LA GRANDE ALLIANCE

PRE-FEASIBILITY STUDY – PHASES II & III – TRANSPORTATION INFRASTRUCTURE

TECHNICAL NOTE 21
FINANCIAL ANALYSIS

FINAL VERSION

DATE: MARCH 26, 2024

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EXECUTIVE SUMMARY

The infrastructure program of La Grande Alliance represents strategically significant assets aimed at enhancing long-term economic growth and regional competitiveness by more efficiently moving passengers and goods via the new and upgraded infrastructure. Recognizing the importance of this infrastructure program, the analyses and conclusions developed throughout have been developed diligently and iteratively through engagement with key stakeholders. In particular the development of the financial analysis at the portfolio level (i.e., Phase I, II and III) was assisted by the Phase I consulting team. It should be noted that both consulting firms hired by CDC have produced independent analysis using different financial models and assumptions. WSP has not verified the Phase I analysis and taken the output results "as is".

In order to inform the procurement and financing strategy for the infrastructure program, an ecosystem scan of major passenger rail projects was performed, and international freight rail project examples were reviewed, including the Inland Rail project in Australia. This overview provides an understanding of the financial structure, procurement approach and key issues faced by existing projects; it also points to some key lessons that can inform the decision-making regarding risk allocation and thus procurement options for La Grande Alliance. The key overarching conclusions include:

— Freight and passenger rail projects are increasingly being delivered through a range of PPP models.
— Few PPP rail projects transfer full revenue risk to the private partner; the tendency is to structure these deals with availability payments or to provide minimum revenue guarantees.
— Governments play a significant role in funding rail projects, including PPPs. Public funds account for a more significant portion of total capital costs. The private sector's contributions on rail projects are normally low.
— For this project to be deemed commercially viable by lenders, a significant level of public sector support in the form of minimum revenue guarantees, direct capital contributions and/or risk guarantees will likely be required to cover the private sectors annual financing and operating expenditures during the debt tenor.

As noted above, WSP completed two financial assessments, one specific for Phases II and III and a second one reflecting the entire La Grande Alliance proposed infrastructures, which includes Phase I and its key outputs. The overall financial model combines the proposed Project's cost assumptions, forecasted revenue for the corridor, and a series of assumptions regarding the proposed Project financing. It is built to evaluate the three main phases of La Grande Alliance project independently and on an overall portfolio basis. However, the majority of the analysis focused mainly on Phases II and III which is the subject of WSP's scope and effort.

The base case scenarios for each phase were calibrated based on various inputs including estimates for revenue (freight tonnage and passenger volume), capital and operating costs and various financing inputs. The base case was modelled without any government support to understand the proposed Project's performance based on the project costs and revenues. The NPV of Phase II and Phase III are \$(2,494) million and \$(3,299) million respectively for a total NPV of \$(5,793) million at the start of 2027. The total infrastructure asset valuation generates an NPV of \$(8,592) million for Phase I, II and III combined, at the start of 2023. This points to the need for government support to offset the large capital costs and fairly low forecast tonnages.

In order to strengthen the reliability of the financial analysis a sensitivity analysis was undertaken to test the impact of different base case inputs assumptions on the project's financial results. The sensitivities tested included +50% to +80% capital contributions, +10% to +30% increases in revenue and -10% to -30% decreases in operating costs. The overarching takeaways from the sensitivity analyses are as follows:

— The base case tariff would need to be increased to \$76.62/tonne (real \$2023) for equity holders to earn a minimum IRR of 12%.
— The minimum subsidy required for equity holders to earn a minimum IRR of 12% is 70.8% which would return a Phase II Project NPV of \$911.7 million and a minimum DSCR of 1.47x.

- Given the size and high capital cost of the proposed Project, the model is not very sensitive to a normal level of optimal sensitivities for the main model drivers, namely tonnage volume increases (+10%, +20%, +30%) and reduction in operating costs (-10%, -20% and -30%). The proposed Project NPV in all cases remains highly negative.
- It should be noted that the Phase I outputs indicate that even with an 80% subsidy the project is not feasible (i.e., negative NPV). Accepting these results as is would weigh down the overall financial feasibility at the global portfolio level.

Based on the project's objectives and constraints, review of precedent PPP passenger and freight rail projects and comprehensive financial analysis, it was determined that the project is not financially feasible and should be further assessed to meet the requirements of the project. While understanding the financial feasibility is considered foremost in advancing the project's development it is not the only consideration. The project creates social and economic benefits which are worth considering to make the project more attractive to investors and more convincing to funding partners.

Additionally, from a strategic point of view, greater market growth for rail infrastructure in northern Quebec could result from increasing demand (from increased shipped throughput tonnage or increased selling price per tonne) for "green resources" that are deposited in this resource-rich area. The growing demand and supply constraints for these commodities which include cobalt, lithium, graphene, copper, nickel, etc. can make the project more compelling. Prior to making Capex decisions to increase production, mining companies will ensure appropriate rail service capacity exists that is cost-effective, reliable, and safe. As the viability of the infrastructure relies heavily on the mining sector, their rate of growth is of central importance. Faster growth would incrementally increase additional net economic and social benefits, supporting the rational for both capital and operating funding.

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1 INTRODUCTION

This Technical Note 21 presents the pre-feasibility financial analysis developed by WSP. It offers a preliminary overview of the potential investment value of La Grande Alliance proposed infrastructures and should be considered the starting point for future feasibility investigations. This pre-feasibility financial analysis, in contrast to the other technical notes, incorporates all three phases of La Grande Alliance proposed infrastructures.

The evaluation of Phase I was undertaken in parallel to Phases II and III. The inclusion of all three phases is centred around an integrated analysis to determine its overall financial viability. As such, the main modeling assumptions were agreed upon between the Phase I and Phase II-III consultants particularly relating to the technical, commercial, financial and operating parameters of the Project and common to the three phases. Both consultants undertook their own independent financial analysis and modeling. As the scope of work of the Phase I and Phase II-III is naturally different given one is a feasibility study and the other a pre-feasibility study, the overall level of detail and accuracy of the financial analysis inputs and modeling framework is also different. Thus, both models were kept separate, with the main financial performance outputs of Phase I integrated to the outputs of Phase II-III at the same base discounting date, to extrapolate overall conclusions both at the portfolio level including the combination of Phase I-II-III and at the individual Phase level. This final draft report, at its core, captures the financial analysis of Phase II-III and associated conclusions regarding the financial performance of the asset. The outputs of Phase I provided by the Phase I consultants where then incorporated “as is” to depict the overall financial impact of Phase I on the Project.

Per the terms of the engagement a pre-feasibility level financial analysis is to be undertaken in conjunction with the other proposed Project planning mandates. The financial analysis entailed two primary elements.

- Developing the pre-feasibility inputs, assumptions and risks based on proposed Project concept and market research;
- Appraising whether the proposed Project is a good public investment decision based on robust financial analysis and financial modeling.

The analysis seeks to model the revenues created by the proposed Project (i.e., freight tariffs), its capital and operating costs, financing costs (i.e., debt repayments), and financial flows (i.e., level of subsidies) to generate a return on investment in order to understand the proposed Project feasibility and viability under the base case assumptions.

The primary objectives for the financial viability assessment are to:

- Model forward-looking freight movement tonnage forecasts (demand) to quantify the proposed Project revenue potential;
- Model the cost estimate for capital expenditures and construction spending over the respective construction timelines. Model operating expenses for the respective phases;
- Develop a cash flow for the proposed Project finances on an unlevered and levered basis;
- Compute the Net Present Value (“NPV”), Internal Rate of Return (“IRR”) and level of public subsidies required to achieve a viable Project.

La Grande Alliance proposed transportation infrastructures consists of:

PHASE I (1-5 YEARS)[1] (THE PHASE I IS STUDIED BY OTHERS)

— **Roadway: Upgrading and paving of the community access roads** for Waskaganish, Eastmain, Wemindji and Nemaska.

— **Railway: Matagami to Rupert**

A proposed railway line following, as much as possible, that of the Billy-Diamond Highway (BDH) starting at the town of Matagami towards km 257 of the BDH (Rupert River Bridge).

— **Railway: Grevet to Chapais**

A return to service for the railway line between Grevet (Lebel-sur-Quévillon) and Chapais (approximate distance of 147 km).

PHASE II (6-15 YEARS)

— **Railway: Rupert to La Grande**

A proposed railway alignment following, as much as possible, that of the Billy-Diamond Highway (BDH) starting at km 257 (after the Rupert River Bridge, which is the junction point with the railway alignment developed by the Phase I Consultant) all the way to La Grande River. The Phase II railway alignment extends over an approximate distance of 340 km.

— **Route 167: Upgrade & extension to Trans-Taiga**

Upgrade and paving the section from the Mistissini community access road to the Stornoway Renard Mine access road over an approximate distance of ±204 km;

North extension to connect with the Trans-Taiga Road near km 408, over an approximate distance of 172 km.

— **Roadway: La Grande to Whapmagoostui/Kuujjuarapik**

A proposed road corridor connecting Chisasibi community's access road and Whapmagoostui/Kuujjuarapik, over 207 km.

PHASE III (16-30 YEARS)

— **Railway: La Grande to Whapmagoostui/Kuujjuarapik**

A proposed railway alignment extending from the Phase II railway alignment, and which follows, as much as possible, the feasibility roadway alignment leading to Whapmagoostui/Kuujjuarapik developed during this study by WSP. The Phase III railway alignment extends over an approximate distance of 219 km.

— **Harbour at Whapmagoostui/Kuujjuarapik**

A proposed seasonal Harbour for shallow draft vessels/boats (~6 m water depth) along the Whapmagoostui/Kuujjuarapik coastline between the mouth of Great Whale River and the entrance of the Manitounuk Strait.

[1] All dates indicated herein are hypothetical and would begin as of the start of the construction period. This therefore does not include all pre-project phases, most notably the Environmental and Social Impact Assessment, that would be required if the infrastructures are pursued.

1.1 TECHNICAL NOTE STRUCTURE

The preparation of Technical Note 21 represents a substantial undertaking as it presents the results of a significant body of analysis. The document is comprised of six sections which is reflective of the study objectives. Those sections, and the locations in this report where they are presented, include the following:

— Introduction and proposed Project Overview	Section 1
— Transaction Structure	Section 2 to 2.2
— Similar Project Review, proposed Project Participants and Arrangements	Section 2.3 & 2.4
— Financing of the proposed infrastructures	Section 3
— Capital and Operating Costs	Section 4
— Financial Analysis	Section 5
— Conclusion and Next Steps	Section 6

2 TRANSACTION STRUCTURE

2.1 OVERVIEW AND APPROACH FOR THE PRE-FEASIBILITY STUDY

Transaction structure means the way the proposed Project is set up commercially, financially, and legally.

As described below, the structure of the transaction will have an impact on the terms, roles and responsibilities and allocation of risks relating to the financing, construction, and operation of the proposed Project. In this regard, the development of a transaction structure based on the specifics of the proposed Project and the requirements of the market is a key step to the success of the proposed Project. As WSP's mandate is a pre-feasibility study, a deep dive in the transaction structure will not be undertaken but narrative around assumptions and future requirements will be highlighted.

Commercial structure: the breakdown of the proposed Project's main activities, i.e., who will design and build the infrastructure and related facilities, who will finance this work, who will provide the rolling stock (distinguishing between locomotives and railcars), and who will operate the trains and maintain the bundle of assets.

Financial structure: the types of financing (e.g., equity, debt, etc.), their sources and terms.

Legal structure: the legal entity or entities to be created for the proposed Project, their relationship to each other and to other participants, and the legal form (corporation, partnership, etc.) of each.

The structure of the transaction must meet the principles that will guide the realization of the proposed Project, both during its construction period and during its operation. These principles can be summarized as follows:

— As this is a high-level pre-feasibility study being conducted at the early stage of the proposed Project, the analysis is primarily undertaken on an unlevered basis without accounting for the procurement and project delivery model. Typically, as the level of project information advances and the study evolves from a pre-feasibility to a feasibility or bankable business case stage, a procurement options and value for money analysis will be undertaken to study the array of procurement models and quantitatively analyze, on a risk adjusted basis, which model returns the highest value for money, or the lowest overall cost on a NPV basis over the life cycle of the proposed Project. The goal of the value for money analysis is generally to evaluate, on a qualitative and quantitative basis, if an alternative procurement model is preferable to the conventional procurement model typically used by the public sector to undertake its capital projects. For this pre-feasibility study, it is assumed that the proposed Project will be carried out and financed by a separate company who will design, build, finance, operate and maintain the infrastructure via project financing through a special purpose vehicle ("SPV"), without any initial government participation.

— The railroad will be accessible to all potential users based on its capacity.

— The railroad will be located primarily on public lands to be used in accordance with an agreement to be negotiated between the SPV and the Government of Quebec as well as on certain private properties to be acquired prior to the start of the proposed Project by the SPV or any other entity or partner.

The structure of the transaction must also take into account the main risks of the proposed Project. The risks that impact the structure and financing of the proposed Project are:

— **Design risks**: need to revise aspects of the design or scope of the proposed Project.

— **Construction risks**: need to revise construction methods due to unexpected conditions or schedule.

- **Volume risks**: the possibility that less tonnage or miscellaneous freight will be transported than anticipated, which would have a direct impact on revenues (aside from the protection that could potentially be provided through the use of contractual mechanisms such as the use of "take or pay" contracts, government support, minimum guarantees, etc.). Given the unprecedented size and scale of this proposed Project, it will be very unlikely that private financing can be obtained without any sort of government support.

Project risks are discussed in Technical Note 18 and on a qualitative basis. Based on the procurement model chosen in future stages of the proposed Project and associated risk transfer and allocation mechanisms, a quantitative risk analysis will need to be undertaken in order to incorporate the value of risk into the SPV's bid which will affect the overall financials of the proposed Project.

Finally, the structure of the transaction must take into account certain considerations specific to the financing of the proposed Project:

- **Size of proposed Project and required financing**: as presented in Section 4.1, with an estimated total capital cost of $11,395 million (in 2023 dollars) for Phase II and III, assuming a typical financing structure of 10% equity and 90% long-term debt and considering financing costs and capitalized interest during the construction period, the proposed Project would require debt financing of approximately $18,773 million. The capital structure and associated degree of leverage a project can support depends to a large extent on the riskiness and cash flow characteristics of the proposed Project, which in turn depends on the sector to which the proposed Project belongs, the contractual relationships between stakeholders, the lender covenants (i.e., minimum debt service coverage ratio, loan life coverage ratio, etc.) and the market appetite from debt capital markets in the project finance transaction.
- **User risk**: The revenue of the SPV, an assumed entity comprised of potential users, equity and debt investors and other stakeholders depending on the transaction structure will probably need to be secured by several offtake agreements under which users will commit to transport a certain total tonnage at a predetermined price and on predetermined terms for the duration of the proposed Project. The agreements will provide the SPV with the necessary revenues to reach their minimum required return on equity, regardless of the payment structure and model opted for (i.e., availability based through contracting authority, revenue from users under a concession, etc.).
- **Mining market risk**: The Canadian mining industry, located entirely in Quebec, exports almost all of its production. The industry is therefore subject to global market conditions and must respond to market conditions. Sections 10.5.3 and 10.6.6.3. of the market study highlight the major mining companies in the area and their respective potential tonnage contribution to the proposed Project.
- **Risk related to mining companies**: A large part of the tonnage to be transported on the rail is sourced from the mining companies. The future use of the railroad is therefore largely dependent on the performance of the mining companies and associated forecast volumes to be transported. A substantial amount of due diligence will be required to understand these companies' long-term expansion and production plans.
- **Segmentation of the proposed Project**: In typical project financed transactions, there is a clear delineation between the start of construction and start of operations for the proposed Project. The assumptions in this pre-feasibility study regarding the timing triggers for the different segments make it in sort that there are various start and end of construction and operations period, entailing different revenue generating starting dates which overlap in the different phases. Since sources of funds from capital markets and associated pricing terms and conditions are based on the robustness of future cash flows and length of off-take agreements, representations & warranties, security documents and other agreements, it is unlikely that lenders would provide capital to a project which has three different construction start periods and potentially different financial close dates. Even though the sequence of scheduling from a deal standpoint is not in the scope of this pre-feasibility report, future studies will need to further investigate the procurement timeline and model which will directly inform the financing structure. For modelling purposes, the proposed Project was modelled out in a way which reduces ambiguity by using a portfolio approach where each segment is modelled out separately based on their respective timelines to outline the feasibility and financial performance of each with a final pro forma of each segment bundled together presented at the asset level as well. This approach is further presented in Section 5.1.

2.2 POTENTIAL PROCUREMENT STRUCTURES AND METHOD OF ANALYSIS BASED ON INDUSTRY STANDARDS

2.2.1 QUALITATIVE ANALYSIS STEPS

A qualitative analysis first aims to select the implementation methods likely to adequately meet the Project's objectives and constraints. This analysis also allows the selection of the implementation modes that will be the subject of quantitative procurement analysis and risk analysis. The selection of scenarios should account for the different project components (railway, roads, port, other infrastructure, etc.), bundling of assets and scope of work (i.e., contracting packaging) which may each have their proper procurement mode. The selection of the scenarios retained for the quantitative analysis at a future business case or feasibility study should be carried out in the following three steps:

1. Identification of potential scenarios prior to the qualitative analysis of the modes;
2. Qualitative mode analysis workshop; and
3. Selection of the procurement modes retained for the quantitative analysis of the modes.

The definition of each of the qualitative indicators should be established in tandem with study Sponsors and other La Grande Alliance stakeholders and should be crafted according to its main procurement objectives. Typical qualitative factors which are utilized at this stage that are common to infrastructure projects are as follows:

- Quality
- Schedule (e.g., start of work versus finalization of plans and specifications)
- General coordination and project management
- Risk allocation (design, construction, and financing)
- Contractual interface (construction)
- Risk allocation (operations and maintenance)
- Existence of a competitive market/attractiveness of project
- Potential for innovation (e.g., quality and optimization of technical solutions)
- Flexibility (extent to which Sponsor can manage and implement future scope changes)
- Stakeholder management (address stakeholder issues and needs throughout life of the asset)
- Political constraints (extent to which political issues and approvals can be appropriately managed)
- Capacity (extent to which the project Sponsor can appropriately manage the project)

2.2.2 DESCRIPTION OF THE DIFFERENT PROCUREMENT MODELS

A Project could be carried out in different modes. For this review, the most recognized modes are highlighted. There are two main categories of delivery methods:

1. Traditional modes: According to the traditional modes, the Sponsor would contract with two entities, either for:
   - The execution of professional services for the complete design and the elaboration of plans and specifications for tender and construction.
   - The execution of the construction work, based on the plans and specifications for construction.

2 Alternative modes: According to the alternative modes, the Sponsor would contract with a single entity that would oversee both the design and the construction works, based on a description of the needs provided by the Sponsor (performance specifications).

It should be noted that depending on the Project division, several modes could be used depending on the assets targeted. For example, the railway and port infrastructure can be implemented in different modes.

TRADITIONAL MODES

Construction Management (CM) Model

This method consists in segmenting the realization of a project into lots in order to allow the realization of the work by awarding contracts to more than one contractor. Each contract is awarded following the issuance of a public call for tenders and the issuance of plans and specifications specific to the lot. In large-scale projects, this method can allow for sequencing and scheduling of work, making it possible to overlap design and execution activities.

In the Construction Management mode, the public entity responsible for the Project acts as the Project Owner and is in charge of coordinating all activities administering contracts, controlling costs and schedules, and managing the construction sequence of the civil infrastructure and equipment. The public entity responsible for the Project also ensures quality control over the work performed. Supervision of the work remains the responsibility of the public entity or its agent.

The following Figure 2-1 illustrates the organizational structure of the delivery of the civil infrastructure in a Construction Management model.

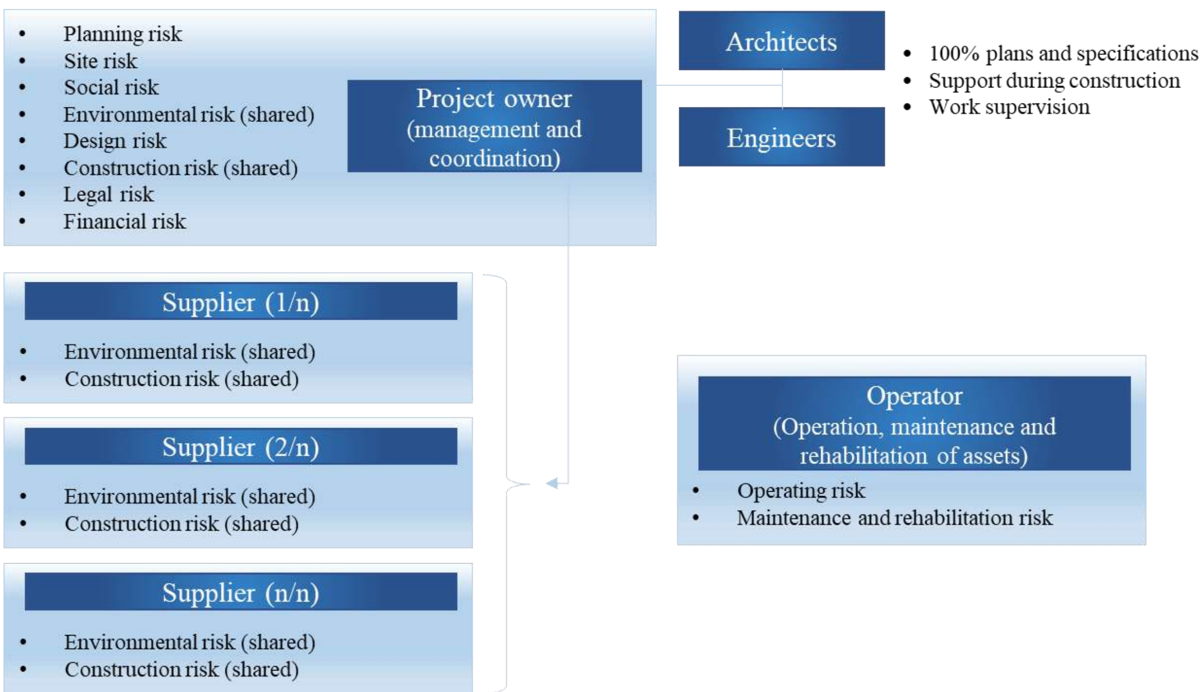


Figure 2-1 Organizational Structure – CM Model

This structure is based on the award and management of the following contracts by the public entity responsible for the Project:

- Architectural and engineering firms for the development of plans and specifications and construction supervision.
- The construction companies for each construction lot.

Once the infrastructure is built and the equipment is operational, the operator is responsible for the operation, maintenance, and rehabilitation of the assets.

Except for the transfer of certain environmental and construction risks to the private sector, the public entity responsible for the Project and the operator assume the other risks of the Project.

Design-Bid-Build (DBB) Model

The following points characterize the Design-Bid-Build model:

- The similarity between the Construction Management model and the Design-Bid-Build model is that the plans and specifications are completed by teams of professionals and that the construction contracts are subsequently awarded based on the plans and specifications for tender.
- The difference between the Construction Management model and the Design-Bid-Build model lies in the fact that in the Design-Bid-Build model, a single construction contract is awarded to a general contractor, who hires the needed subcontractors for all the work planned, while in the Construction Management model, there is no general contractor, it is the Project Owner who plays this role and directly awards contracts with each contractor.
- In the Design-Bid-Build model, contrary to the Construction Management model, the general contractor ensures the project management and oversees the coordination of all the activities, the administration of the contracts (subcontractors) and the control of the budget and costs.
- In the Design-Bid-Build model, the specialized contractors are contractually bound to the general contractor, whereas in the Construction Management, they are contractually bound to the owner.
- The realization of the plans and specifications at 100% before the launching of the calls for tenders is not specific to this model. It could also be done in the Construction Management model.

The following Figure 2-2 illustrates the organizational structure of the delivery of the civil infrastructure in a Design-Bid-Build model.

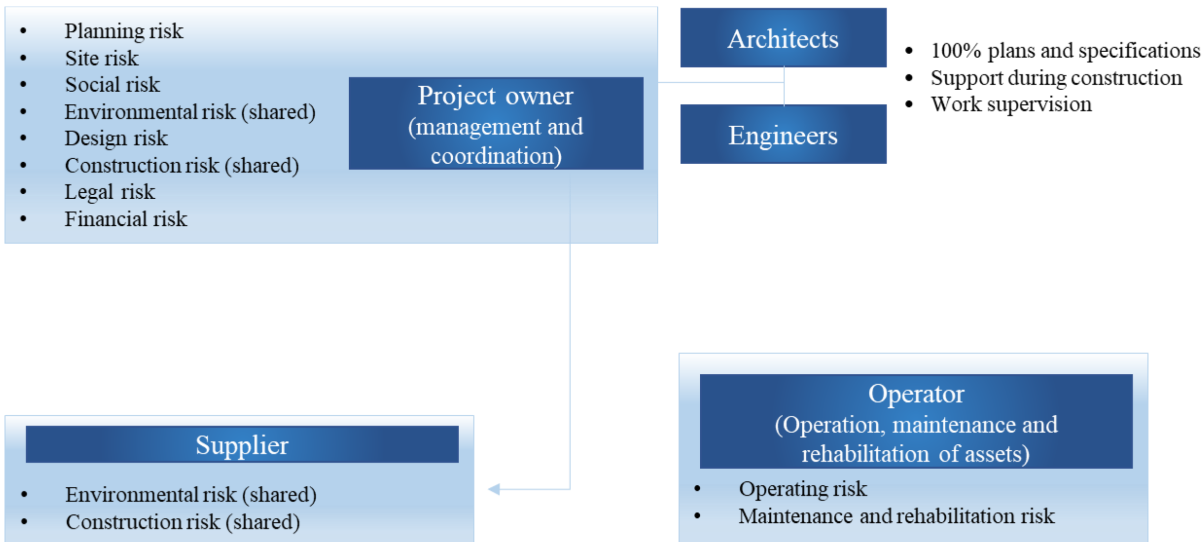


Figure 2-2 Organizational Structure – DBB

ALTERNATIVE MODES

Design-Build (DB) Model

For the public entity responsible for the Project, the Design-Build or DB model consists of preparing a performance specification and then issuing a public invitation to tender and award a single contract to a company or group of companies ("DB Contractor"):

— The preparation of plans and specifications and construction of civil infrastructures.
— The preparation of plans and specifications and the execution of works related to equipment (which could include rolling stock).
— Management, supervision, and coordination of the above activities.
— Prior quality control by the DB Contractor to ensure that the works meet the technical standards defined in its contract and pass the provisional and final acceptance inspection in order to obtain the scheduled payments.
— An independent engineer/certifier will certify the works to confirm provisional and final acceptance for the purpose of releasing payments to the DB Contractor.

The DB contract is awarded following a procurement process that includes a Request for Qualifications (RFQ), a Request for Proposal (RFP) and bilateral workshops with bidders. The DB Contractor then commits to deliver the civil infrastructure and equipment at a set price and date. A process auditor is engaged to ensure that the entire process is fair. This approach allows for better integration of design and construction work and optimal management of related interface risks.

The following Figure 2-3 illustrates the organizational structure of the delivery of the civil infrastructure and equipment in a Design-Build model.

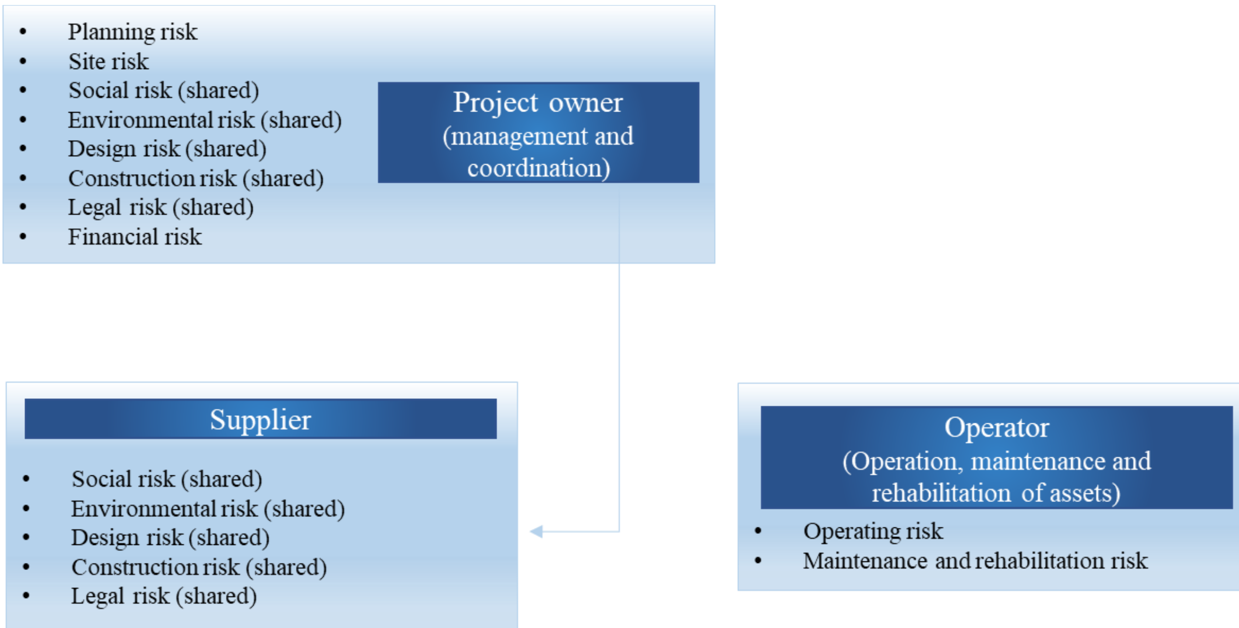


Figure 2-3 Organizational Structure – DB

As captured in the above figure, the public entity responsible for the Project entrusts, following the preparation of performance specifications, all design and construction activities of the civil infrastructure and equipment to the DB Contractor. The design and quality audit are performed by the engineer and/or architect representing the owner and the payment authorization is provided by an independent certifier.

Once the civil infrastructure and equipment are completed, the operator is responsible for the operation, maintenance, and rehabilitation of the assets.

Design-Build-Finance (DBF) Model

For the public entity responsible for the Project, the Design-Build-Finance model consists of preparing a performance specification and then issuing a public invitation to tender and awarding a single contract to a company or group of companies (the "DBF Contractor"):

- Preparation of plans and specifications and construction of civil infrastructures.
- The preparation of plans and specifications and the execution of works related to equipment (which could include rolling stock).
- Financing of planning, design and construction work during the design and construction period.
- Management, supervision, and coordination of the above activities.
- Quality control of the work performed under the Contractor's responsibility.
- A quality assurance plan.

The DBF contract is awarded following a procurement process that includes a RFQ, a RFP and bilateral workshops with bidders. The DBF Contractor agrees to deliver the civil infrastructure and equipment at a fixed price and on a fixed date. A process auditor is normally engaged by the DBF Contractor and the public entity to ensure that the entire process is fair.

This approach allows for better integration of design and construction work, optimal management of related interface risks and adds financial pressure to meet milestones.

The DBF model requires the establishment of a private financing structure whereby the DBF Contractor assumes the financing of the design and construction costs of the civil infrastructure and equipment. The presence of the DBF Contractor's lenders strengthens the control structure of the Project, including by:

- Verification of the financial and technical capacity of the DBF Contractor to fulfill its contract.
- Appointment of an independent certifier responsible for certifying the physical progress of the Project on a monthly basis.
- A diligent review of cost estimates by the Design-Builder. Lenders will want to ensure that the bid meets international standards in this area and that costs are not underestimated or overestimated to create room for maneuver.
- A prior quality control by the DBF Contractor to ensure that the works meet the technical standards set out in its contract and pass the provisional and final acceptance inspection in order to obtain the payments due. The independent certifier will certify the provisional and final acceptance.
- A control on the progress of the works and the respect of the Project schedule because, on the one hand, the payments of the public entity in charge of the Project to the DBF Contractor are closely linked to the achievement of certain performance milestones, and on the other hand, the repayment of the loans by the DBF Contractor is linked to the payments of the public entity responsible for the Project. The presence of the LTAs ensures the technical monitoring of the Project and of the risks for the lenders.

The following Figure 2-4 illustrates the organizational structure of the delivery of the civil infrastructure and equipment in a Design-Build-Finance model.

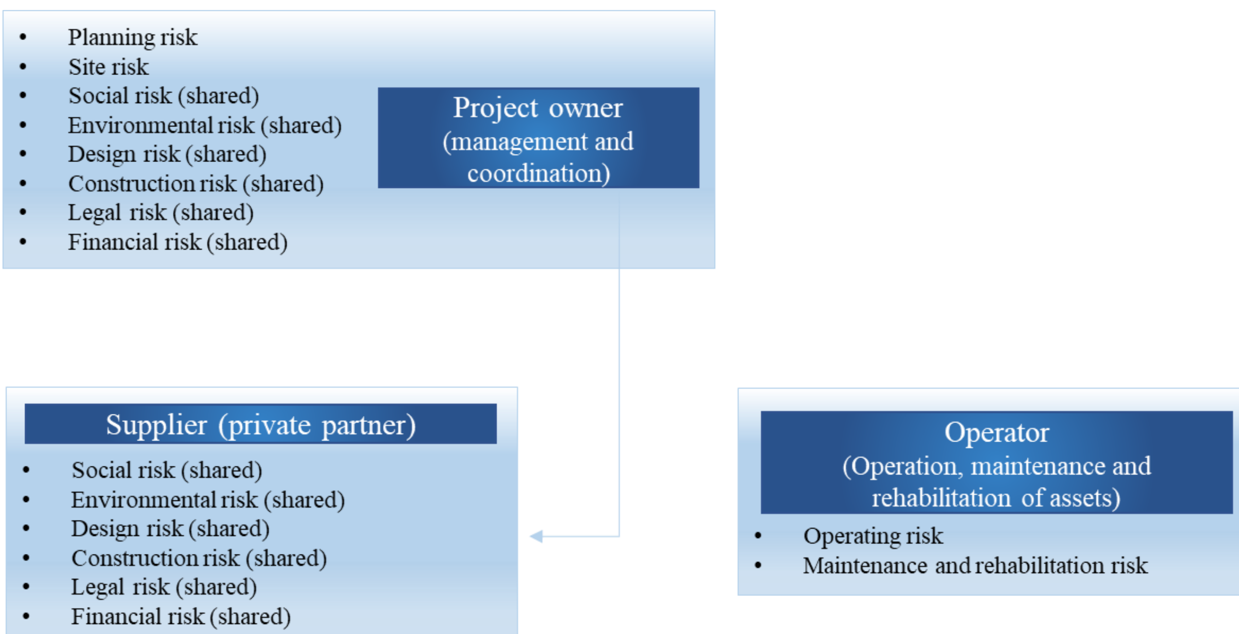


Figure 2-4 Organizational Structure – DBF Model

As captured in the above figure, the public entity responsible for the Project entrusts, following the preparation of a performance specification, the design, construction and financing activities of the civil infrastructure and equipment to a DBF Contractor. The design and quality audit is performed by the engineer and/or architect representing the owner and the authorization of payments is provided by an independent certifier.

Once the civil infrastructure and equipment are completed, the operator is responsible for the operation, maintenance, and rehabilitation of the assets.

Design-Build-Finance-Maintain (DBFM) Model

For the public entity responsible for the Project, the Design-Build-Finance-Maintain model consists of preparing a performance specification and then issuing a public invitation to tender and award a single contract to a company or group of companies (the “DBFM Contractor”):

- Preparation of plans and specifications and construction of civil infrastructures.
- The preparation of plans and specifications and the execution of work related to equipment (which could include rolling stock).
- Financing a portion of the planning, design and construction costs during the design and construction period and the remaining portion of these costs over the term of the concession or project agreement (term to be defined according to the life of the assets, typically 30 to 35 years).
- Rehabilitation of civil infrastructure over the term of the concession or project agreement.
- Management, supervision, and coordination of the activities noted above.
- Quality control of the work performed under the responsibility of the Contractor.
- A quality assurance plan.

The DBFM contract is awarded following a procurement process that includes a RFQ, a RFP and workshops with bidders. The DBFM Contractor commits to deliver the civil infrastructure and equipment at a fixed price and date. A process auditor is engaged to ensure that the entire process is fair.

This approach allows a better integration of design, construction and rehabilitation works entrusted to the DBFM Contractor, an optimal management of the related interface risks as well as an optimal perspective on the life cycle of the Project.

This mode of implementation requires the setting up of a private financing structure by the DBFM Contractor allowing it to assume in the short term (design and construction period) and in the long term (duration of the concession or project agreement) a portion of the design and construction costs of the civil infrastructures and equipment through project financing. The presence of lenders within the DBFM Contractor Consortium strengthens the control structure of this portion of the Project, notably by:

- Verification of the financial and technical capacity of the DBFM Contractor to fulfill its contract.
- The appointment of an independent certifier responsible for certifying the physical progress of the Project on a monthly basis.
- A diligent review of cost estimates by the Design-Builder. Lenders will want to ensure that the bid meets international standards in this area and that costs are not underestimated or overestimated to create room for maneuver.
- A prior quality control by the DBFM Contractor to ensure that the works meet the technical standards set out in its contract and pass the provisional and final acceptance inspection in order to obtain the payments due. The independent certifier will certify the provisional and final acceptance.
- A control on the progress of the works and the respect of the project schedule because, on the one hand, the payments of the public entity in charge of the Project to the DBFM Contractor are closely linked to the achievement of certain performance milestones, and on the other hand, the repayment of the loans by the DBFM Contractor is linked to the payments of the public entity in charge of the project. The presence of the LTAs ensures the technical monitoring of the Project and of the risks for the lenders.

The following Figure 2-5 illustrates the organizational structure of the delivery of the civil infrastructure and equipment in a Design-Build-Finance-Maintain model.

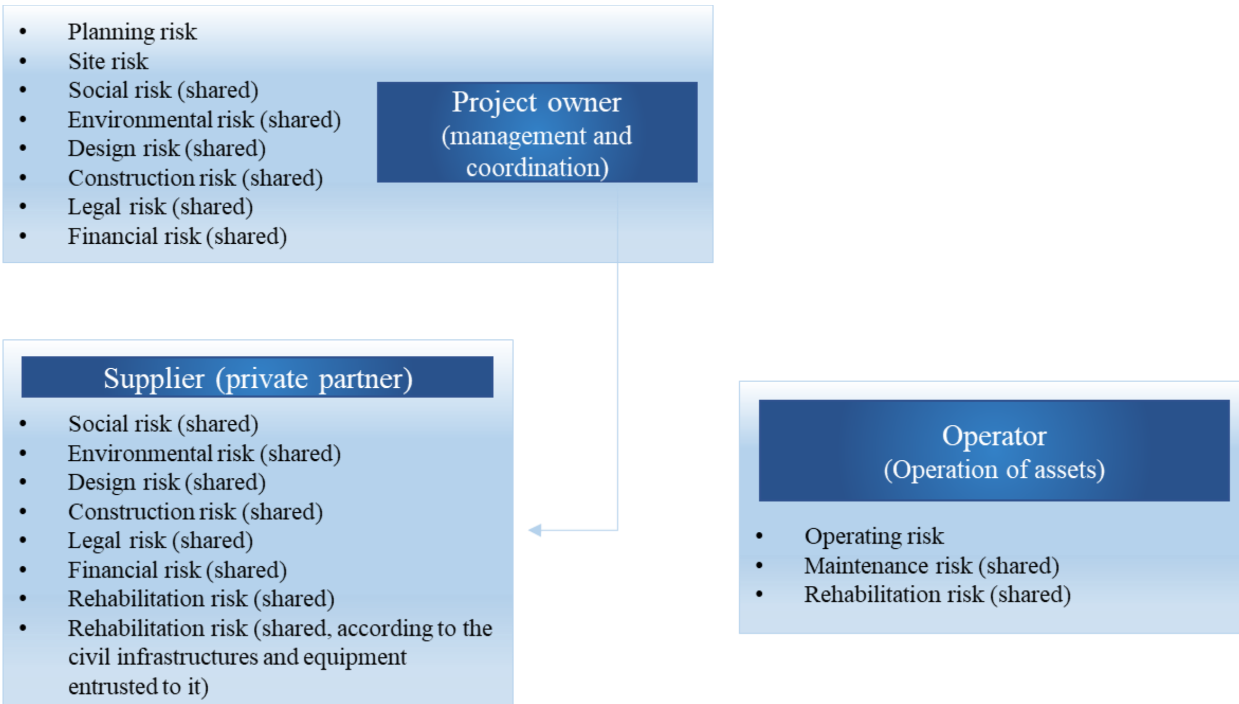


Figure 2-5 Organizational Structure – DBFM Model

As captured in the above figure, the public entity responsible for the Project entrusts the activities of design, construction of infrastructure and equipment, as well as the rehabilitation of certain assets.

The design and quality audit is performed by the Owner's engineer and the authorization of payments is provided by an independent certifier.

Once the civil infrastructure and equipment are completed, the operator is responsible for the regular operation and maintenance of the assets and the rehabilitation of the assets under its responsibility.

Design-Build-Finance-Operate-Maintain (DBFOM) Model

This model is similar to the DBFM model, except that the operation of the infrastructure and equipment is also entrusted to the private partner.

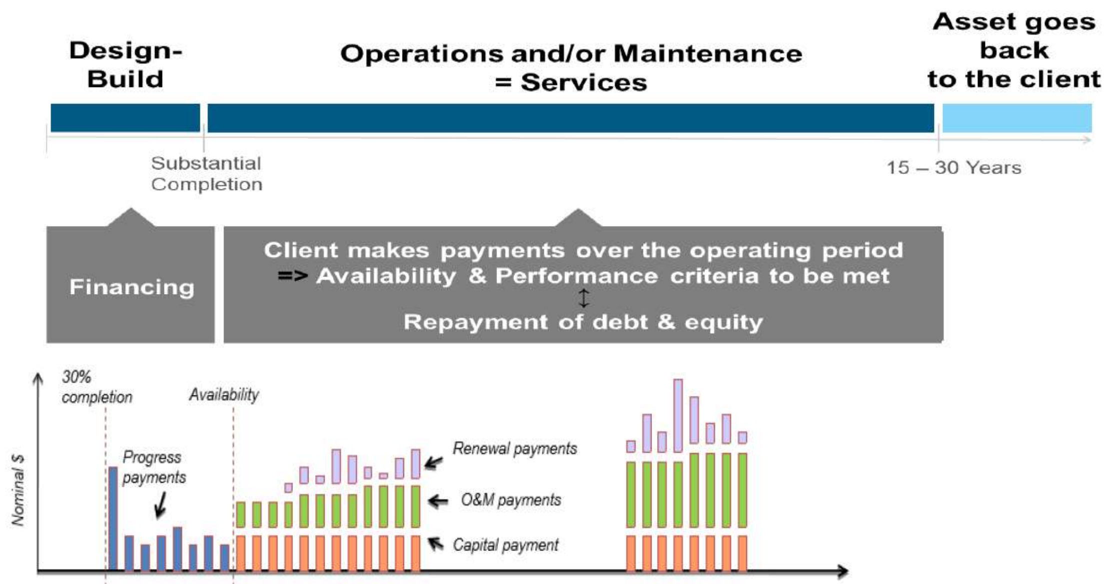


Figure 2-6 DBFM/DBFOM Mechanics

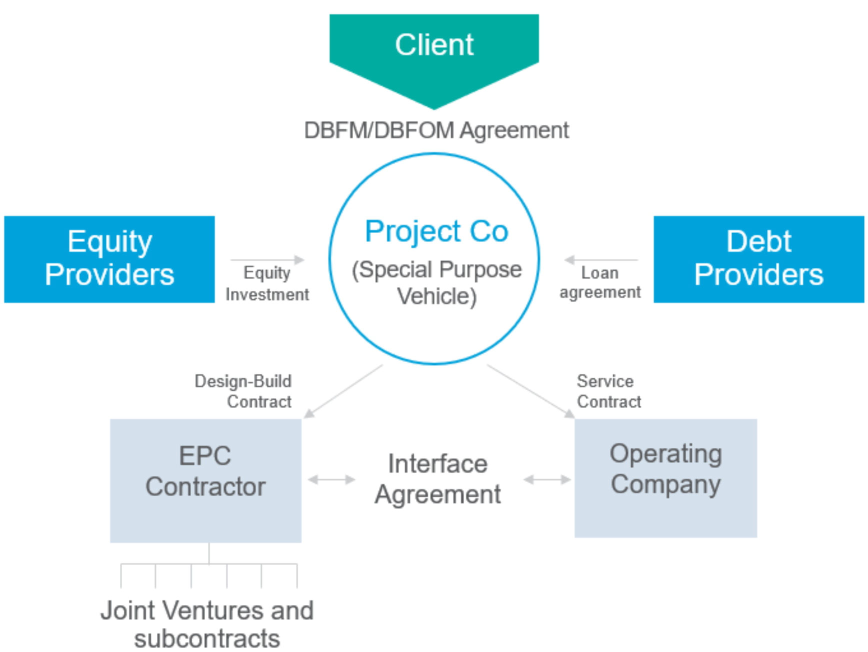


Figure 2-7 Structure Overview – Public-Private Partnerships (P3)

2.2.3 SIMILAR PROJECTS REVIEW

The landscape of heavy freight railway projects financed through public-private partnerships (P3), or other alternative mechanisms is very limited, particularly in the province of Quebec. Most railways operating in Northern Quebec are private with a clear mandate. There has yet to be a railway project financed under a typical P3 structure with offtake agreements over a concession period. For the study at hand, since the largest volume of goods would be sourced from mining companies, it would be envisioned that these entities would have the largest interest in the proposed capital Project and have an equity stake as Project Sponsors. A more detailed analysis regarding some comparable projects can be found in Technical Note 1.

With respect to the financing of railway projects, data is mostly geared towards recently completed or ongoing projects in the light rail transit (LRT) space. A review of projects in North America was conducted to identify the most common procurement models and to help guide the process going forward for future studies. The following table presents a comparative analysis of major LRT projects that have been completed in Canada and the United States over the past 10 years.

Table 2-1 Similar LRT Projects and Procurement Model

PROJECT	COUNTRY (CITY)	PROCUREMENT MODEL	SIZE ($M CAD)	FINANCIAL CLOSE
Waterloo to Kitchener Light Rail	Canada (Waterloo)	DBFOM	870	2014
Evergreen Line Rapid Transit Project	Canada (Vancouver)	DBF	900	2013
Finch West Light Rail P3	Canada (Toronto)	DBFM	1,170	2018
Edmonton LRT P3 – Valley Line	Canada (Edmonton)	DBFOM	1,300	2016
Ottawa Light Rail Transit	Canada (Ottawa)	DBFM	2,170	2013
Purple Line P3	US (Maryland)	DBFOM	2,570	2016
Eglinton Crosstown LRT	Canada (Toronto)	DBFM	5,320	2015
Reseau Express de Montreal LRT	Canada (Montreal)	(1) Engineering, Procurement, and Construction (2) Rolling stock, Systems, Operations and Maintenance These contracts can be considered as variants of the DB contract	6,320	2018

MAIN FINDINGS

- Many LRT projects meeting the above criteria have been carried out in an alternative model, including project financing by the Supplier/Consortium.
- The Maintenance component is generally included in the delivery models selected for LRT projects over the past 10 years.
- The size factor of the proposed La Grande Alliance Project in comparison to precedent alternatively financed LRT projects is significant, in this case more than double in most cases when incorporating all three Phases. For this size of a Project to be financed and to mitigate the overall risk profile of the proposed capital Project, government support and significant level of public sector support will most probably be required to make the proposed Project commercially viable and could take different forms, which can include, but not limited to:
  - Minimum revenue or usage guarantees and undertakings;
  - The assumption of uninsurable risks;
  - The provision of project risk guarantees in order to support private finance;
  - The provision of direct capital grant funding to improve value for money and cover a shortfall in available private finance on large projects; and
  - Supporting the private sector in managing stakeholder relationships and approvals throughout the process.

2.2.3.1 *OTHER FREIGHT RAIL PROJECT EXAMPLES*

Notwithstanding the limited P3 market for freight rail projects in Canada, an additional scan was performed to identify other examples delivered with incremental P3 aspects. The review of freight rail projects is based on both desktop research and in-house expertise and experience within the WSP network.

In total, four projects were deemed appropriate and examined in detail. One project, the Australian Rail Track Corp's Inland Rail (Inland Rail), represents a recent transaction of the largest greenfield freight project in the world (excluding China, Saudi and UAE-led projects). Now under construction, the railway is funded by a partial direct federal grant and the balance via Australia's P3 framework. The characteristics of Inland Rail are considered the most like La Grande Alliance and was carefully reviewed. The other three projects are early-stage freight rail projects in Canada. A high-level review was undertaken for these projects. Table 2-2 outlines the Project examples that were selected for analysis:

Table 2-2 Other Freight Railway Project Examples

PROJECTS	STAGE	LENGTH	COST	TRANSACTION STRUCTURE
Australian Rail Track Corp's Inland Rail	Construction (exp. 2027)	1,700 km	$9.9B (USD)	Traditional and P3 for different segments
Ring of Fire Railway	Early Planning	338 km	$657M (USD)	TBD
Hudson Bay Railway	Operations	1,300 km	N/A	Traditional
Lac Megantic Rail Bypass	Planning (exp. 2023)	12.5 km	$133M (CDN)	Traditional

Table 2-3 Australia Rail Track Inland Rail Program

<table>
<tr><th>PROJECT</th><th>KEY INFORMATION</th></tr>
<tr><td>Project Overview</td><td>Inland Rail is a new 1,700 km railway that will run from Brisbane to Melbourne on either upgraded or brand-new tracks, bypassing congested Sydney altogether.

The Project provides a direct freight rail corridor link between two of Australia's largest cities (Melbourne and Brisbane) and also links south-east Queensland with Perth and Adelaide. The Melbourne–Brisbane corridor is one of the most important and dense general freight routes in Australia, supporting the most significant population, employment, and economic areas in the nation.

Some of the key strategic benefits include:[2]

– Provides a backbone link in the eastern Australia rail and road network.
– Makes Australian producers globally competitive.
– Expands and enhances the national standard gauge network.
– Provides capacity for freight movement that would otherwise be expensive to provide through a road solution.
– Greater regional economic development, particularly along the Inland Rail corridor, including supporting agriculture and minerals traffic, and reducing costs for regional industries.
– A 10-year infrastructure development stream with significant flow-on benefits including regional employment opportunities.

Construction, which is currently underway commenced in 2017 and is scheduled to be completed in 2027. The Project is estimated to cost nearly $10 Billion (USD).

Australian Rail Track Corporation Limited (ARTC) is an Australian Government-owned corporation and current operator of the Australian freight network, and responsible for managing and maintaining the Inland Rail program. Since 2021 ARTC has advanced with bringing main sections of the new railway to the market for large consortiums to bid on.</td></tr>
<tr><td>Route & Length</td><td>In total the Project will comprise 1,700 km with 1,100 km of existing track being upgraded, and 600 km of new track being newly built through regional Victoria, New South Wales, and Queensland.

Due to its sheer size and scale the program has been split up into 13 individual projects across Victoria, New South Wales, and Queensland. The first of the 13 projects, the 103 km Parkes to Narromine section, is already in operation (as of September 2020) and early works on the Narrabri to North Star section has begun. The Parkes to Narromine project generated significant employment for 1,800 people where over $100 million was spent with local businesses, including $14.1 million with First Nations enterprises.</td></tr>
</table>

[2] 2015 Melbourne–Brisbane Inland Rail Report

PROJECT	KEY INFORMATION
	
Procurement Structure	In general, ARTC implemented a procurement strategy and packaging plan around specialist works packages. The packages include a mix of traditional, design-build and P3 models. Tactically, the approach is designed to de-risk the procurement and accelerate the delivery schedule. The strategy encourages greater business participation, including local businesses from every state and territory. More than 1,300 contracts have already been awarded. In 2017, ARTC confirmed their intention for the Gowrie to Kagaru section of Inland Rail in Queensland to be delivered through a P3 model. The 128 km corridor is the most technically challenging corridor of Inland Rail and involves construction of a 6.2 km tunnel, numerous viaducts, bridges and crossing loops. Under the P3 model, the private sector will design, build, finance and maintain (25 years) this section. In March 2022 Regionerate Rail a consortium made of up Clough, GS Engineering and Construction, Webuild (formerly Salini Impregilo), Service Stream and Plenary Group was selected as the preferred proponent.
Financing and Funding Structure	This component of the Project is being procured as a DBFM with the consortium under a 25-year availability-based contract. The investment required for the DBFM is $3.2B (USD). Timeline – commenced in 2017 with budget announcement, 2022 to commence construction and 2025 for construction to be completed.

Table 2-4 Ring of Fire, Northern Ontario

PROJECT	KEY INFORMATION
Project Overview	Ontario's Ring of Fire is considered one of northern Ontario's most compelling opportunities for mineral exploration and development. The area is located 500 km northeast of Thunder Bay and covers a vast area of 5,000 square kilometres. The promise of the Ring of Fire stems from the region's exposure to critical elements which include chromite, cobalt, nickel, copper, and platinum. These minerals are expected to grow in demand with policy makers advancing efforts towards decarbonization and sustainability targets. Of particular interest is the 343 million tonnes of chromite a key input used in the production of stainless steel. Most of the world's chromite is exported from South Africa. This provides a promising opportunity for Ontario to enter the global chromite trade and tap into the growing demand for stainless steel. The province is currently working with First Nations communities through bilateral agreements designed to achieve each community's objectives and priorities. First Nation communities are leading proposed road projects in the Ring of Fire, including assessing any potential social and environmental impacts. 
Route & Length	KWG Resources owns the Black Horse a major chromite deposit in the Ring of Fire. KWG is one of the key stakeholders in the region. KWG has studied operation for the Rail-Veyor ore haulage tramway system from the company's proposed mine along a 330-kilometer corridor to a proposed processing plant located near Nakina, Ontario. Estimates to construct the specialized freight rail line is estimated at $657 Million (USD) and result in operating costs of around $3 per tonne once in commission.
Procurement Structure	No procurement or construction decision has been determined.
Financing and Funding Structure	No funding decisions have been determined. The latest estimates indicate a total investment of $2 billion is required to build the roads, rail and other infrastructure.

Table 2-5 Hudson Bay Railway

<table>
<tr><th>PROJECT</th><th>KEY INFORMATION</th></tr>
<tr><td>Project Overview</td><td>Hudson Bay Railway is a Canadian short line railway operating over 1,300 km of track in northeastern Saskatchewan and northern Manitoba. The railway was owned by U.S.-based OmniTrax and shut down after flooding in 2017, leaving dire consequences for the residents of Churchill. In 2018, a consortium that includes First Nation communities, Arctic Gateway Group, took over ownership with federal help. At the time of the acquisition investment to repair and upgrade the rail line was promised from Federal and Provincial Governments.

The Arctic Gateway Group is a partnership between 41 First Nations and Bayline communities. The Hudson Bay Railway provides the only affordable year-round, all-weather mode of transportation for both passenger and freight trains to access several northern Manitoba communities.

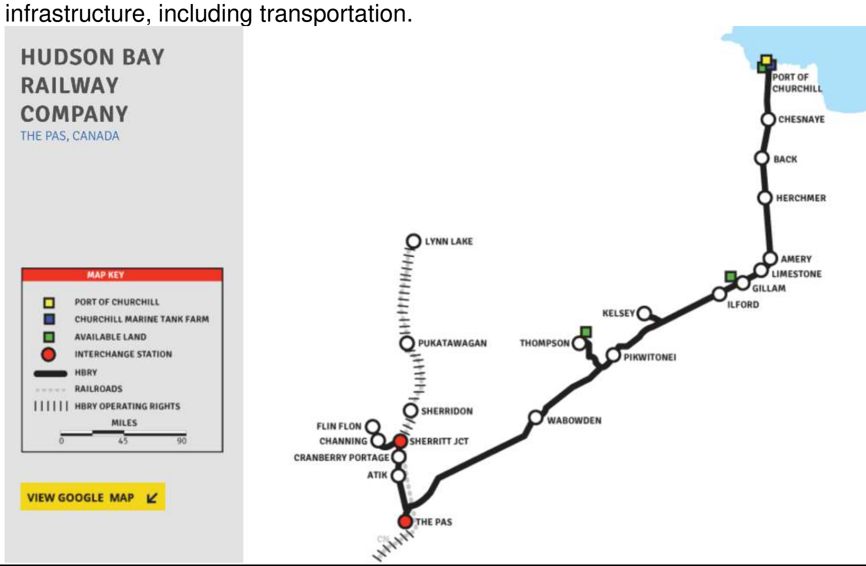
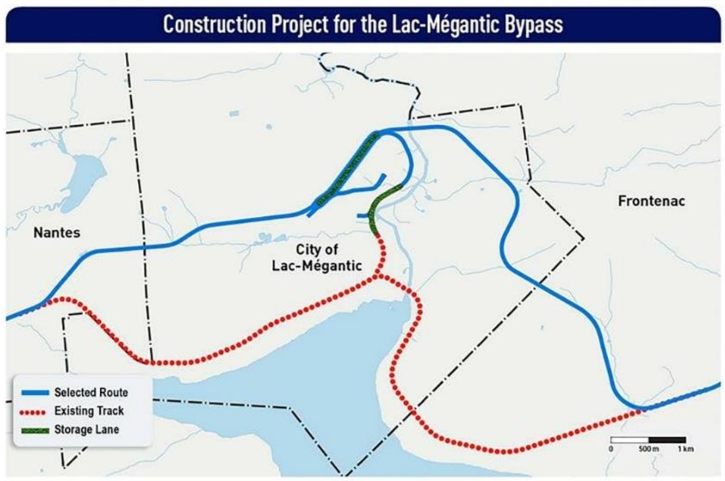
The Hudson Bay region is attracting millions of dollars of investment in resource exploration. As such the rail line provides industry with a more economical and efficient means of supply, which in turn can reduce cost and further economic development. A paper by the Mining Association of Canada (Leveling the Playing Field: Supporting Mineral Exploration and Mining in remote and Northern Canada) suggests the high cost to explore and build new mines in northern Canada is largely due to the lack of critical infrastructure, including transportation.

</td></tr>
<tr><td>Route & Length</td><td>The 1,300 km rail line runs from the Pas north to Churchill Manitoba on a former Canadian Northern Railway right-of-way. See figure above.</td></tr>
<tr><td>Procurement Structure</td><td>Not applicable.</td></tr>
<tr><td>Financing and Funding Structure</td><td>At the time of the acquisition, the government also announced its intention to repair and maintain the Railway. In August 2022, the governments of Canada and Manitoba came together to provide $147.6 million (over the next two years) to the Arctic Gateway Group. The program is designed to provide funding for major upgrades resulting from chronic underinvestment. In addition, part of the funding is dedicated towards ongoing operating and maintenance costs.</td></tr>
</table>

Table 2-6 Lac-Megantic Bypass

PROJECT	KEY INFORMATION
Project Overview	In 2015, the City of Lac-Mégantic commissioned a feasibility study for the Rail Bypass Project. Three years later the final route was announced during a joint funding announcement from Federal and Provincial Governments. The chosen route removes the rail right-of-way from downtown Lac-Mégantic and reduces the number of buildings near the railway. 
Route & Length	The new 12.5-km line will pass through the municipalities of Nantes, Lac-Mégantic and Frontenac, specifically between mileposts 113.27 in the subdivision of Moosehead and 3.49 in the subdivision of Sherbrooke. The Project also includes building two-yard tracks in the Lac-Mégantic industrial park to allow the relocation of Nantes and Frontenac railway operations to this location.
Procurement Structure	The Project will be managed by Canadian Pacific Railway (CP), which acquired the Central Maine & Quebec Railway in December 2019. CP will own the bypass once the construction is completed.
Financing and Funding Structure	The cost of the bypass is expected to be about C$133 million. Federal government will cover 60% and the Province of Quebec will provide funding for the remaining 40%

MAIN FINDINGS

Some overarching conclusions on key issues can be inferred from the Project examples described above. The main findings are summarized below.

- **P3s in freight rail projects:** Freight rail projects delivered under P3 model are few and far between– however the Inland Rail example demonstrates one example of greenfield freight project delivered via a combination of traditional and P3 methods.
- **Government funding**: Governments play a significant role in funding major freight rail projects, including P3s. In the project examples public funds account for most of the total capital costs.
- **Revenue risk**: Governments retain the demand risk which leads to a commercial structure with availability payments or to provide minimum revenue guarantees. There may be a greater willingness to take on revenue risk later when the revenue stream is proven.
- **Institutional Investors**: Institutional investors, such as pension funds or insurance companies typically invest in second generation (or secondary) concessions, where there is no planning/construction risk and a proven revenue stream in place or in greenfield projects with investment grade ratings (i.e., BBB or higher).

— **Inclusion of maintenance**: The Gowrie to Kagaru section of Inland Rail is being delivered as DBFM and does not include operations. Notwithstanding, maintenance over a 25-year term was included in the contract to reduce the interface risk.
— **Integration risk**: The Inland Rail project is a good example of carving out components in freight rail infrastructure delivery under separate contracts/concessions. This requires management of interfaces between the contracting parties to mitigate potential interface risks. The time required for integration of all components increases the risk for both schedule impacts and cost overruns.

The identification of possible delivery models should be done with clear objectives of the proposed Project's procurement strategy in mind. Objectives should be set by Project Sponsors early in the process and should typically account for the following elements which are typical in most infrastructure projects:

— Consider La Grande Alliance and the Quebec government's experience in delivering projects in this magnitude/complexity.
— Ensure quality, safety, frequency, reliability, connectivity, intermodality and capacity of service.
— Ensure integration (full, partial) of operations and asset maintenance activities with the rest of the network.
— Optimize and ensure the cost and quality of the proposed Project over its entire life cycle.
— Optimize and ensure adherence to the proposed Project schedule.
— Optimize risk allocation (risk allocated to the party best able to manage it).
— Ensure a fair and transparent process.
— Optimize change management.

2.3 POTENTIAL PROJECT PARTICIPANTS

As noted above the commercial structure refers to the architecture of contract relationships and the corresponding cash flows that govern the development and life of the proposed Project. The commercial structure is predominately based on the scope of the contract which forms the direct agreement between the procuring authority and private partner.

For the purposes of this pre-feasibility analysis, it is assumed the proposed Project will be structured through a limited recourse project finance model (as opposed to traditional corporate finance model in which lenders provide financing based on the credit profile and balance sheet of the parent company). Non-or limited recourse structures typically include the following participants.

— Procurement Authority: Relevant government agency (federal, provincial or local) responsible for the procurement.
— Project Sponsor: Project lead and owner which may be required to provide equity, guarantees, subsidies and retain certain risk obligations for the Project.
— Special Purpose Vehicle: Legal structure which brings together various parties to implement the Project using a project financing approach. They are comprised of the SPV shareholders with direct links to construction and/or operation and maintenance contractors, lenders, and off-takers.
— Lenders (including senior lenders and/or subordinate): Provide the loans (i.e., the debt financing) to the private partners. Loan agreements and debt covenants govern the terms between borrowers and lenders.
— Off-Taker(s): The party purchasing the product/service the Project is producing. An off-take agreement governs the price and volume which make up the Project revenue.
— Contractor and equipment supplier: A private contractor responsible for designing and building the Project.
— Operator: A private operator responsible for operating the asset after it has been commissioned for a specified term. Ownership of the asset remains with the public entity.

- Financial Advisor: Provide specialist financial and commercial expertise. They are required to develop the transaction financial model, financing structure, tax due diligence, risk allocation, and any capital budgetary impacts.
- Technical Advisor: Provide specialist expertise related to the technical merits of the Project. Typically involved in most parts of the feasibility study including traffic forecasts, technical solutions, and initial designs.
- Legal Advisor: Provide expertise in public/administrative legal matters as well as business, financing, and tax issues. They are required to assess the level of legal feasibility for the Project.
- Regulatory Agencies: Supports the procurement authority by providing oversight and expertise (e.g., Infrastructure Ontario, Société Québécoise des infrastructures)
- Third Parties: Other parties that are impacted by the Project (e.g., utility companies)
- Insurance Providers: Represent the key counterparties for the SPV. Typical insurance includes coverage of construction risks, material damage claims, civil liability, strikes and other business interruptions.

2.4 POTENTIAL CONTRACTUAL AGREEMENTS

Irrespective of the specific procurement method, there are several fundamental agreements that will be entered into between the various parties. These agreements define scope, responsibilities, and remuneration between the parties. These are summarized below. It should be noted that a P3 method entails a more complicated commercial structure than the traditional method and thus will result in a greater number of contractual requirements.

- **Procurement Stage Agreements**: Common sourcing Agreements include Requests for Proposals, Non-Disclosure Agreements, Master Service Agreements and Service level Agreements.
- **Construction Agreements**: Represents the main building contract in a traditional or design-build project. It is also the key construction document on a P3. The remuneration to the contractor under a construction contract is typically the largest expenditure and thus represents a key area of focus for the parties and its stakeholders. It should be noted that the construction contract should be designed to ensure the contractor can bear the risks which are in its control and can appropriately manage. Key components of construction agreements include – price and payment terms, completion dates, force majeure definitions, warranties, insurance, consents, and limitations on liabilities. For the proposed La Grande Alliance project the construction package would relate to the delivery of the track, roads work, stop platforms, interchanges and port infrastructure and can possibly include delivery of the rolling stock.
- **Operations and Maintenance (O&M) Agreements**: Once the proposed Project is completed and commissioned it will move into the operation stage. Typically, the operator is a third party that specialises in the Project's operations and/or maintenance and who will enter into O&M agreements on arm's-length terms with the Project Sponsor or SPV. Traditional O&M agreements are typically based on fixed fee or cost-plus concept rather than results. Under P3 model O&M agreements are performance oriented over a longer-term duration.
- **Subcontractors Agreements**: Represents any supplier or vendor who has a direct or indirect agreement with the primary contractor to carry out a specialized scope of work or supply equipment. For the proposed La Grande Alliance Project this could include subcontracts to supply rolling stock, rail systems and potentially O&M agreements under a P3 model.
- **Shareholders Agreements**: For those projects using a SPV owned by two or more shareholders, the shareholders regulate the relationship between them via a shareholder's agreement.
- **Right of Way/Land Acquisition Agreements**: A land agreement giving the SPV the right to use the land to construct, operate and maintain the Project.
- **Project Agreement**: The key agreement under a P3 method which grants the SPV the right for an agreed period to potentially develop, construct, maintain or operate as appropriate the public asset for a profit.

- **Project Loan Agreement / Credit Agreement**: In most projects there will be a syndicated loan agreement entered into between the borrower and the project lenders. The agreement will regulate the terms and conditions upon which the project loans may be drawn down and what items of project expenditure the loans may be used for as well as the various credit facilities made available (i.e., base facility, working capital facility, stand by facility, etc.). Main material elements typically incorporated in the credit agreement include conditions precedent, stipulations on interest on drawdowns, repayment of the loans and associated amortization schedule, information flow from borrowers to lenders, representations, covenants, and events of default and their consequences.
- **Off-Take Agreement**: The key agreement under which the product of the Project is acquired by a third party (also known as the off-taker) and the associated revenue contract type (i.e., take or pay, take and pay, long-term sales, availability-based, concession).

3 FINANCING OF THE PROPOSED PROJECT

3.1 BRIEF REVIEW OF FINANCING MARKET FOR SIMILAR PROJECTS

This review of the financing market is based on P3 transactions that are to some extent comparable to the proposed Project in terms of financing structure. Based on the review of comparable projects outlined in the previous section, for a project of this size and complexity, given that many railway/LRT projects in North America over the past 10 years have been built using alternative P3 modes, it is likely that the P3 model will be heavily considered as one of the preferred options.

3.1.1 FINANCING STRUCTURE

The financing structure of similar projects is normally composed of senior debt and equity. Other types of subordinated debt and grants (i.e., direct capital cost contributions from the public sector) may also be used, if available.

A key factor in project financing is the ratio of debt to equity, commonly referred to as the debt-to-equity ratio or the leverage/gearing ratio. This ratio calculates the percentage of debt and equity in relation to the total financing of a project, with the sum of debt and equity equal to 100% of the financing. The debt-to-equity ratio is used by financial analysts and investors as an indicator of a company's financial leverage.

Equity is the most expensive form of financing, as the holders are the first to absorb the loss incurred in a project, if any, and is the most exposed to project risk. Since it is advantageous for bidders to submit the lowest-cost bid, bidders generally try to limit the amount of equity invested and favor senior debt financing. Despite this, the amount of equity to be invested in a project is normally determined largely by the lenders, based on the risks of the project. Because equity acts as a hedge against potential losses to lenders, low-risk projects generally require less equity than higher-risk projects.

The balance between the debt and equity portions is based on a quantitative assessment of the project, incorporating the potential costs of financial distress, and a qualitative analysis of the parties involved.

The likely debt-to-equity ratio for the proposed Project can be assessed by comparing it to the financing terms of similar projects in the same asset class. The Table 3-1 shows the debt-to-equity ratios for comparable projects.

Table 3-1 Similar LRT Projects and Debt-to-Equity Ratio

PROJECT	COUNTRY (CITY)	PROCUREMENT MODEL	SIZE ($M CAD)	PROJECT AGREEMENT DURATION (YEARS)	D/E RATIO
Waterloo to Kitchener Light Rail	Canada (Waterloo)	DBFOM	870	30	85%
Finch West Light Rail P3	Canada (Toronto)	DBFM	1,170	30	97%
Edmonton LRT P3 – Valley Line	Canada (Edmonton)	DBFOM	1,300	30	90%
Ottawa Light Rail Transit	Canada (Ottawa)	DBFM	2,170	30	85%

PROJECT	COUNTRY (CITY)	PROCUREMENT MODEL	SIZE ($M CAD)	PROJECT AGREEMENT DURATION (YEARS)	D/E RATIO
Eglinton Crosstown LRT	Canada (Toronto)	DBFM	5,320	30	93%
Reseau Express de Montreal LRT	Canada (Montreal)	(1) Engineering, Procurement, and Construction (2) Rolling stock, Systems, Operations and Maintenance These contracts can be considered as variants of the DB contract	6,320	30	-

Based on the ratios presented above, a debt/equity ratio of 90:10 in the market for comparable transactions is typical.

3.1.2 AVAILABILITY AND COST OF EQUITY

The cost of equity, representing the return on investment sought by investors for a specific project, is a key determinant of a bidder's price. When a bidder prepares its bid, it will attempt to set as many parameters as possible: construction costs will be negotiated in advance as a fixed price with a design-build contractor, operating costs will be set primarily with the operations and maintenance contractor, rolling stock costs will be set with the supplier, debt costs will be set with lenders, etc. In the event that the project has significant revenue risk, revenue forecasts will be performed by an independent expert. Regardless of the revenue mechanisms adopted in the offtake contract (availability payments, collection of revenues from end users, etc.), equity holders will structure the transaction so that they achieve a target internal rate of return.

Target IRRs vary from project to project and are influenced by several factors, such as:

- Technical risks related to the complexity or location of the infrastructure to be built.
- Technical risks related to the operation phase of the Project.
- Volume risks, which could have an impact on revenues.
- The duration of the partnership agreement.
- The overall risk transfer as defined in the partnership agreement.
- The experience and credit rating of the Project's key counterparties.
- The credit quality of the public counterparty to the Project and any related sovereign risks.

Table 3-2 Target and Realized IRRs

INVESTOR	REALIZED	TARGET
Caisse de dépôt et placement du Québec	9.6%	8.9%
Public Sector Pensions Investment Board (PSP Investments)	13.9%	8.6%
Ontario Teachers' Pension Plan	7.9%	1.2%
Alberta Investment Management Corp. (AIMCo)	19.0%	6.8%
BC Investment Management Corp.	12.1%	6.4%
Average	**12.5%**	**6.4%**

Source: Most recent respective annual reports available

Realized IRRs and benchmark rates can vary from investor to investor depending on the investment strategies employed, the geographic locations where investments are made, and the regulations in place. While the examples in Table 3-2 focus on infrastructure investment portfolios, the difference in their exact composition as well as the comparables lead to significant differences in actual performance.

Finally, a bidder's target return on equity is generally higher than the return on a portfolio, since an investment portfolio is composed of projects with higher returns, which compensate for those with lower-than-expected returns. Portfolio analysis of the various infrastructure projects in the portfolio and associated correlations and overall volatility also play a key factor to establish bidder target discount rates.

Considering that these portfolios are diversified across several sub-asset classes, and that some of them, such as public assets, are less risky and generate lower returns, and others are riskier and generate higher returns, a minimum return between 10% and 15% is considered appropriate.

The cost of equity/minimum IRR used in the financial model employed for the analysis of the Project is 12%.

3.1.3 AVAILABILITY AND COST OF DEBT

Short-term debt

There are two predominant types of short-term debt for infrastructure projects: bank loans and bonds. Bank loans are a frequently used source of financing in Canada. This type of financing has many advantages, one of the most popular being the flexibility the borrower has in designing the payment structure to spread the payments over time and minimize the cost of borrowing on the unused balance of funds.

However, short-term bank debt became difficult to access during the global economic crisis of 2008-2009, leaving the short-term bond market as the preferred source of funding. Generally, bond financing is less efficient for construction projects, due to some of the disadvantage it entails. Normally, bond financing requires that the full amount of the borrowed funds be paid to the buyer at financial close, even though the funds will be used incrementally during the construction period. The borrower will therefore invest the unused funds until they are needed for construction. However, the return earned will generally be lower than that required by the bondholders, resulting in a net cost on the unused balance of funds (i.e., negative carry). The longer the construction period, the more this disadvantage of bond financing will be felt. Although short-term bonds have been used in Canadian P3s on a few occasions, short-term bank financing remains the most frequently used method.

Long-term debt

Canada has a well-developed market for long-term debt, providing debt to governments, P3 projects and other entities related to the infrastructure market. Government of Canada bonds are typically rated AAA by four of the major rating agencies (Moody's, S&P, Fitch and DBRS), which is the highest possible rating for bonds. This credit rating reflects the strong financial position of the Government of Canada and results in a lower interest rate required by investors. The debt issued for the proposed Project should therefore be compared to the Canadian infrastructure project financing market rather than to the long-term Government of Canada bond market.

Over the past years, Canada has developed a very active market for infrastructure project financing, including long-term financing products. In line with the terms of most P3 projects or infrastructure projects in general, the maturity of long-term debt used to finance infrastructure projects is generally between 30 and 35 years. Today, long-term financing for infrastructure projects is mainly obtained through private bond financing, i.e., bonds sold to qualified investors such as Canadian insurance companies and pension funds.

4 CAPITAL AND OPERATING COSTS

4.1 DESIGN-BUILD CAPITAL COSTS

Capital costs have been calculated by WSP's cost estimation team. Technical Note 16 - Construction Cost Estimate presents the methodology and assumptions used to obtain the projected construction costs. Technical Note 16 separates the costs by segment, and expense categories are specific to each infrastructure type (road, rail, harbour). For the financial model, the preparatory studies, and detailed design and procurement costs were grouped by phase. The construction and commissioning have been grouped by infrastructure type for each phase.

Table 4-1 Capital Costs per Phase (2023 dollars)

COSTS	PHASE II ($M)	PHASE III ($M)
Expense Categories		
Preparatory Studies	716	552
Detailed Design and Procurement	358	276
Construction and Commissioning - Rail	2,199	2,722
Construction and Commissioning - Roads	1,378	-
Construction and Commissioning - Harbour	-	29
Sub-Total	***4,651***	***3,579***
Contingencies (30%)	1,073	826
Risks (20%)	715	551
Total cost (excluding taxes)	**6,439**	**4,956**

Source: WSP

The costs shown in Table 4-1 exclude taxes. Typically, from a taxation standpoint, the entity will pay the applicable sales taxes at the prevailing rates and will receive rebates of 100% of the GST and 50% of the QST. Since the taxation depends on a number of elements, including the nature of the legal entity created, the type of infrastructure asset and local provincial legislation, in order to reduce any sort of ambiguity, the capital costs used in the financial model exclude applicable taxes. Not included in the capital costs are the three passenger stations of Phase II (Eastmain, Wemindji & La Grande), and the one station of Phase III (Whapmagoostui). Proposed passenger stations are considered to be minimal as passenger volumes are expected to be low. At this stage of the analysis, there is uncertainty about the number and the size of transshipment stations, depot areas, and storage areas. For those reasons, no construction costs were estimated for transshipment stations. A 30% contingency provision of the direct construction costs was established. This provision accounts for the uncertainty surrounding the estimated quantities and unit costs. At this pre-feasibility stage, a 20% risks provision was estimated. As the project moves forward, the preparatory studies (geotechnical, archaeological, environmental, etc.) will provide additional information, which will reduce the probability of unforeseen events and diminish the risks associated with the environment, protected areas, etc. The total design and construction costs for Phase II are $6.44 billion, and $4.96 billion for Phase III in $2023.

Each phase has its own spending schedule (i.e., S-curve) for its respective capital costs. The spending curves were first derived from the proposed infrastructure schedule overview for each segment, as presented in Technical Note 15 – Construction overview. The cost estimates presented in Technical Note 16 were then spread over the infrastructure construction schedule. A detailed explanation on the correlation of schedule and costs are found in

Technical Notes 15 and 16 respectively. The associated capital costs were then calculated by aggregating the segment's capital costs per phase.

4.2 OPERATING COSTS

Operating costs have been divided between road and railway segments, with the railway segments differentiating passenger and freight operating costs. Road operating costs are established from "Détermination du seuil minimal d'entretien pour la route de la Baie-James (Route Matagami-Radisson et chemin de Chisasibi)", provided by the SDBJ. From the total costs, the operating expenses per km was computed. The cost per km is indexed from $2013 to $2023 based on the CPI. Table 4-2 presents the variables, the values and the methodology used to obtain the road operating costs by km.

Table 4-2 Road Operating Costs per KM

VARIABLES	VALUE
Operating Expenses ($2013 thousand)	8,182
Length (km)	620
Opex / km ($2013 thousand)	13.20
Opex / km ($2023 thousand)	**16.81**

Table 4-3 presents the length in km and the annual operating costs by road segment. The Route 167 length includes the new road extension of Route 167 (173 km), the upgrade and paving of the Mistissini-Albanel Lake road (107 km), and the upgrade of the existing road to the Stornoway Renard mine (97 km), for a total of 376 km. Annually, the operating costs of the proposed road segments are $9.80 million. There are two road segments in Phase II, and none in Phase III.

Table 4-3 Road Operating Costs by Segment ($2023 thousand)

VARIABLES	RADISSON TO WHAPMAGOOSTUI ROAD	ROUTE 167	TOTAL
Length (km)	207	376	583
Operating Costs / km	16.81	16.81	16.81
Total Opex	**3,479**	**6,323**	**9,802**

For the railway, the estimated operating costs from Phase I have been applied to Phase II and III. The Opex of Phase I's Matagami-Rupert River railway was preferred to the Grevet-Chapais railway due to its similar nature and location compared to Phase II and III's railway and is thus a proper comparable to extrapolate costing trends. The Opex was estimated on a per kilometer basis of railway for freight and passenger separately. The all-in operating costs used for the financial analysis is approximately $99,000 per kilometer ($2023), with $93,000 for freight trains and 6,000$ for passenger trains.

Table 4-4 presents the total annual operating costs for Phase I's Matagami to Rupert River railway, Phase II's Rupert River to La Grande railway and Phase III's La Grande to Whapmagoostui railway. The operating costs per km of Matagami to Rupert River railway (Phase I) are multiplied by the length of Phase II and III railway segment to obtain the operating costs per phase annually.

Table 4-4 Railway Operating Costs by Phase ($2023 thousand)

VARIABLES	PHASE I MATAGAMI TO RUPERT RIVER RAILWAY	PHASE II RUPERT RIVER TO LA GRANDE RAILWAY	PHASE III LA GRANDE TO WHAPMAGOOSTUI RAILWAY
Length (km)	257	340	219
Freight Operating Costs / km	93.20	93.20	93.20
Passenger Operating Costs / km	6.16	6.16	6.16
Operating Costs / km	**99.36**	**99.36**	**99.36**
Total Freight Opex	23,952	31,687	20,410
Total Passenger Opex	1,584	2,095	1,350
Total Opex	**25,536**	**33,782**	**21,760**

Source: VEI, WSP

Over the program horizon, the infrastructure and other assets needed for the operations depreciate. To maintain operations, some assets require to be replaced and refurbished. Sustaining capital costs are essential to the viability of the infrastructure and are required to optimize the asset performance over its lifecycle via proper asset management. In our modeling, sustaining capital costs occur on year 10 of operations, and every 3 years afterwards. These expenses were estimated using a parametric analysis, with the Matagami-Rupert River railway from Phase I being the closest comparable. From the total sustaining capital costs of the Matagami-Rupert River railway segment over its operating period, a cost of $0.04 million ($2023) per railway km per year was computed. By multiplying this value by the railway length, the sustaining capital costs are $14.46 million for Phase II and $9.31 million for Phase III in 2023 dollars.

5 FINANCIAL ANALYSIS

5.1 METHODOLOGY

The information available for the proposed Project is high level and preliminary in nature given the study is at the pre-feasibility stage. The purpose of this early-stage financial analysis is to understand the financial viability of the proposed Project under the base case assumptions. This assessment combines the proposed Project's cost assumptions, forecast revenue for the corridor, and a series of assumptions regarding the proposed Project financing.

Since the financial analysis incorporates three different phases, each with different start and end dates for construction and operations, a portfolio analysis approach was undertaken for modeling purposes. More specifically, the robust, transparent, and flexible financial model was developed in a way where each segment was mutually exclusive, and thus modeled as a scenario to analyze the financial viability of the phases independently. The present values of each phase were then computed and added together at the same base discounting date to compute the financial metrics of the proposed Project fully integrated. This approach is optimal as it allows one to understand the financial performance of each segment, allowing for a more informed decision-making process as to the value add of each phase in crafting conclusions and recommendations regarding the infrastructure based on projected volumes and costs.

Finally, as previously outlined, the NPV of project cash flows (both positive and negative) over the analysis horizon of the proposed Project is calculated in order to reflect the time value of money and provide La Grande Alliance with the value of these future cash flows in the present day based on established discount rates. Since the financial analysis compares project costs and cash flows at different points in time, these cash flows are presented on a present value basis to allow comparison on the same basis. For example, a dollar spent today costs more than a dollar spent 20 years from now, and therefore the PV of the dollar spent today will be higher than the PV of the dollar spent later. This approach will also allow La Grande Alliance to compare other scenarios and run sensitivity analysis which could affect the cash flows over time and compare these scenarios with the base case. The analysis logic is summarized in the following Figure 5-1.

For analysis purposes, all costs are allocated over the preparatory studies, design, construction, and operating period while assigning an inflation rate to the related costs based on when it is incurred. Details on the inflation rates are presented in Section 5.1.6.

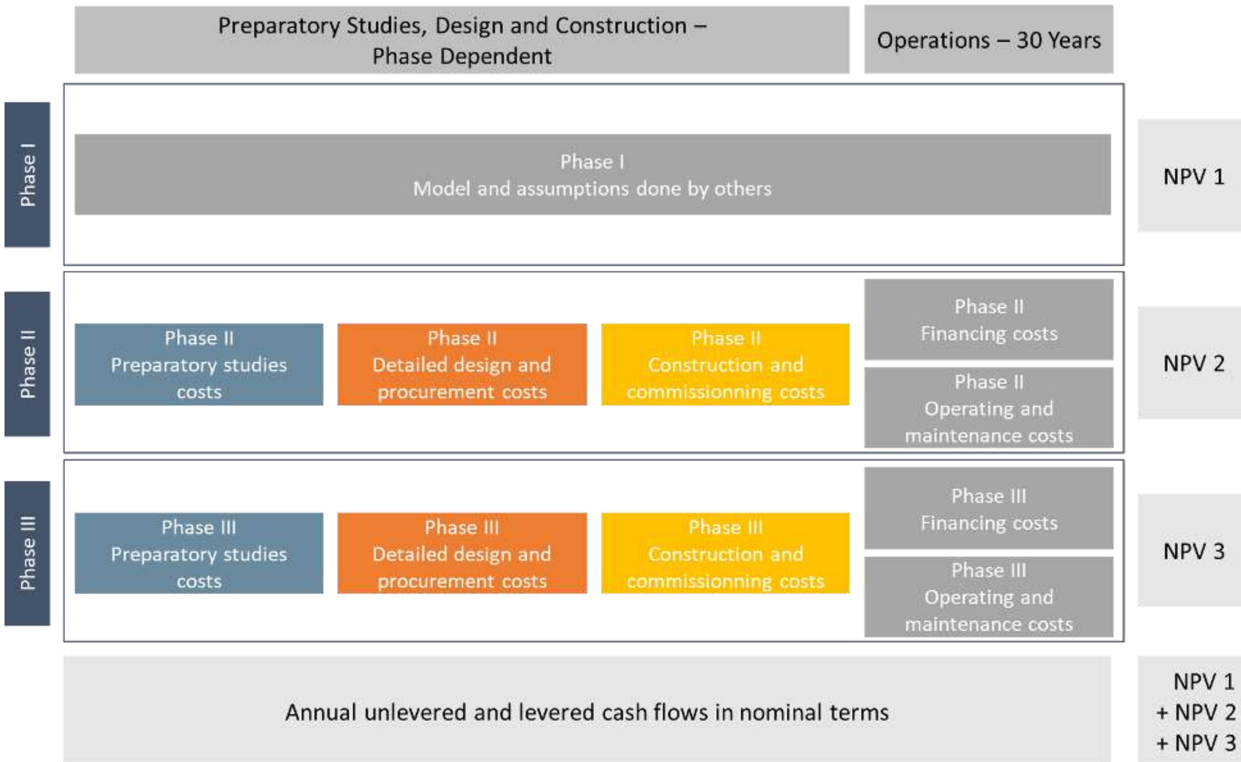


Figure 5-1 Structure of the Financial Model

5.1.1 ASSET TIMELINE OVERVIEW

The following Figure 5-2 shows the preliminary schedule for the proposed Project. It should be noted that the timeline was developed in tandem with CDC and established as being the base case dates for the financial analysis. For each phase, the preparatory studies period are assumed to last 5 years, the detailed design and procurement to last 3 years, and the construction and commissioning to last 5 years. The operations period was assumed to last 30 years which is a typical project agreement length between the private and public sector based on comparable projects outlined in Table 3-1. Phase I's studies, design and construction is scheduled from 2022 to 2034, and the operations from 2035 to 2064. For Phase II, the studies, design and construction of the infrastructure starts in 2027 and ends in 2039, with the operations starting in 2040 and ending in 2069 for a 30-year operation period. In Phase III, the studies, design and construction period spans from 2032 to 2044, and the operations period from 2045 to 2074, also for a 30-year operation period.

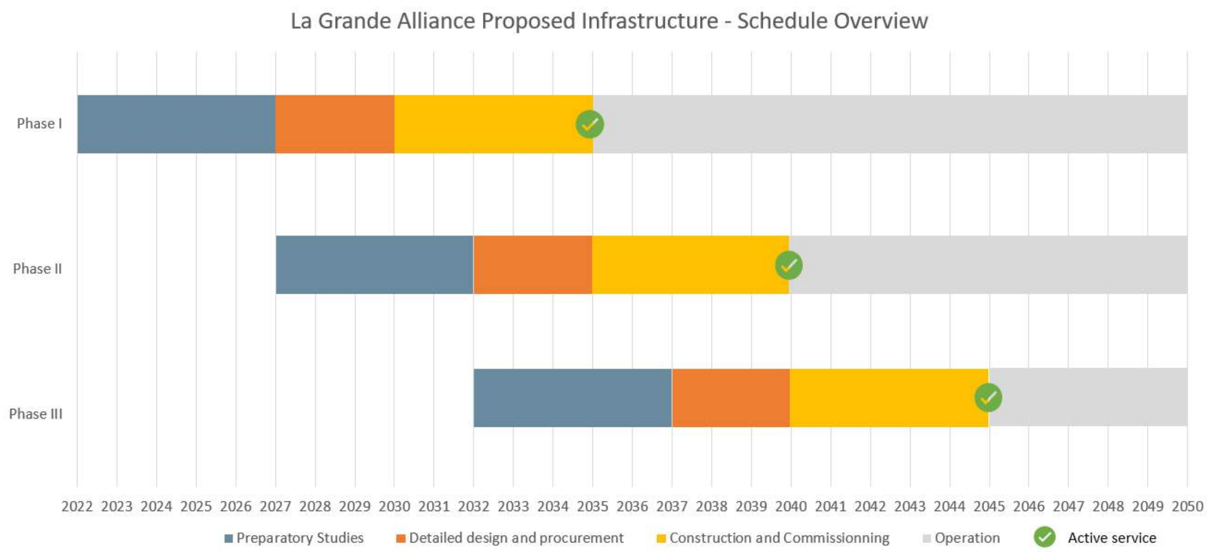


Figure 5-2 Proposed Project and Phases Timeline

5.1.2 DISCOUNT RATE

The discount rate is the interest used to determine the present value of future cash flows. Bringing these cash flows back in time follows the concept of the time value of money, which reflects the opportunity cost of capital: funds available earlier can earn a return or fund capital expenditures, thereby reducing the associated cost of borrowing. The discount rate is a key parameter in the calculation of the present value of the proposed Project's cash flows.

The financial analysis is carried out on both an unlevered and levered basis meaning both without accounting for capital structure or financing (i.e., also referred to as unlevered/project free cash flow to compute the unlevered NPV/IRR) and with the effect of leverage (i.e., also referred to levered free cash flow to compute the levered NPV/IRR). When computing unlevered/project metrics, it provides insight as to the proposed Project performance regardless of the way it is financed and is an important step in understanding the ability of the Project to self-finance. It also provides insight as to the effect of leverage on the proposed Project performance. On the other hand, levered cash flows represent cash flows to the equity investor after the effect of financial leverage (i.e., debt service). These are the cash flows equity investors are more concerned with as they represent the true cash flows they can potentially earn. Since equity investors are the residual claimants on cash flows and debt payments have priority over dividend distributions, the risk profile of these cash flows differs and thus the cost of capital to be used to compute unlevered and levered financial metrics is different. When computing unlevered metrics, the discount rate typically used is the weighted average cost of capital (i.e., WACC) whereases to compute levered metrics, the cost of equity is used. The WACC is 6.15%, calculated with a 90% leverage ratio, a 12% cost of equity and a 5.5% interest rate. The equity discount rate (i.e., cost of equity) is 12%.

Table 5-1 Proposed Project and Equity NPVs

PURPOSE	CASH FLOW BEING ANALYZED	APPLICABLE DISCOUNT RATE
NPV of the Equity Investment	Cash distributions to Equity	Equity hurdle rate (cost of equity)
NPV of the Proposed Project	CADS (Cash distributions to Lenders and Equity Investors)	WACC (% funded by debt * interest rate) + (%funded by equity * cost of equity)

5.1.3 VOLUME TRANSPORTED

In the financial model, the Phase II and III railway segments are considered to be revenue drivers. The road and port segments are not considered as revenue drivers since they do not generate direct revenues for the main stakeholders. The two sources of income for the railways are freight transportation and passenger transportation. Freight traffic is divided in three sectors: mining, forest industry, and others. Other sectors include electricity, mainly composed of Hydro-Quebec and its affiliated companies, construction, and goods procurement. Freight traffic shown in Table 5-2 is taken from the Market Study, Prefeasibility study – Phases II-III. The total freight volume assumed in the financial model is twice the numbers presented in Table 5-2 as the trains are assumed to do roundtrips.

The territory between La Grande and Whapmagoostui is not being considered by the economic actors because the lack of existing transport infrastructure is making projects non-viable. It is the reason for the low projected freight volume in Phase III. The proposed infrastructure could lead economic actors to evaluate other projects which were previously not considered or re-evaluate rejected projects, which could significantly impact the freight transportation demand for Phase III (e.g., Great Whale iron ore project, new Hydro-Québec plants).

Table 5-2 Freight Traffic (in thousand tonnes per year)

SECTORS	RUPERT RIVER TO LA GRANDE RIVER RAILWAY	LA GRANDE RIVER TO WHAPMAGOOSTUI RAILWAY
Mining	4,641	-
Forest Product	319	-
Others	22	4
Total (tonnes)	**4,982**	**4**

Passenger traffic has been separated into three categories of potential movement generators in the Market Study, Prefeasibility study – Phases II-III: the local population, the visitors and tourists, and the workers. The passenger demand for the local population is calculated from the per capita ridership of similar rail lines and the forecasted population of the communities. The visitors' ridership is established from the total annual visitors in the region and a capture rate per rail segment. A 3% capture rate has been assumed for the Rupert River to La Grande railway (Phase II) and 1% for La Grande to Whapmagoostui railway (Phase III). Workers are currently using a fly in fly out system for the major industries. Air travel is expected to stay the preferred transportation mode for this category. Therefore, it is assumed that workers will not add to the rail passenger ridership. Table 5-3 presents the forecasted annual passengers per rail segment. It is assumed that the local population and the visitors will all travel round-trips. For that reason, total passenger volume will be twice the number of passengers.

Table 5-3 Railway Passenger Traffic per year in one direction

RAIL SEGMENT	2031	2036	2041	2046	2051	2056	2061	2066	2071
Rupert River to La Grande	4,835	5,103	5,358	5,576	5,755	5,891	5,986	6,036	6,044
La Grande to Whapmagoostui	1,984	1,984	2,099	2,099	2,165	2,165	2,172	2,172	2,119

Source: Systra-WSP

5.1.4 PRICING MODEL

The pricing model follows the same logic as the volume transported in the previous subsection, separating the freight and the passengers. From the Railway association of Canada (RAC)'s quarterly report for the fourth quarter of 2022, it has been established that the revenue per ton-kilometer (RTK) is 4.28 cents, calculated from the freight revenue per ton-mile (RTM).

All rail freight are assumed to be transported between the intermodal yards of Phase II and Phase III and Matagami, where the proposed infrastructure will connect to the existing rail network. The distance of transportation for Phase II is 597 km, combining the North-South railways of Phases I and II between Matagami and La Grande River. For Phase III, the total freight distance travelled per tonne is 816 km, moving between Matagami and Whapmagoostui. The revenue per ton per trip is obtained using the RTK and the distance travelled per trip, as shown in Table 5-4. The tariff for each phase is an average to account for a one-way loaded trip and an unloaded trip back. As explained in the previous section, freight volumes are doubled to account for roundtrips.

Table 5-4 Railway Freight Revenue per KM (in $2022)

VARIABLES	PHASE II	PHASE III
Freight RTK	0.04	0.04
Distance (km)	597	816
Freight Revenue per Ton per Trip	**25.52**	**34.88**

Source: WSP

Passenger pricing follows a similar methodology, using the distance travelled and a cost per km. The cost per km is established from three similar cases presented in the Market Study, Prefeasibility study – Phases II-III. At this stage of the analysis, there is no information showing that specific communities would generate more rail passenger volumes (e.g., preferred tourist destination, more ridership per capita). For that reason, it is assumed that passenger volumes for Phase II will be spread equally over the possible destinations. For Phase III, we hypothesize that all of the visitors using this railway segment will be travelling from Matagami. The visitors represent 44% of the Whapmagoostui railway ridership. Following the same logic as Phase II, the local population travelling between Whapmagoostui and the other communities are expected to be spread equally. The price per km, the distances between passenger stations, the proportion of passengers, and the weighted ticket price are presented in Table 5-5 for Phase II and in Table 5-6 for Phase III.

Table 5-5 Phase II Passenger Ticket Prices per Trip (in $2023)

VARIABLES	EASTMAIN TO MATAGAMI	WEMINDJI TO MATAGAMI	LA GRANDE (CHISASIBI) TO MATAGAMI
Price / km	0.22	0.22	0.22
Distance (km)	346	515	597
Proportions (%)	33%	33%	33%
Phase II Weighted Ticket Price	**106.97**		

Table 5-6 Phase III Passenger Ticket Prices per Trip (in $2023)

VARIABLES	WHAPMAGOOSTUI TO LA GRANDE	WHAPMAGOOSTUI TO WEMINDJI	WHAPMAGOOSTUI TO EASTMAIN	WHAPMAGOOSTUI TO RUPERT RIVER (WASKAGANISH)	WHAPMAGOOSTUI TO MATAGAMI
Price / km	0.22	0.22	0.22	0.22	0.22
Distance (km)	219	301	470	559	816
Proportions (%)	11%	11%	11%	11%	55%
Phase III Weighted Ticket Price	**137.23**				

5.1.5 ANALYSIS HORIZON

For the purposes of the financial analysis, the analysis horizon begins in 2027, the start date of the preparatory studies period for Phase II. The model was developed in such a way to dynamically account for the different phases through their respective preparatory studies, design and construction start dates over the financial analysis horizon. For the purpose of computing the financial metrics, the length of the operations period and associated revenue generation period was assumed to be 30 years in each case. This analysis horizon is based in particular on the anticipated duration of the proposed Project agreements, as well as the availability of long-term financing typical of infrastructure projects procured in alternative modes.

5.1.6 INFLATION / INDEXATION FACTORS

The actual project costs are adjusted for inflation over the analysis horizon. It should be noted that under current market conditions, inflation has hit values well above the 2% target rate established by the Bank of Canada. The Bank has been increasing rates over the past year to continue its policy of tightening financial conditions. The Bank expects CPI inflation to ease as higher interest rates help rebalance demand and supply, price pressures from global supply disruptions fade, and the past effects of higher commodity prices dissipate. CPI inflation is projected to move down to about 3% by the end of 2023, and then return to the 2% target by the end of 2024. In order to decrease any sort of ambiguity from a modelling standpoint and reducing the need to project forward curves regarding inflation, a constant inflation rate of 2% has been used in the model to index construction and operating costs as well as revenues over the financial analysis horizon. We believe that given the unprecedent nature of capital markets and the current inflationary environment with associated tightening of monetary policy from the Bank, an inflation rate of 2% based on the target rate of the Bank to forecast long-term pricing dynamics was deemed appropriate.

5.1.7 GOVERNMENT SUPPORT

For the purpose of the financial analysis, the base case scenarios for each phase were modelled without any government support to understand the proposed Project's performance based on the project costs and revenues. As expected, given the large capital costs and fairly low tonnages extrapolated from the market study, the proposed Project is not feasible under base case conditions without any government support. Moreover, as previously outlined, given the risk profile of the proposed Project at this stage, Government support is likely to be required which could take different forms and will be imperative for the proposed Project's ability to raise finance.

Even though the proposed Project is at its pre-feasibility stage, in order to understand the level of subsidy or capital contribution which will be required for the proposed Project to be feasible (i.e., equity investors earn their minimum IRR, debt service coverage ratios are satisfied, etc.), the financial model incorporates a subsidy to fund the capital costs. The subsidy in turn reduces the capital costs which need to be financed through equity and debt financing, which improves the overall performance of the proposed Project. An in-depth benchmarking should be undertaken in future phases of the proposed Project in order to understand the level of government support that has been required to deliver projects with characteristics that are consistent with the proposed Project, and the mechanisms that are used to supply this support. Some support forms based on precedent projects are highlighted in Section 2.2.3.1.

5.1.8 FINANCING

The financing package and the cost of capital for the proposed Project may vary depending on the size of the proposed Project, the contractual structure, the depth of the market at the time of financial close, the financial strength of the SPV (either directly or through financial guarantees put in place by its participants), and the experience of SPV in completing similar projects.

With respect to the cost of capital, more specifically short term and long-term debt financing, the current state of capital markets given the current interest rate environment is also unprecedent in nature. The yield curve is a snapshot of risk-free zero-coupon bonds of different maturities, which represents the term structure of spot rates. The slope of the yield curve comes from the market's expectations of how interest rates will change.

Typically, the yield curve is upward sloping, meaning that investors expect interest rates to go up in the future, translating into long-term bonds currently being cheaper than short-term bonds (i.e., debt with longer maturities typically carry higher interest rates than nearer-term ones). Under current market conditions, the yield curve is inverted, meaning that short-term interest rates exceed long-term rates. From a cost of capital standpoint, both the 1-month Canadian Dollar Offered Rate (CDOR), which is a typical benchmark reference rate for bankers' acceptance which represents the short-term risk (risk free) rate, and long-term government of Canada bonds have similar yields of 3.5%, representing the current yield curve dynamics and the market outlook from debt capital markets. In order to reduce any sort of ambiguity in the assumptions and given the current market conditions and tightening policies of the Bank, it is difficult to project future forward rates and associated yield curve dynamics. In return, a constant borrowing base rate was applied throughout the financial analysis, for the cost of capital of both short- and long-term debt instruments.

Short-term financing assumptions

- Capital structure: 90% debt
- Used to finance construction costs
- Base rate: 3.5%
- Margin: 2.0%
- All-in rate: 5.5%
- Commitment fee: 1.0%
- Upfront fee: 2.0%

Long-term financing assumptions

— Long-term amortizing debt instrument
— Amortization period: 30 years, equal payments/annuity ("mortgage style")
— Same cost of capital assumptions as short-term debt: 5.5% all-in rate

Equity

— Capital structure: 10% equity
— Used to finance construction costs
— Target IRR: 12%

Based on the proposed Project's estimated construction costs, a 90% debt/10% equity capital structure (which is typical based on precedent transactions), and other financing assumptions highlighted above, the amount of long-term debt the proposed Project will require is approximately $10,095 million for Phase II and $8,678 million for Phase III for a total combined amount of $18,773 million. This amount is greater than any Canadian P3 long-term debt issuance to date.

For the purpose of the proposed Project's financial analysis, rate assumptions are based on those seen in the market of comparable projects, although based on the project characteristics, there is no true comparable project.

5.1.9 TAXES

It is assumed that the SPV will be created as a project company under a limited partnership structure. Accordingly, income will not be taxable at the project company level.

5.1.10 LAND ACQUISITION COSTS

It should be noted that land acquisition costs are not part of the financial analysis and are therefore estimated at $0. These costs should be specified at a later stage of the proposed Project.

5.1.11 ROLLING STOCK ACQUISITION AND REFURBISHMENT COSTS

It should be noted that rolling stock acquisition costs are included in Phase I. Rolling stock acquisition is not included in the cost estimates for Phase II and Phase III and is therefore estimated at 0$. Operating, refurbishment and lifecycle costs for rolling stock is considered in the railway operating and maintenance costs and sustaining capital costs. The procurement and costs will depend on the project procurement model and the operations and maintenance contractual structure (i.e., part of the SPV, contracted out to a specialized firm for a specified term, etc.).

5.2 RESULTS – BASE CASE SCENARIO

Taking into consideration the estimated capital cost of $11,395 (in $2023 million), assuming a typical financing structure of 10% equity and 90% long-term debt and considering financing set-up costs and capitalized interest during the construction period, the base case scenarios for Phase II and Phase III requires debt financing of approximately $10,095 million and $8,678 million respectively.

The Total NPV is the summation of the proposed Project's unlevered and levered discounted cash flows to the base discounting date. The base date used for this analysis is January 1, 2027 (start of Phase II preparatory studies period). The NPV of the Phase II and Phase III analysis is also discounted to the start of Phase I preparatory studies, namely January 1, 2023, for information purposes. Phase I's NPV consists of the NPVs of the Grevet-Chapais railway and the Matagami-Rupert River railway. It should be noted that Phase I NPV was provided by the Phase I consulting team. Both consulting teams have aligned on specific key financial inputs that drive the models. For this pre-feasibility analysis of Phase II and Phase III, the financial information of Phase I is taken "as is" and is presented for information purposes only. It should also be noted that WSP has not undertaken an independent analysis of the Phase I values, outputs, and modeling logic and thus WSP can in no way comment on the accuracy of the results provided from Phase I as well as the associated Phase I financial model integrity. The portfolio modeling approach used by WSP allows the segregation of results and values which were not validated by our technical and financial teams and furthermore allows to understand the financial performance of each phase independently and on a pro forma basis.

The NPV of each phase was computed from the portfolio analysis approach and added together at the same base discounting date to compute the overall project NPV. As previously outlined, the analysis was done on both an unlevered and levered basis. Based on the cost and revenue assumptions presented in Sections 4 and 5.1 respectively, and assuming no government support nor any sort of capital contributions which represent the underlying assumptions under the base case scenario, the NPV of Phase II and Phase III are $(2,494) million and $(3,299) million respectively for a total NPV of $(5,793) million at the start of 2027. The total infrastructure asset valuation generates an NPV of $(8,592) million for Phase I, II and III combined, at the start of 2023.

As expected, based on the large capital cost and forecast tonnage from the market study, the proposed Project returns a negative NPV which entails the proposed Project is not feasible. Negative NPV projects should not be accepted because from a theoretical standpoint it destroys value for the shareholders. Moreover, negative NPV projects entail that the cost of capital is larger than the IRR (on both a levered and unlevered basis), meaning the investment will not earn its cost of capital at a minimum.

Table 5-7 Unlevered Project NPV ($ million)

Summary Results	NPV
Phase I unlevered NPV (discounted at Jan 1, 2023)	(4,029)
Phase II unlevered NPV (discounted at Jan 1, 2027)	(2,494)
Phase III unlevered NPV (discounted at Jan 1, 2032)	(4,446)
Phase III unlevered NPV (discounted at Jan 1, 2027)	(3,299)
Phase II & III unlevered NPV (discounted at Jan 1, 2027)	(5,793)
Phase II & III unlevered NPV (discounted at Jan 1, 2023)	(4,563)
Phase I, II & III unlevered NPV (discounted at Jan 1, 2023)	(8,592)

The summary of the proposed Project sources and uses of funds in nominal dollars is shown in Table 5-8 & Table 5-9. The summary of the proposed Project's cash flow waterfall is shown in Table 5-10 & Table 5-11.

Table 5-8 Summary of Proposed Project Sources and Uses of Funds Phase II (in $ Million, Nominal) during Construction

SOURCES OF FUNDS		USES OF FUNDS	
Equity	1,122	Construction costs	8,266
Senior Debt	10,095	Interest during construction	1,755
		Financing fees	1,196
Total	11,217		11,217

Table 5-9 Summary of Proposed Project Sources and Uses of Funds Phase III (in $ Million, Nominal) during Construction

SOURCES OF FUNDS		USES OF FUNDS	
Equity	964	Construction costs	6,952
Senior Debt	8,678	Interest during construction	1,696
		Financing fees	994
Total	9,642		9,642

Table 5-10 Cash flow Waterfall Phase II (in $ Million, Nominal)

ITEM	YEAR 1 (2040)	YEAR 10 (2049)	YEAR 20 (2059)	YEAR 30 (2069)
Revenue	358	428	521	635
Operating costs	61	73	89	108
Operating Cash Flows	297	355	432	527
Sustaining Capital Costs*	-	24	-	-
Cash flow available for debt service (CFADS)	297	331	432	527
Debt service	690	689	689	689
Cash flow available for equity	(393)	(358)	(257)	(162)
Net cash flow	(393)	(358)	(257)	(162)

* Sustaining capital costs start during year 10 and happen every 3 years thereafter (see Section 4.2 for more details).

Table 5-11 Cash Flow Waterfall Phase III (in $ Million, Nominal)

ITEM	YEAR 1 (2045)	YEAR 10 (2054)	YEAR 20 (2064)	YEAR 30 (2074)
Revenue	1	2	2	2
Operating costs	34	40	49	60
Operating Cash Flows	(33)	(38)	(47)	(58)
Sustaining Capital Costs*	-	17	-	-
Cash flow available for debt service (CFADS)	(33)	(55)	(47)	(58)
Debt service	592	592	593	592
Cash flow available for equity	(625)	(647)	(640)	(650)
Net cash flow	(625)	(647)	(640)	(650)

* Sustaining capital costs start during year 10 and happen every 3 years thereafter (see Section 4.2 for more details).

As highlighted in the above tables, based on the forecasted model's cost and revenue drivers, net cash flows are negative in the base case scenario, at both the individual Phase and portfolio level. The forecasted tonnage translating into revenue does not satisfy the high initial capital cost and debt service over the proposed Project horizon. At this level of the proposed Project pre-feasibility stage, based on the revenue assumptions extrapolated from neighbouring and comparable freight railways and assumed in the financial model, the only way the proposed Project would be feasible is through government contribution, namely through a capital contribution/subsidy to reduce the initial capital cost and associated financing costs.

Moreover, it should be noted that for sensitivity analysis purposes, Phase III will not be analyzed any further at this point as the forecasted tonnage in this Phase does not justify any sort of capital investment at this time, based on the market study results. With a total capital cost of $4,956 million (real $2023), and 3,900 tonnes of product and close to 2,100 passengers per year translating into $54.1 million of revenue and $1,365 million in operating costs over the 30-year analysis, there is no incentive for any investment to be made in this Phase at this stage of the study. Future studies will need to be carried out to better understand the supply and demand dynamics in this Phase, as well as refine the potential projections to better understand its feasibility and if there are any other potential players in this area which will drive revenue growth.

5.3 SENSITIVITY ANALYSIS

In order to support the understanding of the results of the financial analysis in the base case, a number of sensitivities were identified in order to understand how the model performed under different scenarios by sensitizing key project variables and incorporating potential government capital contributions (i.e., public subsidies). The main results of the different scenarios analyzed are presented in Table 5-12.

Table 5-12 Sensitivity Analysis ($ Millions discounted at Jan 1, 2027) – Phase II

ANALYSIS	BASE CASE	SENSITIVITY TESTED	RESULTS	
Capital contribution	0%	50%	Project NPV: Project IRR: Equity NPV: Equity IRR:	(90) 5.90% (444) 2.77%
Capital contribution	0%	60%	Project NPV: Project IRR: Equity NPV: Equity IRR:	391 7.39% (244) 7.40%
Capital contribution	0%	70%	Project NPV: Project IRR: Equity NPV: Equity IRR: Min DSCR:	872 9.45% (18) 11.65% 1.43x
Capital contribution	0%	80%	Project NPV: Project IRR: Equity NPV: Equity IRR: Min DSCR:	1,353 12.68% 208 16.28% 2.14x
Minimum tariff required to reach minimum hurdle rate of 12%	$25.52/tonne ($2023 real)	Solve	$76.62/tonne (+200.22%)	
Tonnage volumes	0%	+10%	Project NPV:	(2,213)
Tonnage volumes	0%	+20%	Project NPV:	(1,931)
Tonnage volumes	0%	+30%	Project NPV:	(1,650)

ANALYSIS	BASE CASE	SENSITIVITY TESTED	RESULTS	
Tonnage volumes	0%	+206.8%[3]	Project NPV: Project IRR: Equity NPV: Equity IRR: Min DSCR:	3,329 9.84% 53 12.29% 1.49x
Operating costs	0%	-10%	Project NPV:	(2,446)
Operating costs	0%	-20%	Project NPV:	(2,398)
Operating costs	0%	-30%	Project NPV:	(2,350)

From Table 5-12, the main observations which can be extrapolated for Phase II are as follows:

— Considering the base case financial model assumptions, the proposed Project is not financially viable at this stage.

— The base case tariff would need to be increased to $76.62/tonne (real $2023) for equity holders to earn a minimum IRR of 12%.

— The model was tested at different capital contribution levels to understand the minimum required subsidy which would directly lower the capital and financing costs to make Phase II viable. The minimum subsidy required for equity holders to earn a minimum IRR of 12% is 70.8% which would return a Phase II Project NPV of $911.7 million and a minimum DSCR of 1.47x.

— Given the size and high capital cost of the proposed Project, the model is not very sensitive to a normal level of optimal sensitivities for the main model drivers, namely tonnage volume increases (+10%, +20%, +30%) and reduction in operating costs (-10%, -20% and -30%). The proposed Project NPV in all cases remains highly negative.

— The scenario which assumes that Duncan Lake iron ore mine project would be in operations and producing at maximum capacity, increasing the overall freight volume in Phase II by 206.8%, does improve the asset performance, and would make the proposed Phase financially viable from an equity investor's standpoint. On a levered standpoint, Phase II Equity IRR is 12.29% which does meet the minimum hurdle rate of 12%. The Project NPV is $3,329 million with an unlevered IRR of 9.84%. The minimum DSCR is 1.49x in this scenario. This shows the importance of the mining sector and the impact of potential new projects on the financial viability of the infrastructure.

A similar analysis was undertaken by the Phase I consulting team. As outlined in section 5.2, Phase I numbers presented below are highlighted for information purposes only. They are the results of the financial feasibility analysis done by the Phase I consulting team and are taken "as is". The values and their accuracy rely solely on the group that prepared and verified the numbers.

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[3] As described in the Market Study, Prefeasibility study – Phases II-III, tonnage volumes sensitivity of +206.8% for Phase II represents the optimistic case, with all of the anticipated produced freight volume of the Duncan Lake iron ore mine project. A high-capacity transport infrastructure would make the mining project more appealing.

Table 5-13 Sensitivity Analysis ($ Millions discounted at Jan 1, 2023) – Phase I

ANALYSIS	BASE CASE	SENSITIVITY TESTED	RESULTS	
Capital contribution	0%	50%	Project NPV: Project IRR: Equity NPV: Equity IRR:	(1,942) N/A (179) N/A
Capital contribution	0%	60%	Project NPV: Project IRR: Equity NPV: Equity IRR	(1,525) N/A (143) N/A
Capital contribution	0%	70%	Project NPV: Project IRR: Equity NPV: Equity IRR:	(1,108) N/A (107) N/A
Capital contribution	0%	80%	Project NPV: Project IRR: Equity NPV: Equity IRR	(691) N/A (72) N/A
Revenues	0%	+10%	Project NPV:	(3,950)
Revenues	0%	+20%	Project NPV:	(3,870)
Revenues	0%	+30%	Project NPV:	(3,791)
Operating costs	0%	-10%	Project NPV:	(3,964)
Operating costs	0%	-20%	Project NPV:	(3,899)
Operating costs	0%	-30%	Project NPV:	(3,834)

As previously stipulated, the results for Phase I were provided by the respective consultants and are taken "as is" to integrate in the pre-feasibility study. Per the scope of work, a valuation on the financial performance of the asset had to be undertaken with the integration of all Phases I-II-III which is highlighted in Table 5-7. Thus, WSP undertook a portfolio analysis approach from the start so that each Phase was treated as mutually exclusive to understand both the financial performance at the Phase level, and at the global portfolio level with the associated pro forma results.

WSP's mandate did not include auditing, reviewing, nor verifying the results of Phase I, even though we did conduct a high-level review of the outputs received and provided comments accordingly to the Phase I consultant. These comments will not be addressed in the current report although some key elements need to be outlined as they affect the overall results when combining Phase I with Phase II-III.

As previously mentioned, no sensitivities were done on Phase III as earlier described mainly due to the lack of demand in the area which translates into minimal revenues compared to the large capital investment which in turn makes the Phase highly unfeasible under current market conditions.

As highlighted in Table 5-13, the outputs for the capital contributions seem to be outlining that even at an 80% subsidy (i.e., only 20% of the capital costs need to be financed via debt and equity), the Phase I proposed Project is not feasible with negative levered and unlevered NPVs and both Project IRR and Equity IRR showing up as N/A in the file transmitted to WSP. These results are negatively correlated with the results of Phase II which show a degree of financial viability with a subsidy of approximately 70.8% which would allow equity holders to reach their minimum hurdle rate under the proposed pre-feasibility assumptions and modeling structure.

Based on the aforementioned points, in some scenarios, particularly with public sector subsidies, the Phase I outputs will essentially lower the financial feasibility and viability of Phase II since in all subsidy scenarios, the project returns negative NPVs for Phase I. Thus, the value creation and positive NPV from Phase II will be lowered when incorporating the Phase I financial performance outputs and thus putting downward pressure on the asset performance at the global portfolio level. It is important to note that the revenues depicted for Phase II rely on Phase I being built. The value created by Phase II is only possible with Phase I infrastructure in place.

As a closing remark, it should be noted that the revenue methodology in Phase I was based on a hypothetical concession agreement, with volumes and tonnage freight prices forecast into the future with a base tariff indexed to inflation over the financial analysis horizon. The revenue mechanics was similar to the pre-feasibility stage. On the flipside, at the feasibility stage, the revenue mechanism should be correlated to the procurement model. WSP was not provided with any information on the Phase I procurement analysis.

Given the capital-intensive nature of the proposed project and volatility of revenues with the bulk being subject to world demand and supply of the traded mining commodities, it is unlikely that investors would take on demand risk, which by nature decreases the certainty of future cash flows and increases the overall risk profile of the asset. For a project to be financed off-balance sheet via project finance, highly certain cash flows at the project level are required. To understand the feasibility of Phase I, a Project Finance Initiative (PFI) / Project Agreement type analysis should be investigated which is availability based, meaning that demand risk is neutralized with revenue provided from the contracting authority (i.e., typically the public sector). The characteristics of availability type and PFI initiatives are as follows:

- Fixed availability payment (i.e., independent of usage of the infrastructure) for equity investors to cover debt service and required equity return and variable usage payment which is typically pass-through to the contracting authority
- Contracting authority makes payments to the private sector based on key performance indicators being satisfied
- Contracting authority (and not the private sector) takes on demand risk

By neutralizing demand risk via a PFI, this would allow the SPV to transfer out the revenue risk by allowing to fix its future cash flows, thus decreasing the overall residual risk, and allowing for more competitive financing terms and thus increasing the overall project viability. The magnitude of the private sector investment is based on the size of the availability payment.

6 CONCLUSION, ADDITIONAL CONSIDERATIONS AND NEXT STEPS

6.1 CONCLUSION

In sum, our base analysis indicates the proposed La Grande Alliance Project is not financially viable. The results are reflective of high capital costs and relatively modest revenue during the operating phase of the proposed Project. As a result, the proposed La Grande Alliance Project requires substantial financial support to provide a compelling opportunity for the private sector to invest their capital.

It should be noted that the financial analysis provides guidance from a financial point of view only. The analysis is not reflective of the value created from social and economic benefits, which should be considered during an overall study evaluation. Leveraging these benefits to improve economic performance as well as potential next steps are addressed below.

From an economic (and financial) net benefit standpoint, there is the potential for La Grande Alliance to create greater economic benefits (and financial cash flows) if total freight volumes grow faster than the base case assumptions. Greater growth for rail infrastructure in northern Quebec would result from increasing demand (from increased shipped throughput tonnage or increased selling price per tonne) for resources that are deposited in this resource-rich area. Prior to making Capex decisions to increase production, mining companies will ensure appropriate rail service capacity exists that is cost-effective, reliable, and safe. As the viability of the infrastructure relies heavily on the mining sector, their rate of growth is of central importance. Faster growth would increase proportionally additional net economic and social benefits, supporting the rational for both capital and operating funding (e.g., direct grants, annual subsidises, etc.).

6.2 ADDITIONAL CONSIDERATIONS AND NEXT STEPS

Given the conceptual nature of this study, there are several uncertainties and limitation to the analysis. On the basis the proposed Project will continue to advance we propose a series of next steps to raise the proposed Project’s prospects. Taken together, these recommendations constitute appropriate actions needed to appraise the merits of this potential investment more precisely.

- Undertake a Procurement Options Analysis (POA) to decide which procurement strategy best fits the need of the proposed Project. This is a typical mandated policy requirement for large public sector capital procurement. As described in Section 2, the identified options are evaluated to estimate their financial impact from the perspective of the public entity (i.e., costs are compared to determine the procurement approach with the greatest value for the public). Different options contain different payment flows, allocation of risks, opportunities for innovation, financing requirements, etc. As such it is critical that the implications of each option are well documented and understood by La Grande Alliance stakeholders. Typically, a separate report is developed for the POA and Value for Money to capture the qualitative and quantitative analysis on a risk-adjusted basis.
- Undertake Market Sounding dialogues with relevant participants (i.e., large construction contractors, operators, financers) to gather information about the interest, opportunities and challenges associated with the proposed Project. Given the very large capital cost and complexity, a series of market sounding is needed to provide an understanding of the proposed Project’s marketability, risk allocation, market constraints and delivery model preferences. Typically, a preliminary market sounding is conducted to understand the market opportunity at a high level. Standard questions include:
  - What is a realistic time frame for the proposed Project?

- What is the likely financing approach for the proposed Project?
- Are there any factors that would include one's decision to participate in the proposed Project?

After these initial dialogues, more intimate discussions are held with interested parties to gather more detailed information. Questions at this stage are more customized (as opposed to being generic in the preliminary market sounding) and can include:

- What types of challenges and risks does one foresee during the construction period?
- What is the minimum equity contribution that would make the proposed Project attractive?
- What capital structure is best for this proposed Project?

All of the information gathered, including key themes and messages is also developed as a separate, stand-alone report.

- Advance the Risk Analysis to estimate the value and allocation of risks. The objective of the risk valuation is to value the proposed Project risks to develop two fully costed (i.e., risk-adjusted) delivery models to determine the optimal procurement method. The allocation of risks will be different depending on the selected procurement model. The risk valuation process relies on a series of risk workshops to identify, describe, allocate, quantify, and mitigate all potential risks. During the workshops, participants review the allocation between the public and private sectors and provide the inputs (probability of occurrence and consequence/impact) required for quantification. The risk valuation analysis is comprised of a risk matrix and statistical simulations to determine risk distributions.
- Continue engagements with government partners to discuss optimization opportunities to improve the economic and financial viability. This can include identifying potential sources of funds, demonstrate economic, social and environmental advantages, potential land-use integration (where applicable) and other strategies to reduce required subsidies or increase revenue (where applicable).
- Continue community relations work as more information about the proposed Project becomes known and communicated. This includes landowners, first nations communities (especially vulnerable communities and businesses), environmental groups and various levels of government. It should be noted that stakeholder engagement is an ongoing process commencing at the proposed Project's earliest phase and continuing throughout the entire life of the proposed Project. The initial community dialogues completed as part of the market study did not generate a good response rate (but did provide a starting point). Further dialogues are encouraged in a proactive, transparent, and participatory manner to advance the proposed Project.
- Explore strategies to reduce capital and operating costs. As the cost estimate was carried out at an order of magnitude level, there are opportunities for cost reduction. Value Engineering is the method typically employed to optimize the value of the proposed Project. Successful value engineering is predicated on cross-functional collaboration involving all key stakeholders (project sponsor, other government officials, suppliers, technical teams, etc.)