimal)										
Commercial Services Freedom (partial - no extra land)										
Commercial Services Freedom (partial - extra land for railway associated services only)										
Commercial Services Freedom (full)										
Governance structure the same as RB Rail AS										
Governance structure minimally modified from that of RB Rail AS (some relaxation)										
Governance structure moderately modified from that of RB Rail AS (some relaxation + gold share)										
Governance fully modified from that of RB Rail AS										
Ability to offer rail haulage as a business										

Category	Atkins Proposal	Tender Requirement	Total Assessed
Asset Management	14	11	25
Commercial Management	6	8	14
External Engagement	5	7	13
Financial Management	5	4	9
Policy	4	11	15
Strategy	4	4	8
Sustainability	5	3	8
Grand Total	44	48	92



## Example Model (Used For 85 Options)

Partial commercial freedom without the right to seek to acquire land with freight REGULATED pricing for single entity which cannot act as passenger concession letting agency, with minimally modified share ownership/governance and no rail haulage:

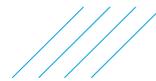
### Pros

- Some economies of scale related to the many services in-house
- Single point of contact for all bodies able to act coherently across all functions
- Some innovation capacity linked to degree of commercial services freedom
- Balance between commercial freedom and minimal modification of ownership/governance
- Less risk for shareholders from right to acquire land
- Less potential for ancillary functions to cause RB to lose management focus
- Minimal changes required to share/governance arrangements

### Cons

- RB constrained functionality may make it harder to recruit expertise

1. Freedom to set all track access (passenger and freight)	2. Freedom to set FREIGHT ONLY flows	3. Traffic Management	4. Capacity allocation	5. Inspection and maintenance across all routes		
Yes	Yes	Yes	Yes	Yes		
7. Vision Author	8. International Rail Relations Lead	9. Passenger Concession Letting agency	10. No significant commercial freedom/capability	11. Commercial Services Freedom (minimal)	12. Commercial Services Freedom (partial - no extra land)	
Yes	Yes				Yes	
13. Commercial Service Freedom (partial - extra land for rail associated services only)	14. Commercial Service Freedom (full)	15. Duplicates existing RB Rail AS governance	16. Minimally modified governance from duplicate RB Rail AS (minimal relaxation)	17. Moderately modified governance from duplicate RB Rail AS (some relaxation + golden share)	18. Fully modified governance structure	19. Rail Haulage offer
			Yes			



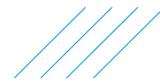


### Multi Criteria Analysis Shortlist Outcomes (7 Options)

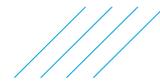
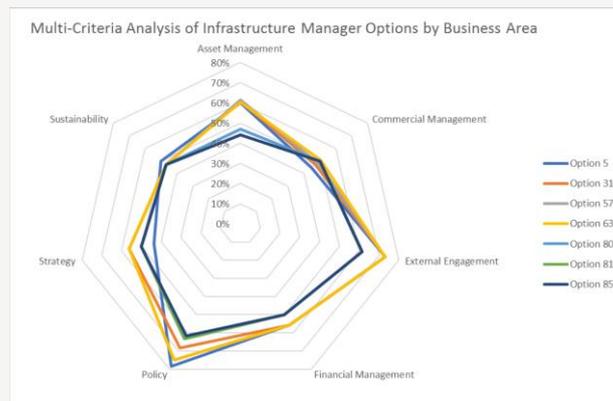
Business Area	Option 5	Option 31	Option 57	Option 63	Option 80	Option 81	Option 85
Asset Management	60.0	61.0	61.5	60.4	47.0	44.0	44.0
Commercial Mgt	25.0	26.4	27.2	28.3	28.0	28.0	28.0
External Engagement	38.0	38.0	38.0	38.0	32.0	32.0	32.0
Financial Mgt	20.0	20.0	20.0	20.0	18.0	18.0	18.0
Policy	47.0	41.0	45.0	45.0	38.0	38.0	37.0
Strategy	14.0	18.0	18.0	18.0	16.0	16.0	16.0
Sustainability	16.0	15.0	15.0	15.0	15.0	15.0	15.0
	<b>220.0</b>	<b>219.4</b>	<b>224.7</b>	<b>224.7</b>	<b>194.0</b>	<b>191.0</b>	<b>190.0</b>

## Cost Model Adjusted MCA Shortlist Outcomes

	MCA Score	MCA Percentage	Weight Adjusted MCA	Cost Score From MCA	Weight Adjusted Cost Score	Overall Ranking	Position
Option 5	220.0	98%	78%	89.7	18%	96.3%	3
Option 31	219.4	98%	78%	89.8	18%	96.1%	4
Option 57	224.7	100%	80%	89.7	18%	97.9%	2
Option 63	224.7	100%	80%	90.0	18%	98.0%	1
Option 80	194.0	86%	69%	91.7	18%	87.4%	6
Option 81	191.0	85%	68%	94.0	19%	86.8%	7
Option 85	190.0	85%	68%	100.0	20%	87.6%	5



## Multi Criteria Analysis of Shortlist



## Key Findings

1

A single, coherent entity controlling the railway across all three countries will perform significantly better than multiple infrastructure managers and thus have a greater chance of successfully delivering the business case.

2

An option based around multiple infrastructure managers would prove somewhat cheaper in terms of absolute cost (€6.8m per annum at ten years post completion), but this is not substantive enough to outweigh the benefits accrued by the creation of a single, cross border infrastructure manager.

## Draft Final Report Outcomes

## Down Selection for Detailed Analysis

- Following discussion with the Client, it was agreed that Atkins would focus on talking forward detailed analysis of the two strongest scoring options (57 and 63)
- Options 5 and 85 were also included for the purposes of relative comparative analysis.

## Stakeholder Consultation

	Latvian Railways	Polish Railway Working Group	Lithuanian Railway Administration	Adria (BalticRail)	Polish Ministry of Economic Affairs	RIB Estonia	DB Schenker Latvia	Latvian Railway	Polish Ministry of Transport	Latvian Ministry of Transport	Latvian Regulatory Authority
Simple charges	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Charges fixed (vs. market driven)	✗	✗	✓	✓	✓	✓	✓	✗	✗	✓	✓
Charges agreed in advance	✗	✓	✓	✓	✓	✓	✓	✗	✗	✓	✓
One window / Same charges whoever customer contacts	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Charges the same in each country	✗	✓	✓	✓	✓	✓	✓	✗	✗	✓	✓
Single IM	✗	✗	✓	✓	✓	✓	✓	✗	✗	✓	✓
IM separate from existing IMs	✗	✗	✓	✓	✓	✓	✓	✗	✗	✓	✓
IM from any country	-	-	-	✓	✓	✓	✓	✗	✗	✓	✓
Single capacity allocation across all countries	✓	✓	✓	✓	✓	✓	✓	✗	✗	✓	✓
Single Traffic Management across all three countries	✓	✗	✓	✓	✓	✓	✓	✓	✓	✓	✗
Maintenance arrangements should prioritize efficiency	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Effective scheduling for both passengers and freight	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Market to decide passenger services (with PSO)	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Synergy between 1520mm and 1435mm	✓	✗	✓	✓	✓	✓	✓	✓	✓	✓	✓
Whole network optimized, not just RB	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Transparent regulation	-	-	✓	✓	✓	✓	✓	✓	✓	✓	✓
CSM System with national control	-	-	-	✓	✓	✓	✓	✓	✓	✓	✓
Regulation more important than the IM	-	-	-	✓	✓	✓	✓	✓	✓	✓	✓
States own the railway within their own country	-	-	-	✓	✓	✓	✓	✓	✓	✓	✓
Profits go to shareholders	-	-	-	✓	✓	✓	✓	✓	✓	✓	✓
IM does not operate passenger/ freight services	-	-	-	✓	✓	✓	✓	✓	✓	✓	✓

Our initial stakeholder consultation undertaken revealed significantly polarised views as to what things would lead to the success of the Rail Baltica project.

Both Atkins and the client were aware from the outset that the different stakeholder views would result in an outcome that would require significant political alignment upon completion.

Key: ✓ - agree explicitly, (✓) agree implicitly, ✗ - disagree explicitly, (✗) - disagree implicitly, -- not mentioned

## Cost Model Adjustments

Following the interim report, some of the assumptions for the Life Cycle Cost Model were updated following alignment discussions with the client. These did not alter the relationships between any of the Options under considerations, with amendments being made to all options consistently. Amendments were as follows:

- Salary costs were uplifted to reflect the increased employment costs in the region following advice regarding an adjustment associated with local employment taxation.
- Spend on professional services was previously around €10 million per annum for the whole route, and has been removed following external review, due to the organization being new and not being anticipated to need substantial renewals and enhancements for the first ten years of operation.
- Further, compensation and penalty payments have been reduced from around €4 million per annum to around €1.1 million per annum, as they are expected to be lower than in the benchmarked organization, due to lower levels of passenger compensation being payable and therefore lower justification for passenger railway undertakings to claim the same from the RBNE.
- Further, around €12 million per annum spend on purchasing utilities has been removed, as this is a pass-through cost.

Overall, this reduced annual cost assumptions from around €81.6m to around €57.8m for Option 57.

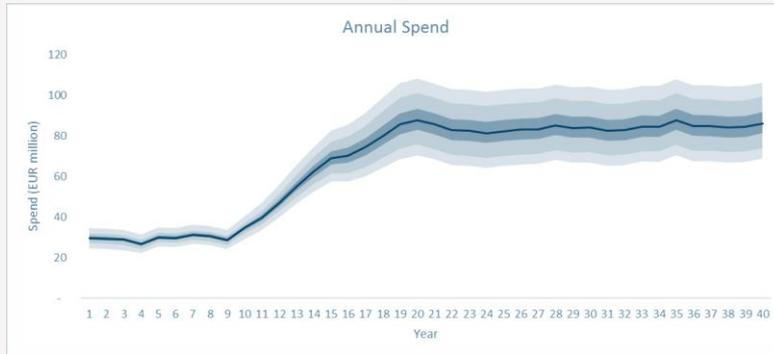


## Single Point Organisational Overview (Year 10 Steady State)

	Headcount	Cost (€) p.a.
<b>Core Infrastructure Manager Headcount</b>	145	5.4m
<b>Maintenance Headcount (Insourced)</b>	143	5.6m
<b>Total Headcount for RBNE</b>	288	11.0m
<b>Procured Services</b>	Headcount	Cost (€) p.a.
<b>General Supply Chain</b>	N/A	27.0m
<b>Outsourced Maintenance</b>	588	19.6m
<b>Total External</b>	N/A	46.6m
<b>Total annual cost (EUR)</b>	N/A	57.6m



## Monte Carlo Sensitivity Analysis (Option 57)



This analysis takes a distribution of costs for each cost item and simulates 1000 possible scenarios from which averages are taken. This analysis starts to take into account the introduction of periodic renewals from year 10 (year 7 for telecoms).

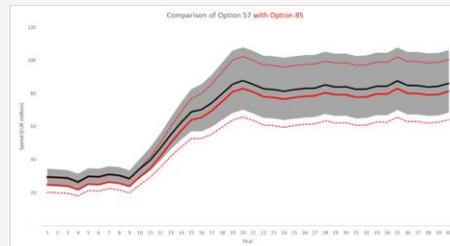
## Further Sensitivity Analysis (Option 85 Versus Option 57)

Undertaking a sensitivity in which the Life Cycle Cost Model timeframe is extended beyond 10 years to be consistent with the CBA was requested by Lithuania, as well as increasing the cost weightings to 50%. These sensitivities were undertaken for Options 57 and 85, with cost scores calculated based on 40-year costs rather than 10-year.

The result of this analysis was to reduce the cost advantage of Option 85 over Option 57, since the impact of the initial synergies of the already-established Infrastructure Managers would diminish over time. As the Monte Carlo analysis shows, the difference in cost between Options 57 and 85 is small compared with the cost uncertainty over a 40-year timeframe.

This does not take into account factors such as the likely reduction in recruitment costs and ongoing Information Technology spends for the RBNE under Option 57 over time, which would further reduce the cost differential over a longer timeframe.

10-year timeframe		Option 57	Option 85	40-year timeframe		Option 57	Option 85
MCA		224.7	190.0	MCA		224.7	190.0
MCA %		100.0%	84.6%	MCA %		100.0%	84.6%
Cost %		89.7%	100.0%	Cost %		92.8%	100.0%
Overall Score (80/20 weighting)		97.9%	87.6%	Overall Score (80/20 weighting)		98.6%	87.6%
Overall Score (50/50 weighting)		94.9%	92.3%	Overall Score (50/50 weighting)		96.4%	92.3%



# Organisational Structure

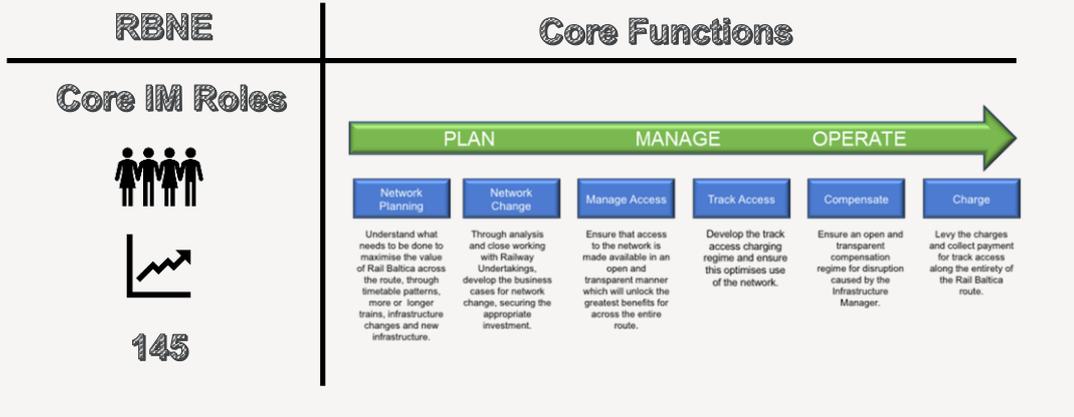
Option 57 (Recommended)

## Headcount

Rail Baltica New Entity		(Option) Outsourced
<b>Core IM Roles</b>	<b>Maintenance</b>	<b>Maintenance</b>
		
		
<b>145 heads</b> <b>€5.4m</b>	<b>143 heads</b> <b>€5.6m</b>	<b>598 heads</b> <b>€19.6m</b>

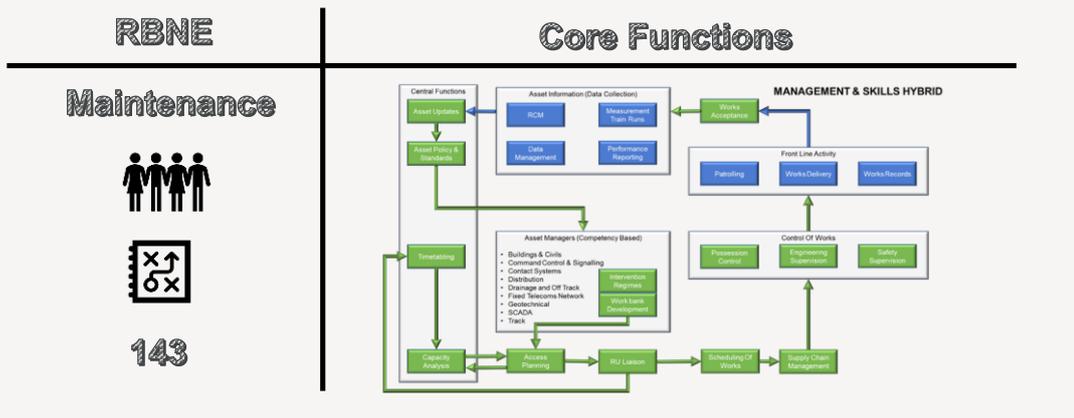
\*Some exclusions apply – further headcount may be required dependent upon station management

## Headcount



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## Headcount



## Headcount

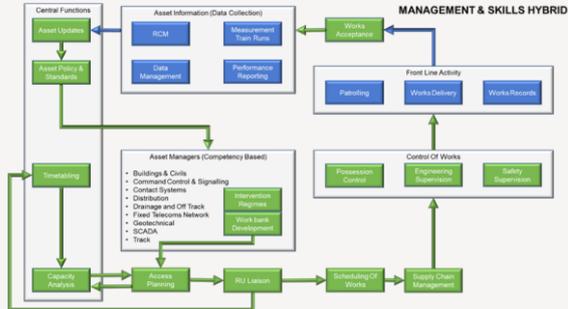
### Outsourced

### Maintenance



598

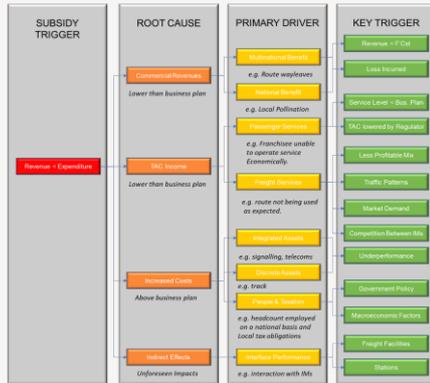
### Core Functions



## Structure and Financial Flows



## Minimising Risk of Subsidy Requirement



Minimising the risk of subsidy is seen as a primary requirement for the infrastructure management model.

How subsidies are triggered is a complex area with multiple factors likely to interact and the root causes will ultimately have to decide how each nation provides subsidy to RBNE.

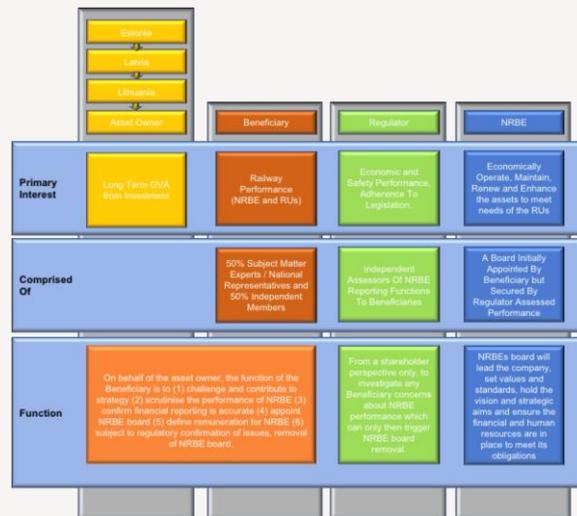
Importantly, any commercial activity which RBNE undertakes MUST be done with the aim of making profit for the organisation.

In the event of a shortfall, the subsidy could be calculated by the following methods:

- Proportionate impact
- Actual Cost Delta
- Passenger Cost

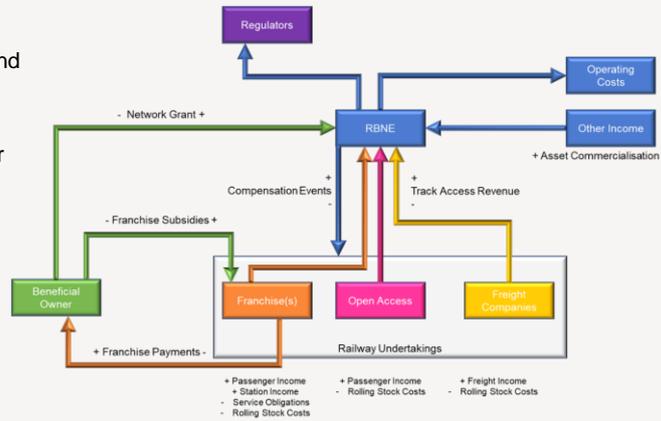
## Shareholder Structure

- RBNE must retain a core focus on operational railway performance; commercialization above that initially envisaged will need beneficiary approval.
- RBNE will need to operate within a framework with regards to unlocking GVA activity related activities to ensure alignment with national economic objectives.
- Beneficiary members should not be formed out of other Infrastructure Managers.
- Regulatory capability needs to be significantly strengthened.



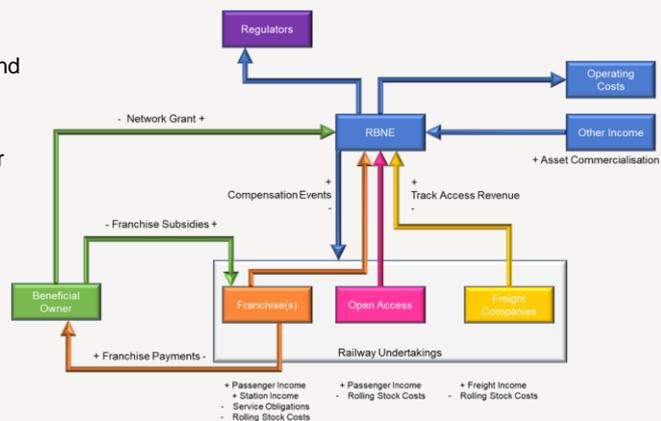
## Contractual Model

- Beneficiaries define service levels and hence influence subsidy probability.
- Regulated track access charges.
- Beneficiaries relationships with other parties via RBNE.
- TAC paid to RBNE.
- Open Access Operators direct relationship with RBNE.
- Freight companies direct to RBNE.
- RBNE external commercial relationships within framework.



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- RBNE external commercial relationships within framework.



# Commercialisation vs GVA Development

## Definition Of Commercialisation

**"For the purposes of this report, commercialisation is defined as:**

- I. introducing new products or services to the general market for profit; or
- II. developing or seeking to develop services which are intended to be offered directly to the general market for profit; or
- III. developing, organising or managing services for sale to the general public."

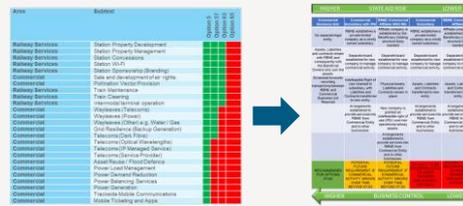
## GVA Stimulus

Activity to stimulate GVA activities along the line of the route is not restricted. Examples of this include:-

- Active engagement with business communities.
- Providing practical support for 3<sup>rd</sup> parties looking to extract value from the presence of the line.
- Working to ensure that ancillary services related to the operation of the line emerge (for example the provision of apps for customer journey information).

## Commercial Activity

Commercial activity by the new entity is restricted at launch to minimise financial risk.



Over time, with consent of the beneficiaries, we anticipate that other commercial opportunities could potentially be unlocked. These may require new legal structures.

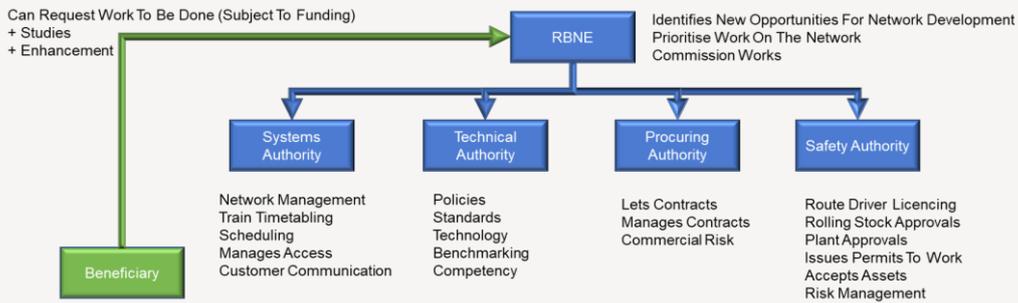
## Focused Asset Commercialisation

- Option 57 has a very low level of commercialisation and, as such, there is a very low risk associated with state aid and competition law.
- Given the theoretical commercial potential for the network, the management team of the new entity may seek to exploit this in the future.
- For the level of commercial activity envisaged in Options 57, we believe a Commercial Business Unit will be sufficient to eliminate State Aid risk.
- However, as the business evolves, if further commercialisation is permitted (not recommended by this report), greater separation will need to be put into place to prevent state aid risks, with associated loss of business control.

HIGHER		STATE AID RISK		LOWER	
Commercial Business Unit	Commercial Subsidiary with RBE	RBE Commercial Activity With RBE	Commercial Subsidiary	RBE Commercial Activity	
No separate legal entity.	RBE establishes a private limited company as a wholly owned subsidiary.	Affiliate company is established by the Beneficiary holding structure (likely needed).	RBE establishes a private limited company as a wholly owned subsidiary.	Affiliate company is established by the Beneficiary holding structure (likely needed).	
Assets, Liabilities and contracts remain with RBE and consequently with the Beneficial Owners who own these assets.	Separate board established for new company to manage commercial activity.	Separate board established for new company to manage commercial activity.	Separate board established for new company to manage commercial activity.	Separate board established for new company to manage commercial activity.	
Disposal/Accounts recording transactions between RBE and Commercial Business Unit Required	Indefeasible Right of Use Granted to subsidiary with Liabilities and Contracts transferred to new entity.	Physical Assets, Liabilities and Contracts remain in place.	Assets, Liabilities and Contracts transferred to new entity.	Assets, Liabilities and Contracts transferred to new entity.	
	Arrangements established to provide services into RBE from Commercial Entity and to other businesses.	New company is granted an indefeasible right of use (IRU) over non operational railway assets.	Arrangements established to provide services into RBE from Commercial Entity and to other businesses.	Arrangements established to provide services into RBE from Commercial Entity and to other businesses.	
	Arrangements established to provide services into RBE from Commercial Entity and to other businesses.				
RECOMMENDED FOR OPTIONS 57.63	POTENTIAL FUTURE REQUIREMENT IF COMMERCIAL ACTIVITY GROWS OVER TIME BEYOND 57.63	POTENTIAL FUTURE REQUIREMENT IF COMMERCIAL ACTIVITY GROWS OVER TIME BEYOND 57.63	UNLIKELY TO BE REQUIRED TO BE IMPLEMENTED OPTION 57.63	UNLIKELY TO BE REQUIRED TO BE IMPLEMENTED OPTION 57.63	
	HIGHER BUSINESS CONTROL		LOWER		

# Roles and Responsibilities of the RBNE

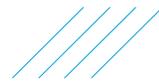
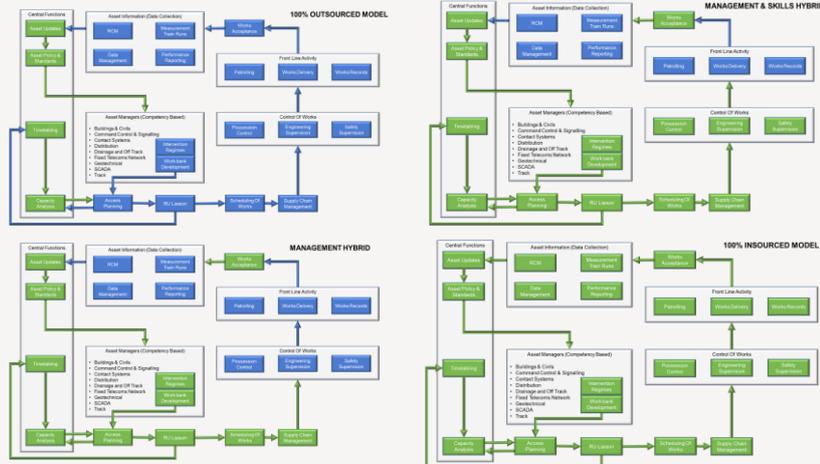
## Core Functions



## Maintenance Model

We have considered the four models shown.

We recommend that a hybrid model for maintenance is pursued as this combines both management and high skilled individuals who will be capable of supporting direct works on site.



## End of Slides Presented

Memo: Further slides, incorporating the text responses to the queries raised are included as Appendix K In this document.

# Appendix L. Option 85 Detailed Analysis

## Option 85

### Context

There has been significant focus on Option 85 in the study and Atkins were specifically requested to retain this Option 85 as a comparator post MCA.

This appendix has been written to help provide clarity as to the analysis associated with Option 85. It remains fully aligned with the main study and the information which is included in both the cost model and the multi-criteria analysis.

Atkins would however like to draw the readers attention to a number of points which exist in the core document, but which are especially pertinent with regards to Option 85.

- Atkins core position was that the business case associated with Rail Baltica must be protected. This was driven by a number of factors, not least of which was the desire for the beneficiaries to avoid or minimise any subsidy requirements for the route.
- Throughout the study, Atkins has been scrupulous to ensure that our work has been built upon a thorough technical assessment and while we have used stakeholder opinion to shape the final recommendation, stakeholder feedback did not directly impact scoring in the MCA – this was done to avoid prejudice and opinion (either for or against a single infrastructure management model).
- The majority of stakeholders who expressed an opinion were however against the existing national infrastructure managers acting as the infrastructure manager for the Rail Baltica route. Items that stress this position have been marked for the reader in this document as they are highly pertinent to the development of a final political solution to the outputs of the Infrastructure Management Study.

While the depth of assessment on Option 85, after its equal treatment and assessment in both the Multi-Criteria Analysis and Cost model was to be relatively light touch, Atkins has developed this appendix to provide a consolidated view regarding Option 85 and our assessment of the relative benefits of the same. It consolidates key information already presented, both in the Life Cycle Cost Model, the Multi Criteria Analysis and the core report for ease of consumption.

The requirement to assess Option 85 is important as a comparator, noting that while it is an infrastructure management Option that uses multiple infrastructure managers to manage the route, it is not the only Option to do so and that other options which were predominantly multi-national infrastructure models performed more strongly.

There are multiple impacts as a consequence of this approach.

Option 85 as a multi-national infrastructure management model is more in line with the existing operational concept and status quo of Ten-T networks across the European Union and as such aligns effectively with existing EU custom and practice, including the use of Rail Net Europe.

This however does not mean that Option 85 is inherently high performing in terms of infrastructure management, but rather that it is compliant with current practice. As such, it brings out the underlying strengths and weaknesses of cross-border railway operations in Europe.

While all the options would require further legal agreements covering all the core and some of the wider functions, Option 85 was deemed require the most as there is no single entity that can conflate functions (such as Traffic Management, Capacity Allocation and Maintenance) into operational outputs (such as performance) that can be contracted; fundamentally, splitting functions that could be delivered by a single function across three route sections will require three sets of agreements, increasing complexity for railway undertakings.

Fundamentally, under Option 85, this separation means that it will be harder to hold anyone to account for revenue and operational performance for the route, as the entities and management team responsible for delivery will be part of wider teams that will have other priorities and objectives that will be larger in terms of revenues and cost.

Under Option 85, the national infrastructure managers are assumed to be the existing 'national' infrastructure managers, but there is nothing within the model which precludes these from being comprised of other 'new', nationally aligned infrastructure managers and the risks and benefits of this model apply equally in such circumstance as far as assessment criteria have been made.

### Methodology

While Atkins looked at the existing performance of the existing national infrastructure managers in the region, it became apparent that the relative railway performance of these infrastructure managers was significantly below that seen in other European countries. The initial source of this information was provided by the infrastructure managers themselves into the UIC (The worldwide railway organisation). This data did not prove that all infrastructure managers were inefficient; Lithuanian Railways evidenced themselves to perform well, relative to the funding which they had available, but they did rank 23<sup>rd</sup> out 25<sup>th</sup> in terms of absolute performance in terms of the Railway Performance Index identified by Boston Consulting Group as being in the lowest performance tier along with Latvia (data for Estonia was not available). For reference, the three tiers of national railway infrastructure management were as follows:-

- Tier One (RPI of at least 6 out of 10). Switzerland, Denmark, Finland, -Germany, Austria, Sweden, and France.
- Tier Two (RPI between 4.5 and 6). Great Britain, the Netherlands, -Luxembourg, Spain, the Czech Republic, Norway, Belgium, and Italy.
- Tier Three (RPI below 4.5). Lithuania, Slovenia, Ireland, Hungary, Latvia, Slovakia, Poland, Portugal, Romania, and Bulgaria

For an any option which builds on the performance of existing infrastructure managers on a new green-field railway, it would have, on many levels been reasonable for Atkins to have taken into account the baseline performance of those infrastructure managers, meaning that Atkins would have recognised the challenge which needed to be undertaken for performance to even reach that of the EU average. In practice however, Atkins took the approach of accepting that the transformation programmes of each infrastructure manager would reach the average EU performance level by the time that the Rail Baltica route was commissioned.

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*It should be noted that Atkins has therefore taken a bullish attitude towards the potential for the existing national infrastructure managers to improve their performance, assuming that not only will they reach today's average performance (effectively sitting in Tier Two), but will be at the average performance levels in an environment where mean network performance continues to improve.*

*The position of neutrality adopted in the MCA means that Option 85 effectively starts without a performance penalty which would reflect the current reality and status quo.*

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The baseline performance for Option 85 has therefore received a positive bias which was designed to minimise the risk of challenge regarding any subjective interpretation by Atkins with regards to the potential success or otherwise of planned performance improvements. These principles also applied to Options 80 – 84.

### **Operational efficiency and sustainability**

Atkins were asked to consider how each Option would impact on operational efficiency and sustainability for the route. The number of variables that drive operational efficiency on the railway is significant, from the political landscape with regards to the acceptability of subsidy or the physical landscape with regards to the footprint the railway must operate within and the population that drives traffic frequency and ability to pay.

This therefore creates the key question as to the definition of 'efficiency'. For one country / railway, railway efficiency may be achieved if total revenue is the same as or equal to total costs. For other countries/railways, the same may be true, but for them a railway is not efficient unless it is profitable without public subsidies<sup>104</sup>.

Key stakeholders indicated that there is little willingness to subsidise the line and therefore at the core of our thinking is defining an operational efficiency and sustainability as the Option which in the round is most likely to reduce the risk of any subsidy being needed - including cross subsidy by a national network – in a manner which balances risk appropriately for the beneficiaries. The most efficient Options are therefore those which best protect the business case.

### **Asset Acquisition**

For all scenarios Atkins are assuming that any procurement follows MEAT principles. Much of cost expenditure post construction for Rail Baltica will be renewal type activity in the longer term. This will predominantly relate to rail, sleepers and ballast as other categories, such as OLE and systems have a long asset life.

As a consequence, acquiring assets at whole life cost becomes predominantly a factor of economies of scale, given that these categories are volume driven. It is more likely that a national infrastructure manager looking after 870km would be able to negotiate volume related discounts than a single infrastructure manager (due to the volumes of equipment procured for their other network assets). Commissioning of these asset types is site specific and as a result, there is no particular benefit or disadvantage from asset acquisition and commissioning being controlled by a single infrastructure manager.

Given the age of the asset, the infrequency of procurement, Atkins also believe that the national infrastructure manager would have a higher level of technical competence in procurement than a single entity solution.

### **Open Access**

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<sup>104</sup> Railway Efficiency – An Overview and a Look at Opportunities for Improvement, Civity, ITF

Option 85, in light of the complexity which would result in the development of an Open Access operations, was assessed to have a lower risk profile in terms of potential variance for track access charges (whole route level competition would be less likely), despite the fact that achieving the overall business case would be considerably less probable – the risk of subsidy here would fall in the context of the overall viability of the route.

### **Asset Management:**

Under Option 85, the existing national infrastructure managers would be having to develop a new range of intervention principles for a high speed, ETCS, electrified railway that will not have any direct comparable precedent to their existing infrastructure. While core competencies may exist in defining these (and challenges will exist for a single, multinational entity – these being captured in the recruitment risk section), the knowledge is unlikely to be present. Notwithstanding that, under Option 85, no penalty was assumed against the national infrastructure management model in light of this, but rather, Atkins assessment of the performance challenges faced under Option 85 were taken at a much more granular level, these being:-

- Asset (Condition) Information Systems:
- Asset Acquisition & Commissioning:
- Asset Data and Knowledge
- Asset Management Plans
- Asset Operations

Our analysis of the same for Option 85 is detailed below.

### **Asset Acquisition & Commissioning:**

For all options Atkins assumed that any procurement would follow the principles of Most Economically Advantageous tender and that the majority of cost expenditure post construction for Rail Baltica will be renewal type activity in the longer term.

This will predominantly relate to rail, sleepers and ballast as other categories, such as OLE and systems can be anticipated to have a relatively long asset life. As a consequence, acquiring assets at whole life cost becomes predominantly a factor of economies of scale, given that these core categories are predominantly volume driven with regards to cost saving opportunity. In light of this, Atkins assumed that individual national infrastructure managers would be able to negotiate volume related discounts than a single infrastructure manager for the route (due to the relative purchasing power based upon total network size) and this was built into our assumptions in the cost model.

Commissioning of these asset types tends also to be very site specific (working from the principle of like for like renewals, without impacting overall route performance) and as a result, Atkins assumed that there was no particular benefit or disadvantage from asset acquisition and commissioning being controlled by a single infrastructure manager – this would not have been the case with regards to the initial procurement and construction of items such as power, signalling and telecoms which would have benefited from a single system approach.

Given the age of the asset, the infrequency of procurement, Atkins also assessed that the national infrastructure managers (under Option 85) would have a higher level of technical competence in procurement than a single entity solution and that better value would ensue than that of a single infrastructure manager for the whole route, this being reflected in the adjustments to our cost model.

### **Asset Data and Knowledge**

Under Option 85, Atkins believe that it would prove to be more difficult to coordinate route level asset data and knowledge than under a single infrastructure manager, given that each national infrastructure manager is unlikely to harmonise on the procurement of associated systems, processes for assessing information, or indeed on the application of modern digital tools for data analysis.

Over time, Atkins believe that there would be increasing issues of different reporting methods, driven by the need for national infrastructure managers to harmonise their national reporting, meaning that performance of the route would become harder to measure, analyse, improve and control, though Atkins also recognised that there would likely remain some attempt at harmonisation, disseminated through working groups between the different national infrastructure managers.

Further to this, the ability to prioritise asset interventions based upon the risk profile presented for the individual sections of the 870km would prove greatly more difficult than to that of the whole route (under a single infrastructure manager) due to differing levels of asset data and information over time, meaning that the cohesion of the route would decrease. This would prove to be a major risk to performance of the line.

### **Technical Standards & Interoperability**

Under Option 85, the cost model was developed based upon the role distribution from a coherent national infrastructure manager and as such it is reasonable to assume that this option will have the reach and competencies to engage in the development of TSIs etc., but in our assessment Atkins recognised that the greater depth of the existing national infrastructure managers would mean that the business impact of taking individuals out the company to support such activities is unlikely to have an adverse impact on business performance, while this would represent a relative risk (albeit minor) to the single infrastructure management model in terms of either performance or cost due to the challenge of backfilling headcount.

### **Post Construction Asset Management**

In the longer term (15 years+), Atkins believe that the performance of the route would be at significant risk under Option 85. This stems from the fact that there would be no central guiding mind with regards to the treatment and management of the asset (as indicated above), plus the fact that differing abilities for each nation to continue to invest in the management and operation of the routes will emerge.

We note that this could to some degree be mitigated by inter-governmental agreements and obligations. As a consequence of this, Atkins think that a situation very similar to that which has occurred in Ireland on the Dublin-Belfast route would emerge, with the consequence of falling traffic on the route; with asset management and maintenance the responsibility of the national infrastructure managers, over time, there is a real risk of diverging asset treatments, both in methodology and in intervention type (e.g. heavy maintenance in lieu of renewal), this being driven by varying challenges to cost and willingness to subsidise any network operation, leading to a complex risk profile to manage for the route as a whole.

The nature of the new asset means that asset treatment regimes are likely to need to be optimised for the route as a whole, taking into account the meta-data which becomes available from the infrastructure. This is not something that would occur under Option 85.

## **Asset Management Plans**

Under Option 85, Atkins believe that different approaches to asset treatments (driven both by differing asset information over time and also by the lack of a common technical 'guiding mind' with regards to the asset) could lead to differing approaches to asset management planning (for example, one national infrastructure manager increasing heavy maintenance in lieu of renewal perhaps) and associated different safety impacts, with a changing risk profile for the route that would prove difficult to manage, particularly around those elements of the network that are system related.

Regulatory safety management of the route would be harder across a number of separate Infrastructure Managers as seen in Option 85.

## **Asset Operations**

In order to ensure the Rail Baltica route performs effectively, emerging issues will need to be identified and communicated, something closely related to the effective use of asset information – this is about the selection of the correct intervention type. Under Option 85, Atkins assessed that a national infrastructure manager will find it hard to access a better and more robust dataset relating to the performance of the asset than in a single infrastructure option, this meaning that the correct asset intervention and treatment will be harder to identify, with an associated risk to cost and performance – there is a higher risk of incorrect assets treatment to be applied.

For example, if failures begin to emerge on track assets (e.g. sleeper failure) post construction, this will emerge through pattern analysis in a longer time under Option 85 than it would in a single infrastructure management model simply due to the smaller data sets available. This would mean more complexity in terms of risk identification, a requirement for close working bodies and a coordination mechanism to be put in place between the different infrastructure managers for it work effectively.

## **Asset Rationalisation**

The working principle for the analysis of all Options was that the assets would continue to be owned by the three national governments. Using a multi-national infrastructure manager model (Option 85) Atkins anticipated that there would be less conflict around asset rationalisation because each national government would make decisions that impact on their own value of their assets, providing moderately strong assets owners provided it does not impact the service.

Hereby, the infrastructure manager is directly aligned with the asset owner. However, it would need to be made aware on the impact that other countries may be developing the use of these assets and as such, some kind of coordination mechanism would be needed; the potential for asset rationalisation on a national basis underlines one of the key reasons why complex inter governmental agreements would be needed to protect the service and capability of the route under Option 85 in order to ensure that a single party could not adversely impact the network performance of other beneficiaries.

## **Commercial Revenues From Assets**

Under a multiple infrastructure management option, with the assets will continue to be owned by the three national governments, the ability to seek approval for local asset commercialisation would be relatively straightforward with no risk of conflict with the other shareholders.

However, under such a scenario, the potential to exploit any benefits arising from the line of route will be lost, predominantly those options associated with wayleaves, telecoms and power. This may present a significant lost opportunity for the project, but is unlikely to impact the core business case at this point based upon the data seen by Atkins.

### **Day to Day Operations and Timetable**

In this area, Atkins were particularly concerned with regards to how well day to day operations, timetabling and access to train paths would be achieved under each option. While a number of stakeholders raised concerns with regards to potential discriminatory behaviours by the existing national infrastructure managers, no direct evidence was provided to substantiate statements made during interviews and Atkins did not penalise Option 85 based upon this feedback despite the lack of direct evidence.

The structures that each section of the Rail Baltica would sit within as part of a multiple infrastructure management model will be compliant with the 4th Railway Package and will therefore reflect transparent and non-discriminatory treatment to all parties wishing access to the infrastructure. All existing national infrastructure managers were explicit in that they intend to be fully compliant with the 4<sup>th</sup> railway package.

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*Given the strength of opinion expressed by many stakeholders in our interviews, Atkins came to the conclusion that the regulatory capability across Estonia, Latvia and Lithuania needs to be significantly strengthened regardless of any decision on the infrastructure management model.*

*Atkins noted in our multi-criteria analysis that provided that this was taken forward as a recommendation by stakeholders, Atkins saw no reason to score any Option differently but noted that if this was not done, scoring of the multiple infrastructure manager section under Options 85 should be adjusted downwards by (-2) points.*

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### **Operations, Traffic Management (including Train Traffic Control Efficiency), Possession Planning and Coordination**

Atkins recognises that effective perturbation management is key to the successful development of Rail Baltica from a customer perspective and failing to deliver on this could fundamentally undermine the entire business case due to reputational impact. Due to the increased number of operational interfaces under a multi-national infrastructure management approach, Atkins believes that there is an inherent disadvantage for Option 85 versus a single infrastructure management approach and this was reflected within our Multi-Criteria Analysis scoring.

Evidence from 3rd party research and stakeholder interviews has indicated that the performance of possession planning and coordination is less than satisfactory across the European Union and that this can stem from lack of coordination between the National Infrastructure Managers – effectively, the existing European model which Option 85 would look to replicate is not effective and a better solution needs to be sought. As per perturbation management, due to the increased number of operational interfaces under a multi-national infrastructure management approach, there is an inherent disadvantage versus a single infrastructure management model.

With regards to Train Traffic Control efficiency, Atkins determined that labour cost is the dominating factor in TTC operation management and represents, on average, about 90% of the total cost of TTC (see references in MCA) based on a sample of 14 countries. As the labour cost will be effectively fixed based upon the design of the network, TTC efficiency will only arise from one major variable, that of the terms of conditions which new employees will have, enabling them to have effective rostering coordination aligned along the route to enable workload demand and resourcing to be matched. As such, Atkins believe that due to the lack of harmonised terms and conditions across the Rail Baltica route which would be anticipated under Option 85, the Multiple Infrastructure Management Model would have a minor disadvantage in terms of being able to optimise headcount on the route.

### **Quality of Services, Promotion of Reliability & Punctuality**

Evidence found during the initial benchmarking, particularly the case study from Dublin-Belfast indicated that the performance of the network and the ability of the Infrastructure Manager to promote reliability and punctuality can be fundamentally undermined as a result of differing ability to maintain and optimise the national networks where these are under separate control, this being closely tied to the ability to coherently manage the route as an asset. As a result, Atkins assessed that Option 85 would be in a worse position to control and optimise the network with regards to reliability and punctuality versus a single infrastructure manager.

With regards to the potential quality of service and hence customer experience, all the current national infrastructure managers indicated that they would be prepared to support the establishment of a single point of contact for customer engagement and liaison, although liaison and coordination 'behind the scenes' would doubtlessly add complexity. Good examples of this can be seen in the models established between Dublin and Belfast.

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*Atkins recognised that local relationships should, in principle be of benefit here (under Option 85), providing closer contact with the freight supply chain and helping to build the business. However, feedback from freight stakeholders interviewed indicated that they find the existing Infrastructure Managers difficult to work with, to the extent that they believe a monopoly position exists and that customer service is not a priority, mitigating the potential benefit. This position was also emphasised in feedback from the various regulators interviewed and should be taken into account in the political review process – these are valid concerns with regards to custom, practice and behaviours*

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### **Engineering Train Management**

Given the limited volume of 1435 gauge network across Estonia, Latvia and Lithuania, a multi-national infrastructure manager would be in a much weaker position to justify the investment in dedicated engineering trains, though Atkins also believes the overall investment in these will be disproportionately expensive for Rail Baltica versus most other European Infrastructure Managers.

Under Option 85, Atkins believe that it would likely be more efficient for individual infrastructure managers to contract these services from the market, rather than have dedicated plant.

More importantly, under Option 85, the ability to coordinate the use of Engineering trains across their elements of the network could prove a major impediment to performance. For example with regards to the procurement of snow-blowers, the requirement to use these will be variable across the network as a whole and the ability to deploy to the locations most needed on the network will be key to ensuring network reliability, of which the multi-national infrastructure model would find hard to do so.

### **ERTMS management Interoperability, technical compatibility and cross acceptance:**

For Option 85, Atkins assessed that a multiple infrastructure manager for the route would be significantly less efficient for ensuring cross acceptance of rolling stock and products at route level, with higher costs for the applicant due to a slower turnaround time of assessment and lower risk, due to weaker knowledge of network gauging and network performance issues (this being held in multiple places across the route with other infrastructure managers).

### **ERTMS-compatible operational rules:**

The scope of the operational rules covers ETCS level 1 application whether or not trackside signals or infill are present, ETCS level 2 application, whether or not trackside signals are present, ETCS level 3 application without trackside signals, ETCS transitions between level 1, level 2 and level 3 applications, ETCS transitions to / from level NTC, GSM-R only.

ERTMS is the most crucial tool to achieve interoperability in European railway network and the fact the route is being designed to be ERTMS compliant will mean that all operational rules can be discharged under either model.

However, the Single Infrastructure manager would not have an understanding of National Train Control systems on the existing networks, though given the very limited volume of 1435 gauge track, this would only be a minor disadvantage with regards to the complexity added in handing over to legacy National Train Control Systems where interfaces occur.

### **Expandability of the model to relevant infrastructure in other countries (e.g. Finland (fixed link) and Poland (Rail Baltica section):**

An infrastructure management model based upon the multiple (national infrastructure managers) model embodied by Option 85 would remain very straight forward to implement, reflecting effectively the status quo within Europe and with each national body assuming responsibility for the risk, liabilities and benefits arising from the use of its own national infrastructure and minimum further negotiation would be needed, other than to connect the networks from an Infrastructure Management Perspective. However, as evident throughout the core of our review, such a position would continue to perpetuate the intrinsic weaknesses seen in cross border traffic management.

### **Operational Language**

While there is nothing precluding the development of a single operational language across the Estonia, Latvia and Lithuania. It is unlikely that these countries would look to standardize on the same, there being no impediment to do so today, other than cultural and business inertia.

Working through best practice adoption such as developing glossaries of key commands and issues, Atkins believe that it will be imperative for RBNE to adopt English as one of the operational languages for the route, ensuing the language is aligned with the Operation Plan for Rail Baltica. Notwithstanding this, the EC is currently conducting a study on *'Revision of language requirements for train drivers to*

*allow pilots exploring alternative options*<sup>105</sup>. This has been generally welcomed and while EIM has commented, inter alia that 'in case of operational disturbances and alternative routes, the language skills alone are not enough. The rolling stock must also be compatible to the new route, the train driver must have the necessary authorisation for the network regulation and the associated signalling rules.', with the lack of diversionary routes for traffic on the network, this is not deemed a material issue for the RBNE.

In all cases, Options 5, 57 and 63 would have a clear advantage over Option 85 in unlocking this, given the reduced complexity of developing processes, but given the level of progress being made in this area, it would be sensible for the outcome of the proposed pilot studies currently being undertaken to be assessed before processes are developed in order to ensure that RBNE stays aligned to developments across other Ten-T networks.

Both Options 57 and 63 presented a slightly higher risk profile with regards to emergency planning than Option 85. Existing infrastructure managers will have processes established and in place with the emergency services, while the greater scale of their networks means that statistically they will have and continue to have more experience in dealing with emergency situations. To mitigate this, the RBNE in both Option 57 and 63 will need to identify, adopt and implement an effective emergency management planning regime.

### **Cross Acceptance**

Options 5, 57 and 63 would greatly reduce the complexity and challenges around cross acceptance that would exist under Option 85, provided that vehicles do not thereafter need to migrate onto the national network (for example, in the situation of variable gauge rolling stock); normal national approval procedures, the technical compatibility of railway vehicle and infrastructure, plus network knowledge, all of which are a major impediment to market entry and competition will be greatly improved through the creation of the RBNE which would provide a Single Point Of Contact for assessment and approval versus the time and cost of having to approach three separate national infrastructure managers.

### **Health & Accessibility (including Passengers With Reduced Mobility)**

Feedback from stakeholders about the current state of accessibility for PRM in the region was generally negative when this was raised (with examples provided about flat access platform design in key stations). Going forward, however, working from the principle that design standards will mitigate such issues, the role of the Infrastructure Manager, whether a Single, Multinational body or a Multiple Infrastructure Manager option will likely be restricted to interface with the end customer at stations (and even then, only if these are not covered by the passenger concession process).

As each station design will be unique (a mixture of existing infrastructure and new build), each location poses a different accessibility challenge, impacting people at the point of arrival and the station and at the point of departure.

Effective design for Rail Baltica should mitigate many of these issues, whether they are doorways, stairs, ramps, ticket barriers or general congestion in the concourse. Secondary level support will typically be aligned with assistance for passengers around boarding the train from the platform. None of these will be fundamentally impacted by the infrastructure management option, provided that the

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<sup>105</sup> [https://ec.europa.eu/info/law/better-regulation/initiatives/ares-2018-3324843/feedback\\_fi?p\\_id=255973](https://ec.europa.eu/info/law/better-regulation/initiatives/ares-2018-3324843/feedback_fi?p_id=255973)

skills and capabilities to assess these needs are included in the business model (typically diversity and inclusion / ergonomics) – Atkins made allowance for headcount of this nature within our modelling.

Versus Option 85 however, Atkins assessed that a single Infrastructure Manager option was potentially stronger than a multiple infrastructure manager model was around the issue for customers relating to end to end journey planning and assistance. While it could be argued that some customers would wish a support service (SPOC) for their travel assistance needs on a national basis, Atkins believes that a single infrastructure manager could better manage and coordinate customer assistance due to a lower level of interfaces, reducing the risk of errors and a greater feeling of ownership from the customer, particularly in light of the international nature of the line.

## **Infrastructure Management**

### **Maintenance and Reliability Engineering**

Maintenance is typically delivered by teams working on specific route sections. The length of the Rail Baltica route will be sufficient enough for dedicated teams to be trained and deployed for the length of the route regardless of infrastructure management option. While most skillsets are general, some maintenance technicians (e.g. telecoms and signalling tend to cover large geographic areas and skillsets are often in short supply). There would therefore be a limited benefit versus a nationally bound multiple infrastructure management model (Option 85) where these resources could be deployed along the line of route as needed.

Under a Single Infrastructure Manager, reliability engineering will be possible at a whole route level enabling a more robust assessment of asset and system performance as a route. This is because all of the data for the installed asset base will be centrally visible, and analysis and treatment assessment will be consistent.

While some degree route level reliability engineering would be possible under Option 85 (provided data was shared on network performance), the risks associated with a potential lack of control, such as inspections not taking place as planned or in line with a central schedule and the lack of any central oversight or system management meant that Atkins assessed that performance was unlikely to be as positive as under a single infrastructure management option.

### **Transition from infrastructure delivery to infrastructure management:**

The key risks in the transfer from a build state to steady state operation will relate to the quality and knowledge of the asset built, with associated 'snagging' requirements as well as the organisational competence needed to identify, cost and correct the same.

While existing national infrastructure managers (Option 85) would have an inherent advantage given their understanding of the construction processes that have been followed, a Single Infrastructure Manager was deemed able to mitigate these by negotiating an appropriate defects liability period associated with any performance issues – processes for this are identified in the core report.

This challenge and requirement would not exist for centrally procured elements, such as telecoms and signalling systems, where Atkins would anticipate that Single Infrastructure Manager options could have a minor advantage, in terms of inherited documentation and staff from Rail Baltica AS - should that team and associated project information transfer effectively.

## Renewals

The Rail Baltica route should not need material renewal for a minimum of 10 years from the point of construction, but the existence of established, experienced teams within the national infrastructure managers were deemed give a clear advantage with regards to planning renewals and understanding when the economic tipping point is being triggered from maintenance to renewals and this was reflected in the scoring for Option 85.

## Enhancements & Network Planning

With regards to network planning, The European Rail Research Advisory Council (ERRAC) was set up in 2001 as a Joint Technology Platform with the ambitious goal of creating a single European body with both the competence and capability to help revitalise the European rail sector and make it more competitive, by fostering increased innovation and guiding research efforts at European level.

The ERRAC roadmap covered a number of key deliverables: -

- (1) The greening of surface transport:
  - (a) roadmap on energy;
  - (b) roadmap on noise and vibration;
  - (c) roadmap on sustainable design and procurement.
- (2) Encouraging modal shift (long distance) and decongesting transport corridors:**
  - (a) freight roadmap;**
  - (b) passenger roadmap.**
- (3) Ensuring sustainable (sub)urban transport (including modal shift, suburban and regional rail, light rail and metro, and sustainable urban mobility):**
  - (a) urban, suburban and regional rail research roadmap;**
  - (b) urban mobility research roadmap.**
- (4) Improving safety and security:
  - (a) improving safety and security roadmap.
- (5) Strengthening competitiveness:
  - (a) strengthening competitiveness roadmap.

Many of these areas are neutral with regards to the infrastructure manager engaging on the same, but those marked in bold may potentially be differentiated based upon the approach to engagement taken by the infrastructure manager. In our multi – criteria analysis, Atkins identified that a multiple infrastructure manager model (such as Option 85), based would be better placed to engage around urban mobility and associated light rail solutions due to the current structuring of a number of those organisations and their ability to coordinate such matters across the rest of the rail infrastructure in each country. These items effectively relate to how Rail Baltica will impact on the wider transportation networks of each country, but not to specific enhancements on the route itself (such as requests from a train operating company to increase line speed).

The Rail Baltica route is unlikely to be enhanced for a minimum of 5 years from the point of construction. While the identification of route specific enhancements may well rest better with a single infrastructure manager (due to oversight on network performance and need), delivery of these schemes was deemed more likely to be achieved successfully within the context of an established infrastructure manager where competencies for supply chain management already exist, reflecting in a benefit to Option 85.

Further to this Atkins also sought to understand how the capability of each Option to build enhancements on time, on cost and to schedule. We assessed that during an initial period (c. 1-10 years), the national infrastructure managers would have enhancements team in place to deliver successfully and this gave a benefit to Option 85. In the longer term, Atkins also assessed that the relatively small scale of the route would mean that maintaining a dedicated, skilled organization would prove looking after enhancements would prove easier under Option 85, rather than under a relatively small, single infrastructure manager. This is because the national infrastructure manager would be able to source personnel for the development of network upgrades from skilled staff, noting that they would retain challenges around specific areas such as ECTS, OLE and signalling.

### **Network Enhancements (General)**

With regards to the specific options, Atkins note that there for Option 5, further enhancement of the network would be highly challenging due to the complex commercial agreements that would be in place with regards to many of the assets (telecoms / power etc.), that Options 57 and 63 would be equally well placed to develop the vision and high level option development for new enhancements (and indeed, with their whole route vision would be the best placed to do this), but that Option 85 would be the strongest Option with regards to unlocking further benefits in the national networks due to the lack of interface complexity for the National Infrastructure Managers.

This will also necessitate that close, effective, collegiate working relationships be established with the national infrastructure managers as the operational boundaries of the majority of Railway Undertakings will not be confined to the Rail Baltica route. RBNE must ensure that in reducing the cross-boundary issues which would exist (in Option 85, versus Options 5, 57 and 63), it acts in a manner which promotes the free movement of goods, something that will remain contingent upon effective working relationships with the other national infrastructure managers, regardless of who owns or operates the multi—modal freight terminals on the route

### **Procurement**

Post construction, the requirements for procurement should be relatively low; long term supplier frameworks should have been established for the delivery of support services, products and works during the period when the teams have been in place. However, if a multi-national Infrastructure manager was to continue procuring (as per Option 85), Atkins determined that it would likely operate better than a single infrastructure management model as they would be able to scale and have better organisational capability. While simple procurement categories such as services can often be readily assessed, the market complexities for products with complex supply chains, such as POE, or even ballast require detailed knowledge in order for effective procurement.

Without establishing a procurement organization disproportionate in size to that of the network, it is not reasonable to think that the Single Infrastructure Manager will have the competencies to manage the end-to-end process for buying goods and services appropriately, hence a multi-national infrastructure management model (Option 85) would perform better against this aspect. The picture however is not universally in favour of Option 85.

Atkins believes that under Option 85 a multi-national infrastructure manager would perform slightly worse in its ability to continue to control and procure upgrades that will require a continued view on integration at a systems level, specifically those of control systems and telecoms. These however are not likely to be upgraded for 10+ years and therefore this will be of minimal real-world disadvantage.

### **Supplier Account Management:**

Effective supplier account management relates both to the ability to monitor, influence and control supplier performance. In the case of a multiple infrastructure management model such as Option 85, there are both positives and negatives.

Working from the principle that a national infrastructure manager is more likely to be doing more work than the Rail Baltica route, this will provide them with both contract scale to develop better value, but more importantly, greater influence with the supply chain, especially through the use of contract mechanisms such as right of setoff. The key weakness in this area would be the inability to ensure that issues caused by suppliers across the route are not replicated across other national territories, resulting potentially in items such as the risk of cascaded supplier failure on the route.

**Contingency Planning (Non-Operational Perturbation) e.g. caused by labour relations:**

For contingency planning, Atkins assessed that in the event of any emergencies on the network (fire / flood / act of terror), the local services will be responsible for response and action on the network, with national coordination and established practices coming to bear. The physical scale of the network under control by each infrastructure manager is likely to result in a higher frequency of need to interact with these national bodies, meaning that a multiple infrastructure management option using the existing national IMs would have better relationships with these bodies (if not necessarily processes).

This resulted in Option 85 scoring more highly than the single infrastructure management options in this area, though it should be noted that challenges will still remain with regards to operational language.

**Route Development, Demand Analysis (Market Knowledge):**

Forward demand analysis is typically comprised of a few key areas:-

- Market studies - articulating strategic goals for each particular market sector, forecast future rail demand, and develop conditional outputs.
- Stakeholder Consultation - gathering views of how rail services can support delivery of the market's strategic goals.
- Cross Boundary Analysis - options for services that transit the entire length of the route to make consistent assumptions in respect of these services (Poland / Finland).
- Route Studies – developing options for future services and for development of the rail network along the existing route.

Atkins anticipated that for market studies, both the Single Infrastructure Manager and the Multiple Infrastructure Manager would be equally reliant upon external consultancy to develop market studies, due to the multinational nature of the Rail Baltica route and the impact of macro economic factors on the development of the same and therefore saw no differential between Option 85 and any of the other Options considered.

For stakeholder consultation, Atkins anticipated that the multiple infrastructure management model would have a natural advantage from the perspective of having much greater reach into the supply chain through extended interfaces and their existing control of multi-modal facilities. Should a single infrastructure manager have significant presence or involvement in multi-modal terminal operations, Atkins would anticipated this to be balanced however.

With regards to cross-boundary analysis, which considers options for services that transit the entire length of the route to make consistent assumptions in respect of these services (Poland / Finland), Atkins anticipated that a Single Infrastructure Manager would be better placed to understand the

needs and requirements of end to end services of this nature, given the external nature of the client obligations.

With regards to route studies, which will develop options for future services and for development of the rail network along the existing route, looking at options for future services and for development of the rail network, based on the conditional outputs and demand forecasts from the market studies and assess those options against funders' appraisal criteria, Atkins believed that Option 85 had a minor advantage with regards to a single infrastructure manager option, predicated upon a better understanding of local market dynamics and client needs with regards to in-country traffic, noting that concerns had been raised about the lack of customer responsiveness that exists today.

### **Development of value added services**

While outside the traditional and core functions of an Infrastructure Manager, high performing infrastructure managers who seek to optimise the return from their assets are increasingly looking to understand how they can develop value added services, both to make a commercial return and to unlock greater opportunities for development.

For rights of way and services which will exploit the overall integrity of the route, Atkins would expect significant weaker propositions from a fragmented infrastructure management model rather than a single national infrastructure manager - though there are many different ways in which this could be exploited, not just through the Infrastructure Manager looking to commercialise such services, for example all three nations could agree to sell Indefeasible Rights of Use of concessions to third parties for the development of these services on the corridor. While this may unlock commercial value from the network, it will not necessarily unlock all the potential value of the network in terms of a guiding mind focused on locking ancillary benefits, something which meant that single entity options scored higher than Option 85.

### **Interfaces with the 1520mm plus management of freight and passenger terminals**

While there may be some operational synergies that emerge at interchange points between the 1520mm and 1435mm rail networks (such as in improved utilisation from multimodal freight terminals), there was no assessment made during the Multi-Criteria Analysis that the Rail Baltica route would or should operate these. Further to this, as from an asset utilisation perspective as the networks will not be physically connected, Atkins did not anticipate that specific synergies could be robustly identified from the perspective of the assets and their interaction, despite claims from a number of the national infrastructure managers – this not being evidenced.

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*All freight stakeholders consulted emphasised the fact that they believed the existing structures of the national infrastructure managers effectively precluded them from establishing their own freight terminals or from direct management of the same, particularly around the potential to gain access to terminals and develop their own businesses*

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General synergies accounting from economies of scale, covering both headcount and improvements in procured contract rates were however included in the cost model and gave benefit to the existing National Infrastructure Managers under Option 85, but to avoid duplication, were not scored specifically in the Multi-Criteria Analysis.

## Management of other utilities/services in the Rail Baltica right-of-way corridor

Under Option 85 Atkins identified that a multiple infrastructure manager model would be in a worse position to commercialise services on the route than under a single infrastructure manager option, though this will be heavily influenced by the degree of commercial freedom which is available to the infrastructure manager (and in our final recommendation that are a number of constraints on commercialisation), but nonetheless, the clear lack of an ability to exploit the network in an integrated manner is a clear negative for any multiple infrastructure management option. We did however recognise that the commercialisation opportunities could also be realised by the assets being made available for commercialisation on a multi-national basis without the use of the existing national infrastructure managers (through the creation of a special purpose vehicle or similar).

### Rail Baltica business development and commercialization (freight and passenger):

A single infrastructure manager will manifestly have a greater single focus on the delivery of business across the whole route than a multiple infrastructure manager model (as per Option 85) who will have competing demands for their focus. Similarly, a single infrastructure manager will be better placed to understand the needs of the route as a whole, including where new investment is required in order to develop route business.

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*It was posited in our discussions with stakeholders that a single infrastructure management model would be better placed to promote the development of solutions that would bring additional economic benefits to areas in proximity to the route, or even to better stimulate economic growth. This stemmed from the perception that the existing national infrastructure managers did not perform well in delivering such activities. There was no evidence however that a single infrastructure manager should inherently perform better in such matters – something that is reflected in the light touch approach recommended for RBNE and exemplified by the ‘landlord’ type approach to the multi-modal terminals.*

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Examples were given with regards to how the type of freight on the network could be controlled to encourage the development of other value added services, but this approach is flawed in that it assumed discrimination of traffic, something which is illegal under EU law). Our proposed model for track access charging for Rail Baltica provides a compliant compromise position which could be adopted regardless of the infrastructure management option adopted.

Atkins was asked to assess how the Infrastructure Manager could also promote additional economic benefits under the business development parameter. While degrees of commercialisation are obviously possible, the need for high levels of commercialisation and to be at arms length and to act independently will limit this significantly; each entity created would need to be at arms length and independent, limiting the control and direction that could be applied as they would effectively be independent businesses. These were the commercial freedoms broadly seen in Option 5.

## Customer Relationships & Orientation

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*From a customer perspective the application of Option 85, reflecting that of multiple, national infrastructure managers would not meet the majority of stakeholder aspirations insofar as the majority of interviewees were negative with regards to the existing national infrastructure managers and their responsiveness to customer needs. However, these aspirations were effectively opinion and therefore did not influence scoring.*

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Despite this, Atkins recognises that under Option 85 national infrastructure managers will have the disadvantage that they will not be able to easily align behind customer needs, such as the management of possessions (across the length of the route) to minimise disruption, to provide simple, clear plans with regards to asset treatments, risk profile and performance – there would be not single vision and source of information available for the customer.

The role of the Infrastructure Manager with regards to customer relations will be strongly influenced by the shape of the passenger concession agreement and the inclusion or exclusion of stations within the franchise. The option for deep alliancing remains under the 4th Railway Package, although the performance benefits of these remains unclear at present; customer satisfaction improvements appear to be tied to significantly increased cost. Atkins does not however believe that deep alliancing (between track and train) will be possible in practice under Option 85 due to the complexity of constructing such an agreement across 3 different infrastructure managers.

The common areas that will require effective support by any Infrastructure Manager, regardless of whether or not they have a direct interface with the travelling public will be in the effective provision of data regarding network perturbation and performance.

For freight customers, the use of RNE systems will likely prevail, meaning that from a data perspective, there will be no advantage for reporting purposes and customer information based upon the IM model.

For passenger purposes, the Multiple IM option will be more complex in terms of gathering data on the performance of the route and communicating to customers issues on the network, meaning that it will prove harder to provide consistent communication for travel along the Rail Baltica Route.

Efficient functioning of the single European railway area (promotion of competition; removal of barriers of entry; avoidance of protectionism): While Atkins does not have any hard evidence relating to ongoing anti-competitive behaviour in any of the existing infrastructure management companies who would form part of the Multiple Infrastructure Management mode, a number of parties cited the October 2017 finding by the European Commission that Lithuanian Railways (Lietuvos geležinkeliai) had hindered competition on the rail freight market, in breach of EU antitrust rules, by removing a rail track connecting Lithuania and Latvia.

Regardless of whether or not any ongoing issues exist, there is a manifest need for cultural change in order to build confidence in the neutrality of at least some of the Infrastructure Managers who would form part of Option 85.

## Regulation, Economic Regulation and Funding Allocation

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*A number of the National Regulatory Bodies were actively seeking a solution that did not result in the Rail Baltica route becoming part of the existing National Infrastructure Managers. The drivers for this were predominantly around perception of behaviours seen in the existing infrastructure managers. While consistent with feedback from many stakeholders in the marketplace, this did not impact the scoring of the Multiple Criteria Analysis.*

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With regards to effective economic regulation, from a principled perspective, both single and multiple infrastructure management options can be structured to provide confidence that the business is performing effectively and discharging its responsibilities appropriately. This is not the same as discharging its responsibilities efficiently however, something which an economic regulator should look towards. Atkins believes that this efficiency stems, in the case of a single infrastructure management model, from the advantages that can accrue from a single till approach, noting that concerns have been expressed around the risk of cross subsidy on the route.

Under the single till principle, as all activities would be directly associated with Rail Baltica route (operational and commercial) and a single entity with a clearly coherent asset base, there will be a high level of transparency in being able to identify appropriate Track Access Charging.

This means that under a multi-national infrastructure model (as in Option 85), it is probable that charges will lead result in a less economically efficient outcome as it will not enable the sharing of profits generated by complementary commercial activities.

Evidence of this approach can be found in the aviation industry, where dual till approaches (separating the management of the asset from the commercialisation) often leads to higher charges, an outcome not in the interest of users and passengers.

Balancing this somewhat, Atkins also considered the degree to that an Option which was aligned with a national infrastructure manager model (Option 85) would enable clarity with regarding to funding obligations and allocations. Option 85 would be simple from the perspective that in the context of an output based maintenance requirement, the obligations would rest completely with a single body in each national territory. It also aligns well with the fact that every stakeholder stated that they were not prepared to accept any cross subsidy of operations.

Despite this, Option 85 remains potentially less stable dependent upon how revenues would accrue to each nation if Atkins are concerned about the long term viability of the route; working from the positive position that the line remains profitable, some form of cross subsidy mechanism may remain necessary in order to ensure that the infrastructure is managed consistently. This remains a challenge to be addressed.

## Accounting Practices

There are no common standards of railway financial reporting, particularly with regards to assessing how public sector contributions to railways have been made, though all options will need to be compliant with European System of National and Regional Accounts (ESA 2010)

With regards to the development of commercial activity, from an accounting perspective, the primary risk sits around state aid - ensuring that there is no public support to commercial activities which effectively cross subsidise activity in the commercial sphere based. It is prohibited (with some limited exceptions) to prevent negative effects on trade.

ESA2010 provides guidance with regards to the potential to have assets on balance sheet or off balance sheet, there being two key tests - The Institutional Unit Test checks the relative balance of control over any procured special purpose vehicles and The Asset Test, used to assess the balance of risks and rewards (as an indicator of economic ownership) from the asset.

We would anticipate that significant commercial activities (as seen in Option 5) conducted associated with the Rail Baltica route would have to be themselves independent of the Infrastructure Manager and as such, they will not be subject to influence or guidance by the infrastructure manager regarding the areas that they can invest in or work on; increased commercial opportunity comes at the expense of being able to control and direct the business.

Atkins deemed these principles applied to all scenario's, for both Single Infrastructure Managers and Multiple Infrastructure Managers (Option 85) and were therefore not deemed a differentiating factor.

### **Transparency and management of conflicts of interest**

Whether for the single infrastructure management options or for the multiple infrastructure management options (such as Option 85), all parties have confirmed that they will be fully compliant with the 4th Railway package. However, evidence does exist which shows that despite the separation of track and train, even the presence of both infrastructure manager and railway undertaking in the same 'shell' can lead to potential conflicts of interest.

Atkins therefore believes that a risk exists in the structuring of a multiple infrastructure management model due to the existing relationships that exist within Estonia, Latvia and Lithuania with regards to the potential for anti-competitive behaviour and COI that could be effectively mitigated from the outset with the creation of a new single infrastructure manager.

### **Engagement in/with industry NGOs (including but not limited to EIM, CER, ERFA, UIC):**

The national Infrastructure Managers are already members of all the primary NGOs and will have to continue to be members of the same.

- European Rail Infrastructure Managers
- PRIME
- RNE

Under the multiple infrastructure management model, they will therefore all be well placed to engage with and adopt best practices. They will also have an inherent advantage due to the relative size of their organisation to be able to support and staff the extended workstreams that often emerge from such bodies.

While a single infrastructure manager may have the competencies to deliver, the scale of their organisations may make it a challenge to resource.

### **Public Perception:**

Atkins considered the impact of the choice of public perception with regards to the end selection of infrastructure manager. It is easy to focus on the challenges that face the project - According to a survey conducted in October 2015, 69% of people aware of the Rail Baltica project supported it. But public opinion has dwindled since. The latest survey, published in March 2018, showed that now just 52% of people – a very narrow majority – support the project (Source : Estonian World) - but the question is not about the popularity of the project, but about the reaction to the particular infrastructure model.

Infrastructure Managers are by and large invisible to the public and positive brand reception is unlikely - a neutral response is likely to be the outcome, given the differing drivers and tensions between greater European Integration and National self determination. Where the multi-national Infrastructure Manager has some potential for lesser benefit however will be in how it is able to unlock 3rd party benefits through a cohesive guiding mind with regards to the use of the assets (e.g. rural broadband / crop pollination), items that are unlikely to occur consistently in the multi-infrastructure manager environment (Option 85) due to the complexity of coordination and different national objectives. For instance, national focus on using the fibre assets to improve rural broadband or mobile connectivity could well have different focus on a national basis, yet would require support from all beneficiaries to progress due to the impact on operational risk profile for the route.

### **Trade Union Relations:**

While meetings were requested with Trade Union representatives in the region, Atkins was unable to establish these and no written response to our questions regarding 'What would constitute a high performing Infrastructure Manager' were received. We therefore did not include feedback from Trade Unions with regards to our Multi Criteria Analysis.

However, based upon our work looking at the potential for the commercialisation of railway assets in elsewhere there would be a natural risk that Trade Union support for those options with high degrees of commercialisation (e.g. Option 5) would be lower; our historical engagement with national unions has consistently shown concern about commercial activity around what have been considered core railway assets such as telecoms and power. We have assumed that positive, pro-active communication with trade unions would be adopted to mitigate such risks, while the potential for standardised working terms and conditions would also be a positive for a single infrastructure management option.

### **Engagement With Railway Undertakings**

In consultation with Stakeholders, those parties who were not linked to existing National Infrastructure Managers (e.g. as sister companies), were strongly in favour of a model that did not involve the existing National Infrastructure Managers, though this was not implicitly the same as desiring a single infrastructure manager for the route (for example, Option 85, but using newly formed, independent national infrastructure managers was not necessarily opposed).

The reasons for this were complex, but related to a range of issues, such as perception that the relationships between the existing national infrastructure managers and their sister companies effectively restricted access to desirable train paths, had poor customer relationships, taking extended times to respond to queries and blocked them developing their own freight yards for connection onto the national network.

#### **Access to and/or management of service facilities:**

In the paper 'Access to Service Facilities and Rail Related Services', The European Rail Freight Association recognises that *'Discriminatory practices to access to a facility exist in all Member State regardless the competitive environment.'* However, a differentiation can be made between a facility under the direct or indirect control of a body or firm which is also active and holds a dominant position in national railway transport service markets for which the facility is used (Recast Article 13 para 3), and other facilities. *Dominant players should be required to apply more requirements than small facility operators...'*

A new single Infrastructure manager could equally find itself dominant in the marketplace, if it was to control the major multimodal facilities on the route, just as dominant operators exist on the national networks.

The issue here is one of behaviours, including around the level to which the operators would actively market the facilities to develop business, something that can not be readily assessed; There is an obligation on service facility operators to provide information about terminals to improve 'marketability', but this effectively only basic information, over and above information provided via the Network Statement.

Both models are capable of fostering and encouraging competition on the network, but Atkins cannot identify which model would actually do this better; this item is further complicated by the fact that customers have expressed a desire to operate their own facilities and the fact that the ownership and operation of these facilities is not yet determined.

While scoring was not reduced for the Option 85 and other Multiple National Infrastructure Manager options, it must be noted that some stakeholders did complain about anti-competitive behaviour being ongoing with regards to access to service facilities. Further work developing the recommended model was taken forward post MCA.

#### **Administrative efficiency (economies of scale)**

Cost synergies for Option 85 (as per all Options) were captured within the cost model and are documented there. These comprise benefits relating to assumed synergies on external contracts and headcount and are were assessed in this MCA question to avoid double counting.

#### **Audit and Assurance**

Under an existing, nationally aligned multiple infrastructure manager model such as Option 85, the process for audit and assurance would be straight forward from an asset cost perspective, with reporting and activities aligned under the appropriate existing economic regulators.

As all stakeholders have stated that they would not be prepared to entertain a model that carried with it the risk of national cross subsidy, this model would strongly align with that position, with economic

regulation and national expenditure matching and resulted in a higher scoring assessment versus that seen in the single multi-national infrastructure management models.

However, this model would not in itself guarantee that the process of audit and assurance is carried out consistently across the route, although common international standards could be agreed. Differences in treatment of the asset could drive different cost implications, while the regimes to check these could vary significantly depending upon the approach taken by the national governments.

## **Regulatory Reporting**

Atkins believes that for Options 5, 57 and 63, economic regulators will have a slightly more complex reporting and analysis task than would be the case under Option 85.

There will be an obligation to report on the levels of performance and service, as well as value for money for both passenger and freight services, with this obligation becoming more rigorous in the event that subsidy becomes required. It should be noted that the external impact on safety and economic regulators (in terms of cost) was not a direct part of this commission, but in all circumstances, Atkins are recommending the strengthening of regulatory capability in the region.

## **Driver Licencing**

There are currently EU-wide standards for train drivers, specifically Directive 2007/59/EC on the certification of train drivers operating locomotives and trains on the railway system in the Community. Drivers must have the necessary fitness and qualifications and have a licence confirming that a driver meets minimum requirements for medical and psychological fitness, basic education and general professional skills as well as a harmonised complementary certificate indicating the railways and types of train for which the driver is authorised.

The national competent authorities issue the train driver's licence and have a number of tasks including: issuing and updating licences, providing replacements and suspending and withdrawing licences if necessary; ensuring periodic examinations and checks; ensuring the publication and updating of a register of accredited or recognised persons and bodies (medical doctors, trainers, examiners, etc.); keeping and updating a register of licences which have been issued, modified, suspended, cancelled or declared lost or destroyed, or which have expired; supervising the process of certifying drivers and carrying out the necessary checks on board trains travelling within the EU.

Responsibility of driver availability will be the responsibility of the carriers and the railway undertakings, not the infrastructure manager.

As a result, the scope of Atkins analysis with regards to driver licencing was restricted to consider which option would best be able to ensure effective training and which will ensure the rapid turnaround of drivers licencing. Today, the typical model is that drivers will need to be licenced by multiple national authorities, something which will take longer and cost more money than a single approval. Atkins therefore assessed that a single infrastructure manager would be more efficient in supporting driver licencing than a multiple infrastructure model such as that typified under Option 85.

## **Health & Safety Policy**

As part of our research, data from RMMS indicated relatively low levels of experience in electrification and no experience in high speed rail within the existing national infrastructure managers. Atkins therefore recognised that while the majority of competencies might exist within the national infrastructure managers, not all competencies are present. RMMS data also showed that the existing national infrastructure managers are amongst the worst performing from a safety perspective in the European Union.

Atkins therefore believes that there are two major issues with regards to endorsing Option 85 as a multiple infrastructure manager model with regards to the application of health and safety policy;

- (1) The current gap between a high performing and low performing infrastructure manager is such that it does not seem feasible to close this delta fully within the timescale of the construction of Rail Baltica (although Atkins have added significant cost allowance for business improvement, meaning that Atkins have only included a minor differential in scoring) and;
- (2) There are few natural synergies in terms of competencies with regards to electrification and high speed rail for the existing national infrastructure managers.

### **Interface and cooperation with European Union Agency for Railways, National Safety:**

All stakeholders indicated that they would support the development and application of a common approach to safety across the Rail Baltica route. Our working assumption is that this will be the case.

However, as previously stated, the three current national infrastructure managers currently have some of the worst performing safety standards in Europe, with special measures being applied to improve performance. Given the challenges presented by cultural inertia and from our direct experience of safety culture transformation, Atkins believes that this presents a major risk in establishing a world class approach to safety and due to the need to negotiate a common position across three parties under Option 85, there is a strong probability that a 'lowest common denominator' will result.

### **Financial Planning & Life Cycle Costing**

Under Option 85, each party would have their own financial planning activities and cycles, something that could present challenges from a route perspective. Despite this, revenues should prove relatively predictable as charges will be communicated to any parties in advance through the national network statements, with the same service available for the same price within each national jurisdiction (though potentially varying in each country).

However, under Option 85, as risks, liabilities and rewards associated with the use of the Rail Baltica network will sit on a national basis, each national infrastructure manager will be motivated to optimise traffic on their own national networks; conflicts could occur whereby each Infrastructure Manager could in theory get a better revenue stream from other routes, reducing traffic on Rail Baltica. This factor resulted in a lowering of the score for Option 85.

Such behaviours would make future forecasting of cash flows more complex with regards to understanding the case for future investment capital required for the route, though in practice, the impact of this would likely be limited and in any event, some similar variabilities could be expected due to competition arising by the existing national infrastructure managers continuing to develop and promote services such as The Amber Train.

Under Option 85, Atkins does not believe that life cycle costing will not necessarily be required at a trans-national route level as the infrastructure being built will be absorbed into the national assets of each territory.

Under this circumstance, Atkins would anticipate that each country would have an availability agreement put in place which would ensure that the assets would be renewed and maintained as required with the liability for the efficiency of the same at the national level.

As a consequence, while there would not be a route based view of ongoing life cycle costing (divergence would be expected), but this would not *necessarily* impact the performance of the line; the question therefore needs to be to assess what elements of the assets would need renewed on a multi-national basis ongoing and what the implications of this would be on life cycle costs.

This will fundamentally relate to the signalling systems; telecoms systems life expiry is often driven by support obsolescence, driven by the manufacturer - renewal will therefore be driven at the same time across all countries under a national infrastructure manager model, something that would need to be proscribed under inter-governmental agreement to avoid major performance and safety risks emerging on the route.

The life cycle costing of signalling systems will however be more complex in under Option 85 than a single infrastructure manager option. Due to the integrated nature of the asset, understanding what needs to be done in terms around investment decisions for upgrades will be far more challenging and almost impossible in the future without close working relationships and coordinated investment.

### **Scheduling & Invoicing**

Atkins considered a range of items with regards to scheduling and invoicing for all options. At a most basic level, invoicing will need to cover three different areas:-

- (1) Invoicing for train paths used
  - (2) Invoicing if trains are not run (reserved path not used)
  - (3) Charges for Traction.
- (1) Would prove relatively straightforward under Option 85, with invoicing being possible in line with actual usage, this being facilitated by confirmation of train header code information and associated movements on the network. Invoicing will therefore be on a national basis, in line with the published track access charges.
  - (2) Presented a potential challenge from the perspective that during stakeholder interviews concerns were raised that the railway undertakings owned (as independent subsidiary of the national infrastructure managers) reserved paths in order to stop other 3rd parties accessing the infrastructure. To limit this behaviour, Atkins would to ensure that invoicing for unused paths is effective.
  - (3) Billing for traction power is likely to remain discrete on the network, both to reflect the relative efficiencies of different motive units and also to influence environmentally friendly driver behaviour.

Against this background, all the existing national infrastructure managers have indicated that they would support the creation of a Single Point of Contact for freight customers. Atkins therefore

assumed that this would include a single point of billing and invoicing, plus a common methodology for the resolution of customer concerns and payment disputes, including for example, compensation payments for traffic over the entire route being covered by the individual infrastructure manager responsible for the initial delay.

This would be a more complex delay attribution process that that which would occur under a single infrastructure manager option due to the potential for dispute along the line of route regarding the cascade effects of perturbation, meaning that Option 85 scored lower than the single infrastructure manager options.

### **Capacity allocation and management including Cross Border Management**

For access to international train paths today, customers can file applications with any one of the competent bodies on the international train path (in this case Estonia, Latvia or Lithuania). This position would continue under Option 85.

This process works because all are members of the Rail Net Europe association of infrastructure operators, acting as a One Stop Shop, although this is effectively a single window, rather than an organisation trying to optimise the process for the route as a whole.

Under this model, customers would file an application for an international train path with any one of the three bodies (or via a central contact desk) which will then coordinate identification and pricing of the train path amongst the parties.

This will be functional, but due to the need to coordinate between other bodies, will be relatively less efficient and hence slower than having a single point of contact which has fully up to date information on all train paths on the route (as amended and influenced by engineering possessions etc.) and an ability to manage, alter and amend the same. The single infrastructure management option was therefore found to be more efficient.

With regards to cross border operations, both stakeholder consultation and data from RNE has indicated that there are issues (across Europe) with the management of freight traffic over borders due to services getting 'backed' up due to issues in the coordination of train paths, particularly when perturbation issues exist on the network. The service today is effectively functional, but not optimised - this could be improved by having an agreed process for train prioritisation across the three countries, but clear risks on performance would remain for freight that could be more effectively ameliorated under a single infrastructure manager who would hold a single view of the route.

With regards to passenger cross border operations, under the Third Railway Package (2007) provision was made for the liberalisation of international passenger services. As Estonia, Latvia and Lithuania are all parties to the package, Atkins confirmed there was no impediment to railway undertakings providing services across the infrastructure, regardless of the infrastructure manager option.

However, Atkins do not anticipate in any circumstance that the Infrastructure Manager(s) will be the operator of passenger services on the route. As the passenger experience cannot be the direct responsibility of the infrastructure manager, the principles of effective cross border operations (passenger) were assessed in a similar manner to that of freight, whereby control of the signalling systems and train paths in a seamless manner reduces the risk of disruption to the passengers, though as train paths for passenger trains tend to be commonly prioritised, the relative benefit of a the single infrastructure manager was reduced versus that for seen for freight.

## Promotion and organization of cross-border services

While the creation of a SPOC as envisaged under RNE guidelines goes some way towards the mechanics of ensuring effective cross border services are put in place, it does not address the issue of the branding and promotion of the services.

For the majority of infrastructure managers, this has traditionally been not a focus of activity, but is likely to be of greater importance for Rail Baltica, in particular for freight, where the promotion of seamless movement of goods could be a genuine positive in terms of ensuring the success of the business case.

Under Option 85, a national infrastructure manager would be in a weaker position to build up appropriate marketing of the line by holding a cohesive vision for development of the network than that of a single infrastructure manager. Other solutions, such as those seen in the case study of Dublin-Belfast have the potential to have the brand undermined through the poor performance of any infrastructure management partner.

## Path Definition

Atkins assessment of this criteria was based upon the RNE Process Handbook for International Path Allocation. This handbook follows the principles set down in the European directive 2001/12-14. This handbook applies only to international traffic, both passenger and freight. The process for national path requests is the responsibility of the national infrastructure managers. A multi-national infrastructure management model would ensure management of national traffic on the network but would find it more difficult in terms of international traffic.

While this could lead to additional complexities in the management model, the fact that the majority of the rest of the rail infrastructure in the region operates on a 1520 gauge means that there will be limited transfer off the core network and this is not likely to prove to be an operational or performance risk.

This means that on balance path definition will be more effective under a single entity under Option 85, with faster and more effective definition of train paths as result.

## Track Access Charges (TAC) determination and management

As part of our initial assessment in the multi-criteria analysis, Atkins recognised that there are multiple ways of Track Access Charges being calculated:-

- Full costs after subsidies
- Marginal costs with mark-ups
- Full costs after subsidies
- Marginal costs with mark-ups
- Full costs after subsidies or;
- Full costs.
- 

In reality, there are two drivers for harmonisation of TAC - cost and the political environment, The ability to have common provision of cost information, will be far simpler under a Single Infrastructure Manager option, given the differences which often occur in accounting treatments at a national level,

although the framework for European rules about Track Access Charges (TACs) 2015/909 covers direct cost was in detail, covering parameters such as speed, axle load, and track radius.

However, the fixing of infrastructure charges is most fundamentally a political issue and differs from one country to another. As a result, Atkins believes that only a Single Infrastructure Management model can effectively harmonise track access charges as these will change and evolve over time - something which is unlikely to be accommodated efficiently under a multilateral agreement between the National Infrastructure Managers under Option 85.

### **Emergency Management and Contingency Planning**

Atkins considered the impact for contingency planning which needs to take place in a non-operational environment – this is a complex area and detailed studies should be undertaken prior to services commencing to establish clear processes and standards.

Though planning for emergencies is a critical role within a railway undertaking, it is typically not one which justifies a full time dedicated position and is hence often combined with other roles such as security or fire safety. In many cases, emergency planning is integrated within individual business functional units, with each responsible for such arrangements within its own area.

As a consequence, many of those who take on emergency planning responsibilities do so with limited previous experience. As for any other role, effective emergency planning requires a combination of knowledge, understanding, skills and behaviours. This approach generally functions well due to the importance of individuals having knowledge of company train/station operations and interfaces and specifically those that carry risk (e.g. busy stations). In these areas, as noted in the final report, where shared facilities exist, it is important to have a lead responsible for emergency management and contingency planning. Even under a single infrastructure manager option, this may remain the existing national infrastructure managers.

Option 85, each infrastructure manager would exercise less control on the processes and procedures across the route, ensuring that these were consistent would also prove more difficult than with a single infrastructure manager.

Railways typically focus on responding to discrete events (for example, a train crash or route flooding), but where events happen that present a risk all nations along the route, there is likely to be a disadvantage when there is no centralised control procedures as seen in a single infrastructure manager model. For example, coordinating resources across the line in the event of a Flu Pandemic would be more difficult and enabling a coordinated response would need operational working groups set up between the individual infrastructure managers. These events are however low frequency in nature, despite high potential impact.

### **Railway Security**

The railway is typically classified as Critical National Infrastructure. The most effective way for an organisation to protect itself against national security threats is to use a combination of physical, personnel and people, and cyber security measures. One of the basic items to establish will be items such as the cost of personnel identification, systems that are also typically used to manage the number of hours which staff work onsite.

These will all need to be developed from scratch for a Single Infrastructure Manager but are assumed to exist already under Option 85. Costs in the cost model were adjusted to reflect this, but they are not in themselves differentiators at an infrastructure manager level as such processes must exist.

Resilience to cyber-attacks will depend upon the nature of services provided under the commercialisation options. Complete commercialisation could include the sale of IP traffic capacity, something that could be high risk under DDOS attacks, particularly in light of the open nature of network.

There would be a sliding scale of risk through lower grade commercialisation, such as the sale of optical wavelengths, through to the most secure option which would be to keep the network closed. The varying impact of this was reflected in the Multi Criteria Analysis through the 'Commercial Freedoms' scoring mechanism.

Atkins notes that RB AS, when considering IP transit has worked on the principle of having either dedicated fibre or wavelengths, both of which should ameliorate this risk, though the utilisation of dedicated fibre remains complex from a state aid perspective.

Responses to theft and vandalism are typically handled locally, with engagement with lineside customers handed with direct contact. Under Option 85, the existing national infrastructure managers would benefit from economies of scale in this area, these being captured in the cost model.

### **Sustainability and Environmental Protection**

While there is no reason why the management approach for sustainable and environmental protection should be any better for a Single Infrastructure Manager than under Option 85. Under Option 85 the associated national network opens up the opportunity for better end of life asset practices to be introduced over time. In our MCA Atkins confirmed that Atkins would ascribe a higher score to Option 85 on this point if evidence is provided that all these elements are already in place.

While the end of life disposal of rail is unlikely to have any material difference for either a single infrastructure manager or a multiple option, for both the recycling of ballast and the recycling of sleepers, the multiple infrastructure management options (Option 85) will be at a significant advantage. While volumes of both are unlikely to be high, the size of the network means that it would likely to be more economic for the national infrastructure manager to invest in facilities for ballast washing or concrete crushing, with lower logistics costs.

### **Extreme Climate Resilience**

The geography of Rail Baltica means that it will be exposed to significant seasonal variations of weather. The most likely extreme condition which the infrastructure will have to deal with relate to snow and ice. This falls into a number of different categories; Snow is compacted by passing trains into solid ice, stopping point operating equipment from functioning, while ice coating the overhead line can interfere with both pantograph connections and also bring down the OLE, while snow drifts of > 30cm typically stop trains without snow ploughs fitted.

While many of these aspects can be managed through appropriate patrolling of the network through the use of maintenance teams, in order to keep tracks clear and suitable for high speed running, seasonal treatment fleet is typically needed, from snow ploughs, to snow blowers and overhead line de-icing equipment. Plant of this nature is expensive and used irregularly, but its availability is essential to the network operating reliably.

Under Option 85, it would be unlikely that a shared plant solution would be created, meaning that the Project would have significant extra cost to bear to ensure service availability; even if such an outcome was to arise, the potential for conflict between the partners is significant in the event that a critical constrained resource would need to be managed - prioritisation would remain on resolving local issues, rather than the effectiveness of the entire route and therefore Atkins anticipates this area to be a significant risk to route performance under Option 85.

## Summary

Option 85 presents a reasonable cost proposition for Rail Baltica, but a very poor value and performance proposition.

If core functions are undertaken across multiple national organisations (as in Option 85), this will likely lead to inefficiencies in managing the interactions and a failure to capitalise on possible synergies across the route. This is a fundamental challenge to the creation of a high performing infrastructure management solution for the route.

In our Multi-Criteria Analysis, Atkins recognised that as a single entity for the route, both options 5, 57 and 63 would both have a significant advantage over Option 85 in terms of being able to coordinate maintenance and renewals activity along the route, greatly reducing the risk of disruption, meaning that the impact of works would be reduced for both passenger and freight services and something that is again at the heart of performance.

Atkins has recommended a hybrid model for the development of infrastructure maintenance, under which, under a completely open tender (most likely structured as an offer across Estonia, Latvia and Lithuania or with separate packages for each), there remains an opportunity for the existing National Infrastructure Managers to build on their core synergies around existing skills, capabilities and competencies which were identified in the Multi-Criteria Analysis and which form the heart of the strong cost performance identified in Option 85.

In such circumstance, the recommended Option has real potential to garner and share benefits from amongst all stakeholders in the Rail Baltica project and Atkins strongly hopes that such mature relationships of collaborative working emerge.

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