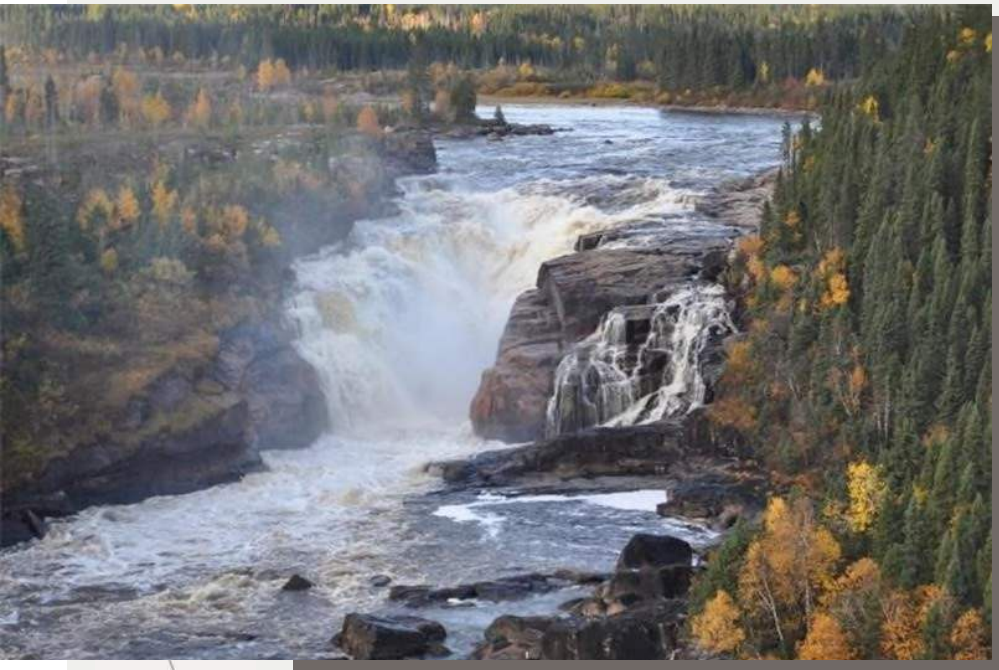
LA GRANDE ALLIANCE

CREE DEVELOPMENT CORPORATION
Respect · Collaboration · Strength

Transportation Infrastructure Program
Feasibility Study, Phase I

VOLUME 1 - INTRODUCTION



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2023-04-14

Vision Eeyou Istchee
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Stantec ▪ DESFOR ▪ SYSTRA
with subconsultant KPMG

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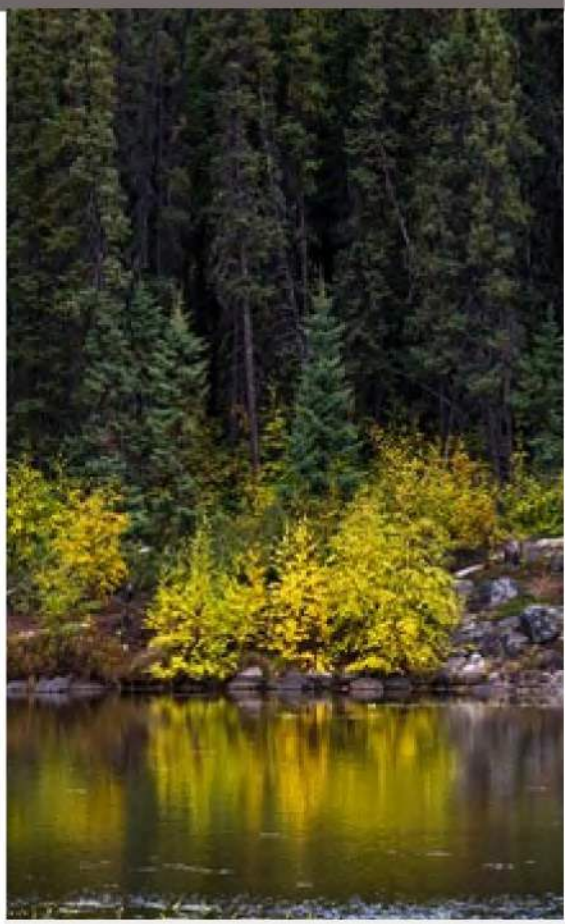
Prepared by:

Christopher Salhany, P. Eng.
Deputy Project Director, VEI

Reviewed by

Alessandro Cirella, P. Eng.
Project Director, VEI



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Transportation Infrastructure Program Feasibility Study, Phase I

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1. GLOSSARY

English	French	Cree	Definition
Analysis	Analyse	Dibaapjikin	
Approach	Approche	Ayshkinwapdiknooj	
Acquisition	Acquisition	Kowdinjeyn	
Axle load	Charge d'essieu	Oudaapeyn	The axle load is the total weight of vehicle/locomotive divided by the number of axles. The axle load is used to govern the weight limit applied to trains passing over a railway line.
Ballast	Ballast	Oudaach	Track ballast forms the track bed upon which railroad ties (sleepers) are laid.
Bond	Obligation		A bond is an interest-bearing security issued by governments, companies and some other organizations. Bonds are an alternative way for the issuer to raise capital to selling shares or taking out a bank loan. Like shares in listed companies, once they have been issued bonds may be traded on the open market. A bond's yield is the interest rate (or coupon) paid on the bond divided by the bond's market price.
Boundaries	Limites	Cheshjenawadgecheykin	
Capital	Capital		A firm's ASSETS are known as its capital, which may include fixed capital (machinery, buildings, and so on) and working capital (stocks of raw materials and part-finished products, as well as money, that are used up quickly in the production process). Financial capital includes money, BONDS and SHARES.
Catenary	Caténaire	Oudaabaanwaashdaakneyyaabee	A catenary is a system of overhead wires used to supply electricity to a locomotive that is equipped with a pantograph.
Centralized traffic control (ctc)	Commande centralisée de la circulation (ccc)	Aanetshkaatnaanooj	Centralized traffic control (CTC) is a form of railway signalling and consolidates train routing decisions that were previously carried out by local signal operators or the train crews themselves.
Chainage	Chaînage	Aachesschinwaapdiknooj meskinaatch	The relative distance, in kilometres, measured along the track centreline between datum and the current position. It is also known as kilometric position or station.
Clearance	Dégagement	Iiwaadgeaapeein	The clearance outline is the minimum height and width of tunnels and bridges to allow for the safe passage of rolling stock. In addition, the term may apply to the minimum distance to railway platforms (passenger or freight), buildings, electrical equipment boxes, railway

English	French	Cree	Definition
			signal equipment, third rails or to supports for overhead lines from the track.
Community	Communauté	Eeyoueedowwin	
Community information officer	Agent d'information communautaire	Dipaachmoosoo	It is the recently nominated Cree person of each community that oversees the study of Phase I in order to inform their communities about the study and keep the flow of information between the CIOs, EDOs, CDC and the consultant, especially the Liaison Officers.
Concern	Préoccupation	Eeyiimeydimheewowin	
Confidential	Confidentiel	Kinwheydimaasoowin	
Consent	Consentement	Neehiidimoowin	
Consultation	Consultation	Tipaachjimoowin	
Consumption	Consommation		Goods and services that people procure. Consumption can be broken down into private and public consumption. Gross domestic product is composed of consumption, investment, imports and exports.
Continuously welded rail (cwr)	Long rail soudé (lrs)	Ouutaapaan meskino	Rails that are welded together to form very long continuous strands of rail without any joints.
Corrugated steel pipe (csp)	Tuyau en tôle ondulée (tto)	Beopskkiiyaabee	Pipes made of rolled steel sheets with corrugations that give them strength.
Cost	Coût	Iiditstaakooj	
Cost of capital	Coût du capital		The amount one must pay the owners of CAPITAL for the privilege of using it. This includes INTEREST payments on DEBT. When deciding whether to proceed with a project, calculations of whether the project is likely to generate sufficient revenue to cover all the costs incurred, including the cost of capital are performed.
Cost-Benefit analysis	Analyse avantages-coûts		A method of reaching economic decisions by comparing the costs of doing something with its benefits. With careful selection of the assumptions used in cost-benefit analysis it can be made to support, or oppose, almost anything. This is particularly so when the decision being con templated involves some cost or benefit for which there is no market PRICE or which, because of an EXTERNALITY, is not fully reflected in the market price. Typical examples would be a project to build a hydroelectric dam in an area of outstanding natural beauty or a law to require factories to limit emissions of gases that may cause ill-health.

English	French	Cree	Definition
Criteria	Critère	Naadoowheydaaktch	
Crossover	Traversée-jonction	Aashshooweskkinnoo	Generally composed of two turnouts of the same hand and a closure panel, and which is used to permit a train to move onto the other track in double track territory.
Culvert	Ponceau	Sheebeeshbeeyobsk	A tunnel or pipe carrying a stream or open drain under a road or railroad.
Curve	Courbe	Aawhyyoomj	
Cut	Déblai	Maadsh	The excavation from existing ground level needed to reach the bottom of railway track bed.
Data	Donnée	Messinaaheekin	Facts and statistics collected together to be examined and considered and help decision-making of for reference or analysis.
Demand	Demande		The relationship between the price of a good and the amount economic agents are willing to consume at different prices.
Derail	Dérailleurs	Bitdoodepyoou	A derail or derailer is a device used to prevent fouling of a rail track or collision with anything present on the track, by unauthorized movements of trains or unattended rolling stock.
Design	Conception	Dipssinaaheekin	
Develop	Développer	Cheowshdaakkinnooj	
Discount rate	Taux d'escompte		How much less is a sum of MONEY due in the future worth today? The answer is found by discounting the future cashflow, using an INTEREST RATE that reflects the fact that money in future is worth less than money now, because money now could be invested and earn INTEREST, whereas future money cannot. FIRMS use discounted cashflow to judge whether an INVESTMENT project is worthwhile.
Ditch	Fossé	Biddooeyyeskaanoo	
Dumper	Culbuteur	Waabinchessoo	A rotary car dumper is a mechanism used for unloading certain railroad cars such as hopper cars, gondolas or mine cars.
Earthwork	Terrassement	Ischeeaabidseewin	Earthworks are engineering works created through the processing of parts of the earth's surface involving quantities of soil or unformed rock.
Economic	Économique	Shooyaan aadipbaapdikaanooj	
Electrification	Électrification	Owwyaabaakoomdiknooj waashdaaknaayaabee	A railway electrification system supplies electric power to railway trains and trams without an on-board prime mover or local fuel supply.

English	French	Cree	Definition
Embankment	Plateforme		A raised bank to carry a road or railway across a low-lying or wet area.
Engagement	Engagement	Aanidgekaadoonaanoj	The way to consult stakeholders and rights holders that involves a deeper participation then just informing them.
Engineer	Ingérieur	Kaaksdaat	
Environmental	Environnemental	Kenwhydiknoojeshjii	
Estimate	Estimer	Aadipidshkohnooj	
Exhaustive	Complet, complète	Cheyshdoodiknoo	
Externality	Externalité		An economic side-effect. Externalities are costs or benefits arising from an economic activity that affect somebody other than the people engaged in the economic activity and are not reflected fully in PRICES. For instance, smoke pumped out by a factory may impose clean-up costs on nearby residents; bees kept to produce honey may pollinate plants belonging to a nearby farmer, thus boosting his crop. Because these costs and benefits do not form part of the calculations of the people deciding whether to go ahead with the economic activity they are a form of MARKET FAILURE, since the amount of the activity carried out if left to the free market will be an inefficient use of resources. If the externality is beneficial, the market will provide too little; if it is a cost, the market will supply too much.
Factors of production	Facteurs de production		The ingredients of economic activity: land, labour, capital and enterprise.
Feasibility	Faisabilité	Aanaandoowheyyaapdiknooj	A feasibility study is an assessment of the practicality of a proposed project. It aims to objectively and rationally uncover the strengths and weaknesses of a proposed venture and the resources required to carry through, and ultimately the prospects for success.
Fieldwork	Travail de terrain		Scientific or technical work that is not carried out in an office.
Fill	Remblai	Shaaksjindaa	
Fixed cost	Coûts fixes		Production costs that do not change when the quantity of output produced changes, for instance, the cost of renting an office or factory space. Contrast with variable costs.
Footprint	Empreinte des travaux		Surface occupied by construction
Freight	Marchandise	Ouudaapehtdaakin	Freight is the general term for goods transported from one place to another.

English	French	Cree	Definition
Future	Futur	Neeshdaampj	
Gradient	Pente	Iishinnaakooj goh	Also called slope, incline, grade, mainfall, pitch or rise. It refers to the tangent of the angle of a surface to the horizontal.
Grande (great) alliance	Grande alliance	Neeshtaammaadookj	
Heavy haul railway	Chemin de fer de transport lourd	Koosookaateypaan	A heavy haul railroad is defined as one that meets at least two of the following requirements: - Operates trains of at least 5 000 metric tonnes. - Hauls revenue freight of at least 20 million gross tonnes per year over a given line haul segment comprising at least 150 km in length. - Operates equipment with axle loadings of 25 tonnes or more.
Hi-rail	Véhicule rail-route	Eeshpookaagindehpen meskino	A road vehicle that is equipped with special equipment allowing it to travel on railway tracks.
Highly sensitive area	Zone très sensible	Neeshteyyiidiknoo	
Impact - positive impact - negative impact	Impact - impact positif - impact négatif	Jikmaakheewow naandoo, jekweejheewow naandoo	
Identify	Identifier	Iitskaaneysheed	
Inclusion	Inclusion	Ishditchmaakinnoo	
Indexation	Indexation		Price adjustments for keeping pace with inflation. It allows diffrent prices to be compared in time.
Inflation	Inflation		Rising PRICES, across the board. Inflation means less bang for your buck, as it erodes the purchasing power of a unit of currency. Inflation usually refers to CONSUMER PRICES, but it can also be applied to other prices (wholesale goods, WAGES, ASSETS, and so on). It is usually expressed as an annual percentage rate of change on an INDEX NUMBER.
Inform	Informer	Jekweedimwaakinoo	
Infrastructure	Infrastructure	Cheywishdaaknooj	
Interest	Intérêt		If a deposit account of $100 earns an INTEREST RATE of 10% a year, then at the end of the year the account will contain $110. If all of that money is left in the account, then the 10% interest will be paid on the $110, so at the end of the second year $11 of interest will be added, making $121 in all. This is known as compound interest.

English	French	Cree	Definition
			By contrast, SIMPLE INTEREST pays the 10% only on the original sum in the account.
Interest rate	Taux d'intérêt		The interest rate is a means of reflecting the OPPORTUNITY COST of tying up money in the investment project. To test whether an investment makes economic sense the INCOME must be discounted so that it can be measured against the costs. If the present value of the benefits exceeds the costs, the investment is a good one.
Issue	Enjeu	Yiimiidimheewowin	
Jointed rail	Rail éclissé	Inshkwaadaabaanmeskino	Rail sections that are bolted together leaving a small gap in between.
Kilometre post (kp)	Point kilométrique (pk)	Dibaapjikin	A kilometre post is a numbered marker placed on a route such as a road, railway line, canal or boundary. They indicate the position on the route relative to some datum location.
Level crossing	Passage a niveau	Aashoopeenaanooj	A level crossing is an intersection where a railway line crosses a road or path.
Liaison officer	Agent de liaison	Dipaachmoosoo	
Locomotive	Locomotive	Ooudaabaan	A locomotive or engine is a rail transport vehicle that provides the motive power for a train.
Mainline track	Voie principale	Ooudaabaanmeskino	
Maintenance of Way (MOW)	Entretien de la voie ferrée (EVF)	Ohyaashdoodiknoomeskino	The upkeep and repair of a railroad's fixed property (eg. track and bridges).
Manage	Gérer	Dibeydiknoo	
Market study	Étude de marché	Dipidshkohtdiknoo	
Memorandum of understanding	Protocole d'entente	Nishdoodaatnaanoo	
Million Gross Metric Tonnes per Annum (MGTPA)	Millions de tonnes métriques brutes (MTMB)	Mishtimshteemeenaahoowin	It is a measure of the annual tonnage carried by the train and the weight of the train itself over a section of track
Million Metric Tonnes per Annum (MTPA)	Million de tonnes par année (MTPA)	Mishtimshteemeenaahoowin	It is a measure of the annual tonnage carried by the train over a section of track
Ministry of Transportation	Ministère des Transports de Québec (MTQ)	Beemoodowooujimmow	

English	French	Cree	Definition
of Quebec (MTQ)			
Mitigation measure	Mesure d'atténuation ou mesure de mitigation	Owwyaashdoodiknooj	
Multiplier	Multiplicateur		Shorthand for the way in which a change in spending produces an even larger change in INCOME. For instance, suppose a GOVERNMENT loosens FISCAL POLICY, increasing net PUBLIC SPENDING by pumping an extra $10 billion into education. This has an immediate effect by increasing the income of teachers and of people who sell educational supplies or build or maintain schools. These people will in turn spend some of their extra money, putting more cash into the pockets of others, who spend some of it, and so on.
Net present value	Valeur actuelle nette		A measure used to help decide whether or not to proceed with an INVESTMENT. Net means that both the costs and benefits of the investment are in cluded. To calculate net present value (NPV), first add together all the expected benefits from the investment, now and in the future. Then add together all the expected costs. Then work out what these future benefits and costs are worth now by adjusting future cashflow using an appropriate DISCOUNTRATE. Then subtract the costs from the benefits. If the NPV is negative, then the investment cannot be justified by the EXPECTED RETURNS. If the NPV is positive, it can, although it pays to make comparisons with the NPVs of alternative investment opportunities before going ahead.
Network	Réseau	Eeyimhoowaakin	
Opportunity	Occasion	Weejheewowin	
Plan	Plan	Ouwhyshdaaknoo	
Port, deep sea port	Port, port en haute mer	Mishtaacheemaan aamishaakaamakitch	
Preliminary corridor	Corridor préliminaire	Cheydaapaakoomch meskino	
Project	Projet	Chowwishdaaknooj	
Protected area	Aire protégée	Chaanaakidweydicknooj ishtchee	
Quantitative	Quantitatif	Maamoo	
Radius	Rayon	Chiispyigshkaaj	A radius is a straight line or distance from the center to the edge of a curve. For a railway, a curve with a larger radius would allow for trains to travel at faster speeds, but generally requires more space.

English	French	Cree	Definition
Rail car	Wagon	Ouudaabanj	
Rails	Rails	Oudaabanmeskino beeobsk	The steel rails on which the train rolls. Serves to transfer loads to the railway ties and to control the direction of the train.
Railroad, railway	Chemin de fer	Oudaaban meskino	
Recommendation	Recommandation	Gohdeydiknooj	
Report	Rapport	Dipaajimoon	
Risk	Risque	Kooshdaatdikoon	
Right holder	Détenteur de droit	Ooujimmow	
Right-of-way (row)	Emprise ferroviare	Neeshdimchaabimbead	A right to make a way over a piece of land. Railroad rights-of-way (ROW) are generally considered private property.
Road	Route ou chemin	Meskino	
Roadbed or subgrade	Plateforme	Meskinaakaan	
Rolling stock	Matériel roulant	Ouudaabaan	The term rolling stock in the rail transport industry refers to railway vehicles, including both powered and unpowered vehicles.
Shoulder	Épaulement	Niimdaatch	A shoulder is part of the ballast or sub-ballast cross section, placed at the edges of the cross section.
Siding track or passing track	Voie d'évitement	Meeyowhoomeskino	A track other than the mainline track, used for parking vehicles or allowing trains to pass each other.
Span	Travée	Ashshinaaktch	Span is the distance between two intermediate supports for a structure (eg. the span of a bridge).
Stakeholder	Partie prenante	Kaaweedgedaat	For any decision or action, a stakeholder is anyone who is affected by, or can influence, that decision or action. More broadly, it can also be a person, group, organization or government with an interest or concern in a particular measure, proposal or event.
Stockpile	Pile de stockage / aire de stockage	Eewadgechaagone	A large accumulated stock of materials, typically referring to a stock of ballast, granular, or other materials required for the construction of a railway.
Structure	Structure	Aabidseekoomk	
Stub-end track	Voie d'embranchement en cul-de-sac	Eewaashshoonmeskino	A track, usually similar to a siding, that is only accessible from one end. A dumping post is typically located at the non-connected side.

English	French	Cree	Definition
Study, studies	Étude, études	Aanaandoochesschiid iknooj	
Sub-ballast	Sous-ballast	Ouudaabaansinneesh	A layer of coarse-grained material or treated material provided between the subgrade and ballast. It ensures better distribution of loads, to perform as a filter layer between the subgrade layer and the ballast layer to protect the subgrade layer against erosion and frost, and to improve the bearing capacity.
Super-elevation or cant	Dévers	Ouudaabaanbeowbsk	The amount by which the outer running rail in a curve is raised above the inner running rail in the track cross section.
Survey	Sondage, inventaire	Aashikkopdiknooch	
Tangent track	voie droite	Oudaabaanmeskino dipheekin	The straight pieces of track that connect two curves.
Team	Équipe	Aabidseesooj	
Technical	Technique	Dipitchshkone eedoowin	
Ties (or sleepers)	Traverses	Ouudaabaan meskino aabidgehaakinch	Ties are the rectangular supports for the rails that transfer loads to the ballast and hold the rails at the correct gauge. Ties are laid perpendicularly and are generally made of wood, concrete or steel.
Track occupancy permit (top)	Permis d'occuper la voie (pov)	Ouudaabaan mishshinheekinsh	Authorisation issued to allow for track units and track work to occupy an active railway line.
Train	Train	Kobdew daabaan	
Train consist	Convoi de train / composition de train	Maamatchouudaaba ndge	The composition of train, including locomotives, wagons, hoppers, flatcars… etc.
Train performance calculator (tpc)	Calculateur de performance des trains (cpt)	Ouudaabaan dipheekin	A computer program used to simulate the performance of a train on a railway alignment.
Transport canada (tc)	Transports canada (tc)	Canada ouudaaban weeshoowaassoo	
Trans-shipment area	Aire de transbordement	Aajipcheenaanooj aashooboosedaassoo naanooj	An area where cargo or containers are moved from one mode of transportation (e.g.: truck or train) to another mode, while in transit to their final destination.
Turnout (or switch)	Aiguillage	Ouudaabaan aadinnaakin	Track component which enables trains to diverge from the track that is currently on.
Upgrade (road)	Réfection	Aaweeyaashdoodikno oj ouudaabaan meskino	

English	French	Cree	Definition
Validation, to validate	Validation, valider	Taapohcheyttaamowin	
Wayside equipment	Équipement en bordure de voie	Biddoodeyyaaskaanoo	Wayside equipment represents train interface equipment, usually physically located at or near a grade crossing. It is a source and destination for information for, or about, approaching trains and their crews.
Work	Travail	Aabidseewin	
Yard	Gare / cour de triage	Oudaabaanchaakinweydaaksitch	A rail yard, railway yard, or railroad yard is a complex series of railroad tracks for storing, sorting, or loading and unloading railroad cars and locomotives.

2. ACKNOWLEDGEMENTS

The Vision Eeyou Istchee team would like to thank the CDC, the ten Cree Communities of Eeyou Istchee, the Algonquin First Nations, the Jamesian municipalities, the Société du Plan Nord, the Gourvernement du Québec, the Société de Développement de la Baie James (SDBJ) and Sym Consultants for their trust in VEI's services to deliver this feasibility study.

In addition, we would like to thank all the collaborators, agencies, organizations, companies and suppliers who participated in any phase of this study. Attempting to list all of our collaborators would run the risk of forgetting some of them. Thank you all, because without your contribution, this study would not have been as complete.

Finally, we would like to thank the members of the Cree community, for their collaboration throughout the feasibility study.

3. LIMITATIONS AND RESERVATIONS

In accordance with the study's Scope of Work, this report responds to the Cree Development Corporation (CDC) Tender #2020-01 dated January 27, 2021, and does not constitute a legal document. This document, prepared by Vision Eeyou (VEI), is published in compliance with and under an agreement between VEI and the owner CDC for whom it has been prepared. It is limited to the issues raised by CDC in the request for proposals documents and has been prepared using the levels of competency and diligence normally applied by engineering, technical specialists and designers in the preparation of similar documents. This document is designed to be read as a whole, and its sections or parts should not be read, used or cited out of context. This confidential document is the property of the owner CDC and is intended only for use by CDC.

This report incorporates the observations and data collected by VEI to complete engineering analysis and design required for the Phase 1 Grande Alliance study. The results and analyses presented in this document are based on limited investigation methods, relying solely on, in some activities, visual observations. VEI will not assume any responsibility pertaining to any loss incurred by anyone as a result of unauthorized circulation, distribution, publication, reproduction or use contrary to the provisions of the current notice of this document.

This document relies on information, data, opinions and declarations received for the purpose of this report. VEI is not responsible for any damage caused as a result of the interpretation of such information.

Subsequent detailed studies conducted for the Project may result in analyses and conclusions which differ from those found herein. In addition, this document contains prospective financial information based on scope, hypotheses and schedule. Any changes to these underlying assumptions may impact the results and estimates provided in this document. All amounts in this document are stated in Canadian currency unless otherwise noted.

4. PROJECT TEAM

This feasibility report was prepared by Vision Eeyou Istchee , a consortuim composed of the following three firms, Stantec, Systra and Desfor. Founded in Canada in 1954, Stantec is a global engineering firm with 25 000 employees in 400 offices on six continents, including more than 1,500 professionals throughout the province of Quebec.

Their multidisciplinary engineering team relies on a solid knowledge of the environment and more than 65 years of know-how in: building, transport, energy, urban development, water treatment, telecommunications, physical and technological security, geotechnics and materials control, environment as well as in the fields of urban planning, urban design and landscape architecture.

SYSTRA Canada, member of the SYSTRA group, is an engineering and consulting firm whose primary focus is to offer transportation solutions for passengers or goods. SYSTRA Canada delivers innovative consulting, engineering and project management services in all fields of transportation, including track and infrastructure, rolling stock, railway operations, signaling and telecommunications, economic and financial studies, marketing, institutional and management consulting, as well as support services.

SYSTRA Canada has successfully carried out over 900 projects all over the world and is recognized for its comprehensive railway expertise, whether in the intercity and heavy rail sector, promoting its knowledge of North American standards and rules, or in passenger mobility, offering a full set of expertise and know-how.

The DESFOR group and its associated companies have been developing projects in partnership with the First Nations of Quebec and Labrador for over 25 years. It is a story of growth built on trust and integrity that has enabled the company to diversify. They have a remarkable know-how shared by their teams of professionals who accompany them in the realization of turnkey projects in remote regions. Their expertise in forestry, environment, and construction (civil engineering and building), as well as a wide range of complementary services, puts them at the forefront as a multi-resource partner.

The study group also included KPMG, responsible for the risk analysis of the project. KPMG's infrastructure advisory practice counts over 120 dedicated professionals in Canada and over 3,000 more around the world. Its Global Infrastructure Advisory (GIA) practice is a global leader in providing full lifecycle infrastructure delivery advisory services, having advised on the development and operation of hundreds of major infrastructure projects and assets around the world. KPMG assists clients in the screening, design, financing, planning, procurement, implementation, and monitoring of large scale infrastructure projects with multi-skilled professionals teams (with a broad range of backgrounds including financial advisors, Certified Asset Managers, Chartered Professional Accountants, Certified Management Consultants, Professional Engineers).

5. REPORT STRUCTURE

5.1 OVERALL REPORT TABLE OF CONTENTS

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- Volume 4 – Market Study
- Volume 5 – Risk, Economic and Financial Study
- Volume 6 – Appendices

6. WHAT IS LA GRANDE ALLIANCE

6.1 LA GRANDE ALLIANCE OBJECTIVE

La Grande Alliance refers to the Memorandum of Understanding (MOU) on the Cree-Québec Sustainable Infrastructure Program in Eeyou Istchee Baie-James, signed between the Cree Nation Government (CNG) and the Government of Québec on February 17, 2020. The purpose of the MOU is to provide a framework for Cree local and regional entities to work closely with relevant Québec government ministries to connect, develop and protect the territory of the Eeyou Istchee Baie-James region of northern Québec in an inclusive and participatory manner. The main objective of La Grande Alliance is to build a promising program for the strategic, predictable, and sustainable development of the territory over a 30-year time horizon.

La Grande Alliance consists of four avenues of future development – transportation infrastructure, communication, electrification, and protection – to devise a roadmap that takes into consideration innovative economic and technical opportunities and/or constraints, as defined by communities, land users and other relevant groups.

The Eeyou Istchee Baie-James region is rich in natural resources. However, historical development of these resources has resulted in projects often thrusted upon Indigenous and non-Indigenous communities alike, for whom the only option was to react. This scenario makes land use planning very challenging for communities and government officials, strategic transportation or energy infrastructure planning ambiguous for public services and government ministries, and investment by promoters of development projects risky and uncertain.

The link between transportation, communication and energy infrastructure and the potential for development is undeniable. The key, however, is to ensure that such infrastructure does not occur in environmentally or culturally sensitive areas. This is essential to avoid potential conflicts between development and the communities where this infrastructure is proposed to be built. Conversely, providing communities with the opportunity to contribute to the conception, planning, deliberation and evaluation of infrastructure, hand in hand with protection of some natural areas, has the potential for shaping the territory in an empowering way that brings long-term predictability to the region. In turn, this allows communities to plan their growth more easily, resources for protecting environment and wildlife to be deployed more efficiently, land use planners to work with more certainty, and investment by promoters and developers to be more secure.

The following report deals specifically with the transportation infrastructure component envisioned through the MOU.

6.1.1 The Client – Cree Development Corporation

In conformity with the MOU, the CNG has mandated the Cree Development Corporation (CDC) to conduct a series of studies to examine the economic, technical, and socio-environmental aspects of a series of proposed large transportation infrastructures envisioned over three phases spread over 30 years.

The CDC is the modernization of the James Bay Native Development Corporation, created through the *James Bay and Northern Québec Agreement* (JBNQA) to "assist, promote and encourage the creation, diversification or development of businesses, resources, properties and industries within the territory with a view to stimulating maximum economic opportunities for Cree people and contributing to their general economic well-being". Following the signature of La Grande Alliance MOU, the CNG mandated the CDC to carry out the Infrastructure Studies, part of which are the subject of this report.

6.1.2 Precursors to La Grande Alliance

The Agreements presented below allow the reader to better situate the MOU within the current legal framework in place in the region.

THE JAMES BAY AND NORTHERN QUÉBEC AGREEMENT

The JBNQA was signed on November 11, 1975, by the Government of Québec, the Government of Canada, Hydro-Québec, the Grand Council of the Crees of Québec and the Northern Québec Inuit Association. Described by many as the "first modern treaty", the JBNQA created a new legal and, eventually, constitutional framework for, among other things, local self-governance, land management, protection of the traditional Cree way of life as well as for the relationship between Québec and the Indigenous peoples of the James Bay and Northern Québec region. It was the foundation on which Crees laid over 80 subsequent agreements, regarding Cree rights, communities' self-governance and subsequent development of the territory.

THE PAIX DES BRAVES

The *Agreement respecting a new relationship between the Cree Nation and the Government of* Québec (better known and herein referred to as *Paix des Braves),* signed in February 2002 is a Nation-to-Nation Agreement between the Government of Québec and the Crees of Québec. The Agreement is not meant to replace the JBNQA, but rather to build a "development model based on the principles of sustainable development, partnership and respect for the traditional way of life of the Crees, as well as on a long-term economic development strategy, principles which are in conformity with (its) provisions." The Agreement includes specific modalities with regards to mining, forestry, and hydroelectric development on the territory, seen as the three sectors driving the regional economy at the time of signing. Furthermore, the Agreement is meant to provide greater autonomy to the Crees in the manner in which communities will develop in the future. Henceforth, development occurring on Cree traditional lands requires meaningful participation of the Crees at multiple levels, as well as benefit sharing frameworks that see Crees as more than simple stakeholders.

Other Government Policies

In addition to the Agreements presented above, the Northern Action Plan, proposed by the Government of Québec in May 2011, is a 25-year economic development program for the northern regions of Québec based on "sustainable development" which is intended to focus on the construction of transportation infrastructure, mining, and the development of renewable energy projects.

6.1.3 Transportation infrastructure study

The following components were the initial transportation infrastructures considered as part of the studies:

6.1.3.1 Phase I (1-5 years)[1]

- 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, the Billy-Diamond Highway (BDH) starting from the town of Matagami to the km 257 of the BDH (Rupert River Bridge).
- Railway: Grevet to Chapais

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

6.1.3.2 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: upgrading & extension to the Trans-Taiga Road

  Upgrading and paving of the section from the Mistissini community access road to the Stornoway Renard Mine access road over an approximate distance of 204 km;
- Extension towards north to connect with the Trans-Taiga Road near km 408, over an approximate distance of 172 km.
- Road: La Grande to Whapmagoostui/Kuujjuarapik

  A proposed road corridor connecting Chisasibi community access road and Whapmagoostui/Kuujjuarapik, over an approximate distance of 207 km.

[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.

6.1.3.3 Phase III (16-30 years)

- Railway: La Grande to Whapmagoostui/Kuujjuarapik

  A railway which follows, as much as possible, the projected road leading to Whapmagoostui/Kuujjuarapik (from the junction with the Phase II railway alignment).. The Phase III railway alignment extends over an approximate distance of 219 km.
- Port: at Whapmagoostui/Kuujjuarapik

  A deep-water port along the Kuujjuarapik coastline between the Great Whale River's mouth and the entrance of the Manitounuk Strait.

6.1.4 Study Vision and approach

The studies found herein have put **local communities at the centre of the transportation infrastructure development process. This way of working, initially proposed by the CDC, strives to shift the dominant paradigm away from natural resources as the main lever of development, towards community development. Natural resource development remains a vital element to this equation but is no longer the sole driver. In this sense, La Grande Alliance goes beyond a standard regional transportation plan but rather proposes a new model** for how the Cree and the Jamesian populations can work together to sustainably develop the existing network, thereby allowing the movement of natural resources in a manner that promotes the betterment of all.

The Feasibility Studies attempt to seek out and understand ways in which the proposed transportation infrastructures can improve the communities' quality of life. Transportation corridors are explored with the utmost respect for the land, its inhabitants, and Cree heritage. In this sense, the study fully embraces the concept of sustainable development, such that the infrastructures under study can only proceed if they are feasible from a technical, environmental, and economic perspective. Furthermore, it is understood that, to proceed, the proposed infrastructures will require the social acceptability of all communities in the region.

The Client's requirement to involve Cree and Jamesian communities at such an early stage of development reflects their requirement that local stakeholders be actively involved in the planning and management of land and economic development in Eeyou Istchee Baie-James. The organization understands that Eeyou Istchee Baie-James is extremely rich in natural resources, but firmly believes that it must not be seen simply as a source of raw materials for resource exploitation. The CDC is clear that development of the territory must be in accordance with traditional customs and founded on values of respect and gratitude to the land. Finally, it rejects the idea that infrastructure development and environmental protection are opposing, but rather are both key to harmonious development of a territory and its people.

6.1.5 Study Objectives

Understanding the value created through the development of an inclusive and comprehensive infrastructure program will generate stability and allow communities to better access opportunities associated with various aspects of regional development. The challenges and uncertainty created by climate change and geopolitical instability make community participation even more critical.

Therefore, several study objectives have been developed:

1. To better understand the implications, risks, and opportunities related to the various infrastructures contemplated in the study;
2. To maximize connections between communities and the main drivers of economic development in the region, throughout the territory;
3. To identify transportation corridors that concentrate the development footprint, so as to limit environmental impacts elsewhere, in a manner that is in harmony with other land use activities on the territory;
4. To minimize the emission of harmful greenhouse gases in the construction, operation and use of future infrastructure developments on the territory;
5. To identify opportunities to create meaningful jobs for the inhabitants;
6. To understand how to balance infrastructure development with environmental protection as well as the preservation and enhancement of Cree culture for the benefit of future generations.

Although an Opportunity Study was not previously carried out, CDC has included, as part of this mandate, the need to better define the purpose of the studied infrastructures in the three phases of the La Grande Alliance Study.

6.1.6 Context of the study

For thousands of years, the Crees of Eeyou Istchee have lived off the land through hunting, fishing, and trapping. This large territory of 450,000 km² is now inhabited by around 22,000 people divided mostly in ten [2] Cree communities, five of which are located along the east coast of James and Hudson Bays: Waskaganish, Eastmain, Wemindji, Chisasibi and Whapmagoostui. The remaining five are inland communities: Waswanipi, Nemaska, Oujé-Bougoumou, Mistissini, and Washaw Sibi[3]. Whapmagoostui is currently the only community not yet accessible by road.

The gap between the social and economic conditions of Indigenous and non-Indigenous people in Québec continues to be a major social problem. Issues continue to be insufficient housing, chronic unemployment and underemployment, low formal education levels and a flawed and heavily biased justice system. To combat these problems, many communities are implementing strategies that emphasize self-governance, autonomy, history, culture, spirituality, and identity. In this sense, many Crees believe that true economic development must grow from these elements and cannot be in opposition to them.

Changing climatic conditions, rapid demographic growth, and a growing interest in the resource potential in northern territories are all exerting pressure on Cree communities. Today's choices will no doubt influence the lives of future generations.

The Feasibility Studies are carried out in each community within the study area utilizing a network of Grande Alliance Community Information Officers (CIO). CIOs have been appointed by their communities to act as the local antennas of LGA, to ensure participation and engagement in the studies, and to confirm that issues and concerns

[2] An eleventh community, known as "MoCreebec" is composed of JBNQA Cree beneficiaries who live on the west side of James Bay, mostly in Moose Factory and Moosonee, Ontario.

[3] The Washa Sibi community is recognized by the Crees but is not necessarily legally recognized by the Québec government. In the lens of the study, the community of Washaw Sibi was considered equivalent to all other participating Cree communities. The study team does not allude to make any legal statements regarding their status, but this is rather an initiative to be as inclusive as possible.

raised by Cree communities are heard and addressed in the studies. These positions are funded through the CDC.

Jamesian communities, for their part, are relatively newcomers to the territory. However, recent governance agreements signed between them and the Crees show that they form an integral part of the territory and have an important voice in its future development. Although the La Grande Alliance Transportation Infrastructure Feasibility Studies are a Cree initiative, the CDC has made it clear that any discussions about future programs need to include Jamesian communities and their concerns. The study therefore assumes that a successful program will require the active support of these communities as well. To this end, communications have been established with each of the Jamesian communities within the broad study area through their respective municipal administrations.

7. THE PHASE 1 MANDATE

7.1 INTRODUCTION

Infrastructure development is a major element of La Grande Alliance. The mandate of the infrastructure program is divided into three (3) phases and VEI is conducting a Feasibility Study for Phase 1 of La Grande Alliance Infrastructure Projects Studies. Phase I of the Infrastructure work includes the following elements:

- Upgrades to the access roads between the Billy-Diamond Highway and the Cree communities of Waskaganish, Eastmain and Wemindji.
- Upgrade to the access road between the Route du Nord and the Cree community of Nemaska.
- A railway line following, as much as possible, the Billy-Diamond Highway between the town of Matagami and KM257 (Rupert River bridge) of the Highway.
- A return to service for the railway line between Grevet (Lebel-sur-Quévillon) and Chapais (approximate distance of 225 km).
- Trans-shipment areas along the Billy-Diamond Highway and the Grevet-Chapais railway corridors, specifically one located at KM257.

To achieve the stated objectives of the Feasibility Study for Phase I — Infrastructure, six (6) specific tasks are identified below:

7.2 TASK 1 – BACKGROUND RESEARCH, STRATEGY PLANNING AND PROJECT MANAGEMENT

This first Mandate task involves the elaboration of a detailed strategy to execute the subsequent tasks of the Mandate. It includes a communication strategy for working with representatives of the Client as well as with La Grande Alliance Community Information Officers (GACIOs). In this task, Vision Eeyou Istchee Consortium (VEI) is responsible for:

- Maximizing the participation of Cree workers in all parts of the Feasibility Study;
- Developing and implementing a Health and Safety Plan;
- Procuring all necessary permits for any of the work to be carried out for the Mandate that may impact the natural environment for which a permit is required;

7.3 TASK 2 – MARKET SURVEY

This second Mandate task involves a market survey of the potential regional economic sectors that could be serviced by the proposed infrastructures and an outline of what is required to foster future growth. In this task, VEI is responsible for:

- Providing a detailed economic profile of the region and its population;
- Collecting data necessary to identify potential growth areas as well as activities potentially serviced by the proposed infrastructure;
- Building a regional economic model that includes growth projections, railway traffic projections, analysis of status quo and the production of a final market survey report.

7.4 TASK 3 – TECHNICAL FEASIBILITY STUDY

This Mandate task includes all relevant engineering work necessary to evaluate the feasibility of the infrastructures proposed in Phase I. The first action in this task is to produce an Interim Report that includes most importantly a recommendation for the initial corridor for the BDH km 0 — km 257 railway based on the data compiled from the field campaigns, as well as any information received from consultations with the GACIOs and/or Cree land users. Moreover, VEI is responsible for:

- Planning technical field work, conducting visual surveys, interpreting photos, calibrating and validating LIDAR imagery, preparing documentation for geotechnical sampling work along BDHR and preparing an inventory of aggregate materials;
- Collaborating with the GACIOs via workshops and meetings and maximizing the participation of Cree human resources in the field work;
- Preparing preliminary recommendations related to design, operation and maintenance of the railway infrastructure (for freight and passenger traffic) based on the results of the market survey and field work;
- Producing timelines and overall costs involved in the construction of the infrastructure.

7.5 TASK 4 – SOCIO-ENVIRONMENTAL FEASIBILITY STUDY

This Mandate task requires a full analysis of the different social and environmental issues that may affect the design, construction, and operations of the proposed infrastructure upgrades. This analysis includes:

- An extensive local engagement with the communities affected by the infrastructure upgrades proposed in Phase I;
- Data collection and identification of the project's impact on Cree land use, archeology and cultural heritage, land title or servitudes, protected areas, community health, flora and fauna, wildlife, watersheds, wetlands, and critical habitats, road traffic and Greenhouse Gas (GHG) emissions;
- A submission of a separate final report outlining the results of the various studies carried out as part of the Socio-Environmental Feasibility Assessment.

7.6 TASK 5 – CONTINGENCY/MITIGATION STRATEGY AND PLANNING

This Mandate task is included in the final Feasibility Study Report. It requires compiling all the information gathered from Task 2, Task 3 and Task 4 to identify the main risks involved in the work proposed in Phase I of the Infrastructure Upgrades of the Grande Alliance, as well as an initial list of recommendations to address these risks.

The purpose of this task is to present a general mitigation strategy to address issues in the project area. This strategy is based on clear principles and policies, and should be measurable over time through the use of simple metrics. These recommendations are developed in close collaboration with the GACIOs, who were intimately involved in their development.

7.7 TASK 6 – FINAL REPORT AND COST EVALUATIONS

This final task consists of producing a Final Report that includes all major design recommendations based on the compilation of results as well as various consultations carried out with the GACIOs. For the components listed in Tasks 2-5 for which a separate stand-alone report is submitted, the Final Study Report includes a summary of the main findings of these reports, as well as clear references for the reader. The Final Report also includes, but does not limit to:

- An eye-level visual model of the railway at a minimum of three significant locations along the BDH corridor between km 0- km 257 as well as a minimum of two locations along the Grevet-Chapais line.
- A detailed financial and economic analysis of the proposed infrastructures, including the financial risks identified in Task 5, as well as any recommendations to mitigate these risks.

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