

VALLEY LINE WEST LRT

Advancing Urban Light Rail Transit in Canada



THE CANADIAN COUNCIL FOR PUBLIC-PRIVATE PARTNERSHIPS
2021 NATIONAL AWARDS CASE STUDY

The Canadian Council for
Public-Private Partnerships



Le Conseil Canadien pour
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The Canadian Council for Public-Private Partnerships
2021 National Award Case Studies

National Award Case Studies Gold Award for
Project Development: Valley Line West LRT, Alberta

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Introduction

For nearly 30 years, The Canadian Council for Public-Private Partnerships (CCPPP) and its members from the public and private sectors have played a strong role in refining the P3 model and promoting new approaches to infrastructure development and service delivery.

Governments across Canada are using the public-private partnership (P3) model to build, maintain and operate much-needed infrastructure, from schools and hospitals to bridges and highways. In 2021, there are close to 300 active P3 projects in operation or under construction valued at more than \$139.4 billion.

Along the way, the 'made-in-Canada' P3 model has become globally renowned but, as the winners of the 2021 National Awards for Innovation and Excellence in Public-Private Partnerships demonstrate, it has never stopped evolving.

This year, CCPPP is publishing three case studies on these exemplary projects, joining the more than 80 that have been published to date. Designed to inspire others to consider innovative and efficient models for procuring infrastructure, the studies highlight many of the lessons learned about P3s. Each case provides a close look at how a successful P3 has worked, including how the partnership was established, its structure and operation and its resulting benefits.

It is important to learn from these complex projects as we move forward. After all, investment in infrastructure is critical for the future of our communities and country because it creates jobs, drives growth, stimulates productivity, and builds a legacy for us to thrive.

Canadians want — and expect — critical infrastructure to be built quickly and with the best value for taxpayers. Using public-private partnerships is an advantage given their greater potential to offer a fixed price and on time delivery, risk allocation and improved life cycle maintenance and operations.

In 1998, CCPPP established the National Awards for Innovation and Excellence in Public-Private Partnerships to honour governments and/or public institutions and their private sector partners who have demonstrated excellence and innovation in P3s. Gold, silver and bronze Awards of Merit are given in the areas of project development, financing, infrastructure, service delivery or other notable attributes to projects from across the country and at all levels of government.

Winning projects are chosen on the basis of the following criteria:

- Innovative features;
- Relevance or significance as a national and/or international model;
- Economic benefit (job creation, enhanced economic value, export potential, etc.);
- Measurable enhancement of quality and excellence of service or project;
- Appropriate allocation of risks, responsibilities and returns between partners; and
- Effective use of financing and/or use of non-traditional sources of revenue.

2021 Award Winners



Cortellucci Vaughan Hospital, Ontario – Gold Award for Infrastructure

This \$1.3-billion project, the first hospital built in the City of Vaughan and the first net new hospital to be built in Ontario in the last 30 years, has a state-of-the-art emergency department, capacity for up to 350 beds with flexibility to expand, and is the first hospital in Canada to feature fully integrated smart technology, enabling systems and medical devices to communicate directly with one another. In February 2021, as it prepared to open, the hospital pivoted to temporarily become a system-wide resource supporting Ontario's COVID-19 response. From its initial opening until its full opening in June 2021, the facility cared for some of the highest volumes of COVID-19 patients in Ontario. The awards committee was impressed by how well the hospital pivoted ahead of its opening and the innovations deployed by the consortium to keep the complex project on time and on budget such as the use of prefabricated bathroom modules.

Partners: Mackenzie Health, Infrastructure Ontario and Plenary Health



Valley Line West LRT, Alberta – Gold Award for Project Development

This \$2.67-billion, 14-kilometre light-rail extension is the second stage of the City of Edmonton’s Valley Line. The design-build-finance project, which entered its RFP phase and reached financial close during the pandemic in 2020, bundles together design, system integration and construction into one contract. It also is the first to embed a community benefits agreement for a major capital project in Edmonton. With its 14 street-level stops and two elevated stations, the extension will help connect city neighbourhoods and reduce congestion, with LRT stops downtown at all major city hospitals and the city’s largest tourist attraction, West Edmonton Mall. Once the west line is operational, both stages of the Valley Line will operate contiguously with no transfer points or perceived break in service for passengers despite the fact both are being delivered using different P3 consortiums, noted the awards committee.

Partners: City of Edmonton and Marigold Infrastructure Partners



L.F. Wade International Airport Redevelopment Project, Bermuda – Gold Award for Infrastructure (International)

By using innovative thinking and Canadian P3 expertise, Bermuda was able to achieve what many small airports in the world have struggled to do — attract private sector investment to finance a major capital redevelopment. The US \$300-million project is the largest P3 infrastructure deal in Bermuda’s history. The bespoke government-to-government contract and guarantee mechanism, supported by an underlying P3 commercial and financing structure,

enabled the new 288,000-square-foot facility to meet the latest international standards while still dramatically lowering the project’s initial capital budget. In addition, the new terminal is infused with the latest technology. Built sustainably and factoring in the impacts of climate change, the terminal can now withstand windspeeds of 277 kilometres an hour — equivalent to a Category 5 hurricane. Playing a part in the revitalization of Bermuda’s economy, nearly US \$400 million in private investment was mobilized, more than 400 Bermudian companies were engaged, and 885 Bermudians worked on the project. The awards committee recognized the success of the project, which not only sets new standards internationally for others to follow but showcases Canadian companies and Canadian innovation on the world stage.

Partners: Government of Bermuda, Canadian Commercial Corporation and Aecon Concessions



New Adult Mental Health Addictions Facility, Newfoundland and Labrador – Silver Award for Project Development

This \$330-million project will help transform and destigmatize mental health and addictions treatment in Newfoundland and Labrador, reflecting the move away from an inpatient-centred model to one that balances care and healing close to home. The new 24,000-square-foot facility, co-located at the Health Sciences Centre in St. John’s, is replacing a facility constructed in the 1800s. It will house a 102-bed hospital and a new 60-bed hostel. Rooms will be oriented to capture daylight with windows designed to keep out the cold of the province’s blustery winter weather. Terraces will also have built-in snow melting systems. This design-build-finance-maintain project was one of the few P3s globally to close during the height of the pandemic, the significance of which was not lost on the awards committee. Lockdowns posed challenges for teams to travel to the island and led the partners to explore ways to optimize risk transfer to avoid supply chain issues and delays.

Partners: Government of Newfoundland and Labrador, the Eastern Regional Health Authority and Avalon Healthcare Partnership



GO Rail Expansion, Highway 401 Rail Tunnels, Ontario – Silver Award for Infrastructure

This \$132-million design-build-finance project created twin tunnels under 21-lanes of traffic, without disrupting travel on the busiest highway in North America and the world's busiest truck route — a significant achievement that was recognized by the awards committee. Completed in July 2021, the tunnels will increase capacity on the GO Kitchener Rail Corridor as part of Metrolinx's GO Rail Expansion program. The new 176-metre twin tunnels beneath the access ramps of Highway 401 and Highway 409 will enable the simultaneous passage of two trains travelling in opposite directions without any speed restrictions. The project sets a new standard for tunnel construction and design in Canada, using a new-to-Canada auger borer, as well as a pipe roof system that helped drastically minimize risk, speed up the schedule and protect workers. A sequential excavation method rather than traditional cut-and-cover tunnelling also helped avoid traffic disruption and a complex network of monitors tracked any deviations in the highway and surrounding soil as a safety precaution.

Partners: Infrastructure Ontario, Metrolinx and Toronto Tunnel Partners

Acknowledgements

CCPPP has a team of dedicated Award selection committee volunteers who review the applications, select the winners and provide feedback on the case studies. Using their extensive P3 knowledge and experience, they select the winners from a pool of very qualified applications and then ensure the case studies provide a learning tool for seasoned practitioners, as well as those new to the P3 model. The following panelists comprised the 2021 selection committee:

- Brad Nicpon, Chair of the Awards Selection Committee and Partner, McCarthy Tétrault LLP

- Shariq Alvi, Managing Director, Infrastructure and Project Finance, CIBC
- Rupesh Amin, Managing Partner, Infrastructure & Development, Forum Equity Partners
- Peter Hepburn, Managing Director and Head, Infrastructure and Project Finance, National Bank Financial Markets
- Alain Massicotte, Partner, Blake Cassels and Graydon LLP
- Johanne Mullen, Partner, National Capital Projects and Infrastructure Leader, PwC Canada
- Dr. Alan Russell, Professor Emeritus, Department of Civil Engineering, University of British Columbia
- Lindsay Wright, Senior Manager, Global Infrastructure, KPMG LLP

Mark Schildroth and **Chris Sawczak**, Aecon Group Inc.; **Holly MacNeish** and **Stephanie Williamson**, Plenary Americas; **David Stolte**, Mackenzie Health; and **Shannon Peacocke**, Ernst & Young Orenda Corporate Finance Inc. authored the 2021 Award Case Studies, which were developed with significant input and review from the project partners and procurement agencies as well as the diligent work of the researchers.

AECON

Plenary

EY
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CCPPP would like to thank them for their contributions as well as Infrastructure Canada for its research support for the case studies.



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About CCPPP

Established in 1993, CCPPP is a national not-for-profit non-partisan, member-based organization with broad representation from across the public and private sectors. Our mission is to collaborate with all levels of government, Indigenous communities and the private sector to enable smart, innovative and sustainable approaches to developing and maintaining infrastructure that achieve the best outcomes for Canadians.

Our reports, case studies, guidance and surveys are available on CCPPP's website at www.pppcouncil.ca

Additional resources include: P3 Spectrum (www.p3spectrum.ca), Canada's premier source for up-to-date P3 project info.

Quick Facts – Valley Line West LRT Project¹

Project type

Design-Build-Finance

Asset

To design, build, finance, test, and commission the Valley Line West LRT (VLW) in Edmonton.

- 6-year construction period plus performance demonstration and warranty period
- 14-kilometre light rail extension project

Signature elements of the project include:

- 14 street-level stops and two elevated stations
- Two new bridges
- Connection with current transit centres
- An LRT link to major destinations including MacEwan University, Misericordia Hospital and West Edmonton Mall
- Travel time of roughly 35 minutes between Lewis Farms and downtown
- Low-floor urban vehicles and operations, including step-free boarding
- Smaller scale stops spaced more closely together, providing LRT access within walking distance to thousands of people
- Trains that run with traffic. Much of the line will have no gates, bells, fences or crossing arms
- A transfer point with the existing LRT system (Capital and Metro lines) at Churchill Square

Status

Financial close achieved: December 22, 2020

Target Construction Completion Date: December 15, 2026

¹ Background and facts in this case study rely on the information contained in the award application submitted jointly by the project partners in September 2021 to The Canadian Council for Public-Private Partnerships. Information from the submission has been supplemented and updated with information from the procurement documents, the project agreement, the project report, other sources as noted and personal interviews with project partner representatives.

Partners

Public Sector

- The City of Edmonton

Private Sector

- Marigold Infrastructure Partners (MIP) comprised of: Colas Canada (50 per cent) and Parsons Corporation (50 per cent)

VLW was fully funded (40:40:20) by the Government of Canada, the Government of Alberta and the City of Edmonton respectively.

Other participants

Public Sector

- Aird & Berlis – Legal Advisor
- ConnectEd Transit Partnership – Owner’s Engineer:
 - ◇ AECOM
 - ◇ Hatch
 - ◇ DIALOG
 - ◇ ISL Engineering
 - ◇ SMA Consulting
 - ◇ Spencer Environmental
 - ◇ Stewart Group
 - ◇ Thurber
- Ernst & Young Orenda Corporate Finance (EY) – Procurement, Financial and Commercial Advisors
- North Star Consultancy – Operations & Maintenance Advisors

Private Sector

- Fast + Epp (Structural subcontractor)
- Francl Architecture (Architectural and SUI subcontractor)
- Scotiabank (Lead bank)
- Stantec (Geotechnical subcontractor)
- Fairness Advisors
- B. Larkin & Associates Ltd., and Owen D. Pawson Law Corporation (a joint venture)

Project cost, financing, and Value-for-Money (VfM)

Total project cost (nominal dollars)

- Approximately \$2.67 billion (inclusive of the costs associated with the DBF for the infrastructure, owner’s costs, land acquisition, LRV fleet expansion, etc.)
- Marigold’s lead bank (Scotiabank) and lenders brought a two-tranche debt financing solution, comprised of term and revolving debt facilities: \$278 million of revolving, short-term, floating rate, bank debt, and \$120 million of non-revolving, short-term, floating rate bank debt.
- Debt financing was provided by a syndicate of four banks
- Interest rates on the debt were fixed at financial close using an interest rate swap
- Progress payments are made to MIP based on percentage complete. Percentage complete is calculated using a Value-in-the-Ground (ViG) philosophy.
- 80 per cent of the deal value is paid monthly based on progress, after the first 10 per cent of progress is achieved.
- 20 per cent of the deal value is reserved for construction completion

Value-for-Money (present value dollars)

- A VfM analysis conducted in 2021 following financial close estimated using the DBF model achieved savings of \$85.2 million compared to the cost of delivering a project using a traditional public sector procurement approach (design-build).

Project highlights and innovative features

- **Break fee:** RFP bidders were offered a break fee payable in the event the RFP was cancelled without award
- **Extension project:** VLW is an extension of a project currently under construction requiring integration with existing infrastructure, communications systems and rolling stock
- **Sustainable Urban Integration (SUI):** The City of Edmonton required MIP to use Sustainable Urban Integration design principles to create safe, attractive, and connected neighborhoods (incorporating industry best practices).
- **Financing Innovation:** MIP used a two-tranche debt solution at a low interest rate in a volatile market during a pandemic

- **Procurement efficiency:** 100 per cent virtual procurement that included a virtual information sharing week consisting of 20 hours of video recordings to bidders. Commercially confidential meetings and RFQ and RFP evaluations completed within one year

Project website

https://www.edmonton.ca/projects_plans/transit/valley-line-west



Misericordia Station



Overview

In 2020, the City of Edmonton passed its new forward-looking city plan, following two years of consultations with various stakeholders, which posed the question: “What choices do we need to make to be a healthy, urban and climate resilient city of two million people that supports a prosperous region?”²

The Valley Line, an urban-style 27 kilometre-line line that will operate between Mill Woods in southeast Edmonton and Lewis Farms in west Edmonton, is one of those choices.

This case study focuses on the second stage of this transformative city project: the design-build-finance (DBF) of the Valley Line West LRT (VLW), a 14-kilometre LRT extension project and its project development phase.

The VLW project supports more compact, lively neighborhoods while giving Edmontonians a convenient option for moving around the city as it grows by a million more people. It’s not a matter of if Edmonton will hit two million, but when.

The complexities of the project’s integration with Valley Line Southeast (VLSE)³ led to the development of a unique risk transfer, interface agreement and payment mechanism that factored in volatile market conditions. The size of the project and integrated nature required the city’s teams to collaborate closely and carefully to bring this project to market.

In November 2019, VLW planned to be one of the fastest procurements on record for a project of its size; from deal launch to close was less than one year.⁴

Despite the COVID-19 pandemic, Edmonton and the project bidders executed a seamless move to 100 per cent virtual procurement,

including a “virtual information sharing” process where it issued more than 20 hours of video recordings to bidders.

In October 2020, Marigold Infrastructure Partners (MIP) was selected as the preferred bidder, following a public-private partnership (P3) competitive procurement process. Financial and commercial close were achieved on December 22, 2020. At the time of publication, the project is in its design-construction phase.⁵

The total contract value amounts to approximately \$1.7 billion. Total project costs are \$2.67 billion.

Delivering the project using the DBF delivery model will result in an estimated Value-for-Money (VfM) of \$85.2 million net present value or 4.4 per cent versus use of a design-build delivery model. The DBF model requires the private sector counterparty to use third-party private financing. This financing enables the use of a payment mechanism that reserves a portion of the payment to construction completion. This financing, together with the full payment mechanism regime, and the associated lender monitoring and oversight, creates greater financial incentives to facilitate on-time and on-budget project delivery. Using a DBF agreement combined with payment mechanism contributed to positive VfM.

In addition, the economic contribution assessment for the project estimated construction will generate \$760 million in wages in Alberta and another \$209 million throughout Canada. It is expected to generate 8,800 jobs in the province and an additional 3,700 across the country.⁶ These contributions will aid local and national economic recovery from COVID-19.

This case study will examine various innovations such as financing and other distinctive features of the project, which won gold for the project development category in the 2021 National Awards for Innovation and Excellence in Public-Private Partnerships, presented by The Canadian Council for Public-Private Partnerships.

² Edmonton’s City Plan https://www.edmonton.ca/public-files/assets/document?path=PDF/City_Plan_FINAL.pdf

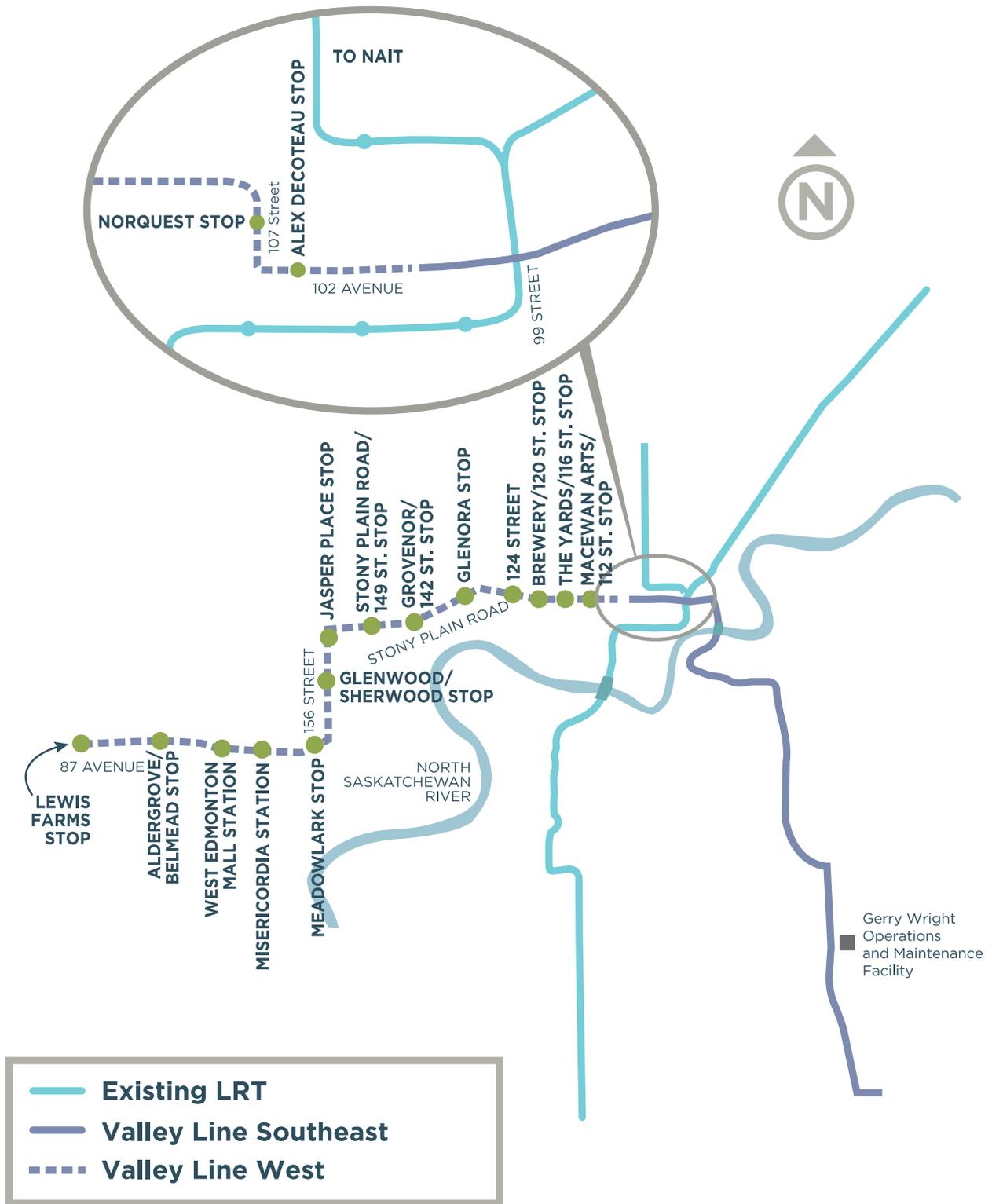
³ Construction activities on the southeast part of the Valley Line (VLSE) started in spring 2016. The project has a capital cost of \$1.8 billion and is being delivered as a public-private partnership (P3) by TransEd Partners. For more information, see https://www.edmonton.ca/projects_plans/transit/valley-line-southeast

⁴ Interview with City of Edmonton, Spring 2022.

⁵ Fall 2022.

⁶ City of Edmonton. City names preferred proponent for Valley Line West LRT construction, October 30, 2020. <https://myemail.constantcontact.com/News-Release---City-names-preferred-proponent-for-Valley-Line-West-LRT-construction.html?soid=1127191170163&aid=KSForz-dqtg> (Accessed June 10, 2022).

Figure 1: Where VLW integrates into the city and connects with VLSE



Background and Rationale

Urban rail transit in Canada encompasses a broad range of rail mass transit systems, including commuter rail, rapid transit, light rail and streetcar systems.

The Valley Line is a new LRT line coming to Edmonton. The Valley Line is all about connecting Edmontonians with more frequent and accessible stops that allow citizens to access all the communities along the line — to create a community of communities.

VLSE, the first stage in the Valley Line, is a 13-kilometre LRT currently under construction. VLSE is being delivered as a design-build-finance-operate-and-maintain (DBFOM) project plus light rail vehicle supply, with TransEd Partners. VLSE is the City of Edmonton's first P3 project.⁷

VLW, the second stage of the Valley Line, is a 14-kilometre LRT extension. Valley Line West is being delivered as a design-build-finance (DBF) project. The route includes 14 street-level stops, two elevated stations, two new bridge structures, one elevated guideway, construction of a separate operations and maintenance facility, adjacent to the existing Gerry Wright Operations and Maintenance Facility (Gerry Wright OMF) and a light rail vehicle (LRV) storage facility at Lewis Farms.

The Valley Line is part of the city's vision to expand mass transit to all quadrants of Edmonton. The line lies within a corridor that threads its way through the heart of the city, weaving it together.

The line will connect with other future low-floor LRT lines and offer an interchange with the city's existing high-floor LRT system.

The VLW extension is connecting a portion of Edmonton that currently does not have access to LRT service, providing a convenient alternative to automobile use while encouraging increased use of active transportation modes and transit connections.

As an urban LRT system, VLW will feature smaller scale stops spaced closely together to better link a greater number of destinations, while providing more direct transit, pedestrian and cyclist connections. It's a line built around stopping off at the local grocery store for essentials on the way home from work, or visiting friends in the city's southeast, without having to drive.

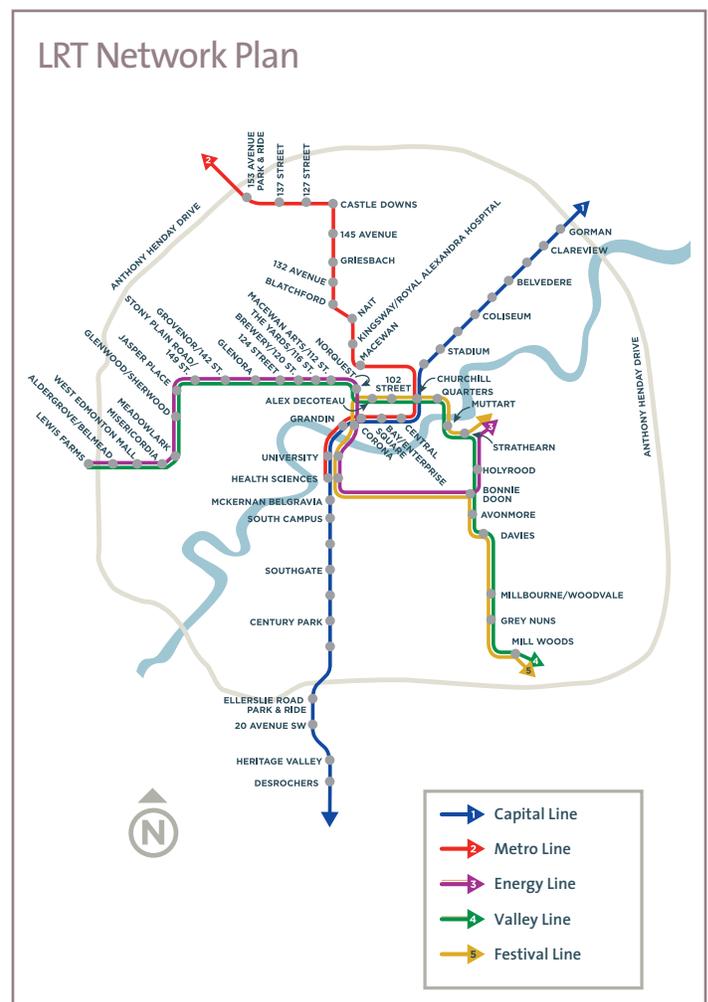
⁷ The Province of Alberta shared templates and provided lessons learned from previous provincial P3 projects. The city broadly adopted concepts from the Alberta model and incorporated additional market-tested concepts and innovations from other Canadian P3 projects.

Edmonton's transportation priorities take into account increasing environmental concerns including climate change. VLW will help with alleviating congestion, improving air quality and moving people quickly and efficiently.

Government objectives

In recent years, all levels of government reviewed existing light-rail networks and have formulated transformative plans for the future. This is because LRT can be built and used economically in both low and high-density areas, linking communities together. The infrastructure and operations can be adjusted to suit density and changes in ridership (i.e., expanded incrementally).

VLW received support from all levels of government (federal, provincial and municipal) because it will create jobs, reduce greenhouse gas emissions, result in fewer road vehicle-kilometres travelled, and build more vibrant communities.



Integration & Interface Agreement

The project faced the challenge of being an extension of a project currently under construction (VLSE), requiring integration with existing infrastructure, communications systems and rolling stock. In the future, there will be an Operator, Project Co and a LRV supplier all of whom will need to work together to make the testing and commissioning of the project successful. In the project agreement, the city defined the “Operator” as the “City Person that is selected by the city to operate and maintain the infrastructure.” Prior to construction completion, the Operator will be brought in to prepare for service.

To address this challenge, the City of Edmonton developed an Interface Agreement. This agreement will include signatures from the city, Project Co, LRV supplier and future Operator. The agreement articulates the roles and responsibilities of each party and how they are obligated to co-operate in the best interests of the project.

The Valley Line Southeast project agreement included Schedule 27 – Expansion Protocols that sets out a framework of protocols to be followed by the city and Project Co in addressing and accommodating a new line that may interconnect. This includes integration and interface obligations such as providing information and data to the city to help facilitate a future extension. Relevant information was shared confidentially with VLW proponents via a data room.

Key decisions were required during Stage 1 (VLSE) including the decision to build beyond Churchill station to the 102 Avenue stop.

This foresight helped to ensure any future closures will not disrupt services at Churchill station.

Design

A major priority of the Valley Line LRT is to design a transit system that meets the overall goals of LRT expansion and fully integrates into the communities it serves.

After extensive public consultation and design development, Edmonton established a design that emphasizes Sustainable Urban Integration (SUI). SUI enhancements are intended to reflect the character of each of the communities along the LRT corridor with a high level of specification to enable a consistent look and feel across the entire line. SUI guidelines look beyond the building of tracks towards creating neighborhoods that are safe, attractive and connected. Some examples include:

- Shared use pathways and sidewalks
- Bike lanes and connections
- Pedestrian-friendly zones and amenity spaces around stops and stations
- Enhance landscaping and streetscaping, creating a more natural environment
- Incorporating organic materials such as stone and wood where appropriate



A rendering of the Governor/142 Street stop



A rendering of the Brewery/120 Street stop

VLW undertook sustainable initiatives including charging stations for electric vehicles, solar panels at vehicle maintenance and storage facilities, capturing stormwater that can be used for irrigating nearby city landscaping, and requiring LEED silver certification for the vehicle maintenance and storage facilities.

Trees that cannot be relocated will be recycled or repurposed such as making wood chips that can be used in green spaces.

Procurement Process

Selecting the P3 model

The process of selecting a procurement model for VLW was a complex one.

The procurement options analysis started with a fundamental principle. The city envisioned the contiguous Valley Line (i.e., the VLSE and VLW) operating as a single alignment with no transfer points or perceived break in service for passengers. The Gerry Wright Operations and Maintenance Facility was envisioned as a single integrated multi-building facility along the south-east alignment with a single connection to the main line.

Given the city's existing DBFOM agreement with TransEd Partners for the first stage of the Valley Line project, procurement model options analysis for the second stage extension quickly ruled out the applicability of the DBFOM/DBFM models because they would be technically and contractually complex to implement and may impact Edmonton's existing contractual commitments.

In March 2019, the city initiated a design-build-finance with vehicle supply (DBFV) procurement process. In May 2019, it shortlisted three bidder teams but three months later two of the bidders withdrew leaving only one shortlisted bidder and no competitive tension.⁸

Following the reduction in the competitive field, Edmonton paused the procurement process and conducted a second market sounding exercise. The city learned the market's risk appetite had shifted dramatically in a short period of time. There were a number of features of the proposed deal that were no longer palatable to

market participants, such as including vehicles in the procurement and risk allocation. Having received this feedback, the city cancelled the DBFV procurement process in November 2019.

After the cancellation, Edmonton amended its contracting strategy. The delivery of LRVs was removed from the scope of work and risk-sharing for utilities and pipelines was adjusted. In November 2019, the project team communicated the amendments and the updated procurement timeline to market participants at an annual conference of The Canadian Council for Public-Private Partnerships (CCPPP) in Toronto.

In January 2020, VLW was relaunched as a DBF with a revised risk allocation and an accelerated procurement process. The procurement process ran 12 months concluding with financial and commercial close in December 2020.

The selection of the DBF model was integral to VLW's success because it ultimately attracted a world-class private partner. Colas, whose subsidiary Standard General has delivered projects in Edmonton since 1969, and Parsons, which has a long legacy of delivering P3 projects in Alberta.

Why DBF?

The city examined the DBF model and recognized it desired private sector involvement to finance a portion of the capital cost of assets during the construction period. The VLW Project Agreement specified that private sector counterparty must use third-party private financing.

This financing anchored the allocation of resources, risks and rewards by using a payment mechanism that reserves a portion of the payment until construction completion (see further description under Financial Arrangements).

Private financing together with a Value-in-the-Ground (ViG) payment mechanism regime, and the associated lender monitoring and oversight, created greater financial incentives to facilitate on-time and on-budget project delivery.

The city recognized the benefits of ongoing lender involvement given experiences on other projects and correlated this involvement to improved project outcomes.

The recommendation of a DBF procurement model was endorsed by city council after VfM analysis in 2019, a market sounding, and capabilities assessment concluded it was the best option.

⁸ The three shortlisted DBFV bidders were Flatiron-AECON-Dragados Valley Line West Joint Venture; Urban Mobility Partners; and WestLINK Group. For more information, see https://www.edmonton.ca/sites/default/files/public-files/assets/transit/Bulletin_RFQ_932400_Shortlist.pdf?cb=1654886713 (Accessed June 10, 2022).

Relaunched Procurement Timeline

After the cancellation of the DBFV procurement process in late 2019, the City of Edmonton planned to be one of the fastest procurements on record for a project of its size.

The condensed timeline for the competitive process meant the city had to be deliberate about its submission requirements and evaluation approach. The depth and breadth of the requirements were calibrated to reflect what the city believed to be reasonable level of effort from bidders during the shortened timeframe. This resulted in fewer technical submission requirements than originally planned and a revised 'case study-style' approach to evaluating the integration of various disciplines within each bid.

Despite the pandemic, the preferred bidder was announced in October 2020, as per the timeline publicly announced nearly a year earlier.

Marketing to Attract Qualified Pool of Bidders

The key procurement objectives for the project included ensuring the procurement process was attractive, competitive, fair, transparent and encouraged innovation in construction means and methods. The competitive process attracted a group of qualified bidders, engaged with them through meetings to refine the project agreement, and ultimately selected a private sector partner.

The development process identified that the city needed a marketing strategy for the project. The multitude of transportation infrastructure projects coming to market in Canada over the same

or similar time horizons meant the private sector had options about where to spend its pursuit resources. There was a risk of failing to attract enough participants to achieve competitive tension. A competitive bid process encourages lower bid prices, higher quality submissions and increased innovation.

To address this risk, the city prepared a project brief to provide interested parties with early information about the intended procurement process and fundamental contractual terms. This information sharing was key to attracting the market's attention and educating potential bidders, creating a high level of awareness and interest in the project.

Honorarium and Break Fee

The City of Edmonton offered both an honorarium and a break fee to de-risk pursuit costs for bidders and thereby increase the attractiveness of the procurement process.

The honorarium, \$4 million, was payable to bidders that fully participated in the RFP process (i.e., submitted a price). The break fee would have become payable to shortlisted bidders if the city cancelled the RFP.

The break fee was graduated, increasing based on the elapsed duration of the competitive process up to a maximum of \$4 million. The inclusion of both an honorarium and a break fee were advertised prior to launch of the RFQ. Amounts were determined using research from precedent projects and information gathered during the market sounding exercise.



City of Edmonton

Selecting a Partner

The City of Edmonton used a two-stage competitive process consisting of an RFQ (i.e., a qualifications-based submission), followed by an RFP. The RFQ stage aimed to shortlist up to three bidders to participate in the RFP. Participants responded to a series of evaluation criteria that examined:

- DB Leadership and Integration (including an approach for how the organization would integrate as Project Co based on past experiences, an organization chart, a series of resumes for selected key individuals, and a risk narrative)
- Design & Construction (including information on how to

organize the design and construction teams based on past experiences)

- Safety Record (including information on the participant's safety record, registrations and recent safety statistics), and
- Financial Capacity (including information supporting the participant's ability to raise the third-party financing)

Request for Qualifications

The RFQ phase concluded on March 12, 2020, when the shortlist was announced. The shortlisted teams were Aecon | Dragados Valley Line West Joint Venture; Marigold Infrastructure Partners; and urbanTransit.

Table 1: Qualifying teams

Aecon Dragados Valley Line West Joint Venture	Marigold Infrastructure Partners	urbanTransit
ACS Infrastructure Canada Inc.	Colas Infrastructure Canada	Astaldi Canada Enterprises Inc.
Aecon Concessions	Parsons Inc.	Webuild (formerly Salini-Impregilo S.p.A.)
Aecon Infrastructure Management Inc.	Francl Architecture Inc.	FCC Construcción S.A.
Architecture49 Inc.	Fast + EPP	IBI Group Inc.
Dragados Canada Inc.	Stantec Inc	
Kasian Architecture Interior Design and Planning Ltd.		
Klohn Crippen Berger		
Ledcor CMI Ltd.		
Platinum Engineering Ltd.		
SENER, SES Canada		
WSP Canada Inc.		

Request for Proposals

The RFP stage identified and selected the bidder that demonstrated a high probability of success to achieve the requirements of the project agreement at the lowest price.

Technical confidential collaborative meetings (CCMs), financial/commercial CCMs and utility/pipeline stakeholder meetings were held with each bidder and covered technical, commercial and financial matters, but were also open to topics of the bidder's choosing.

This collaborative process ensured there were multiple opportunities between the city and each bidder to discuss and refine terms of the draft project agreement. CCMs ensured each bidder understood the city's requirements and could provide it with input on the proposed risk allocation.

The collaborative process resulted in several changes to the draft project agreement that were integral to the eventual success of the competitive process. Some examples include:

Modification of the definition of epidemic and introduction of "limited relief events" to address the COVID-19 pandemic. The definition of epidemic included an epidemic occurring in Canada as declared by the World Health Organization. However, global events remained with Project Co. One example of a limited relief event is a shift in schedule (i.e., city provides Project Co with additional time).

Addition of caps on payment deductions and liquidated damages to address concerns about Project Co's risk exposure. For example, lane closures.

Addition of a definition for "mislocated utilities" and introduction of protection for Project Co if utilities were not located where stated on existing information (within tolerances). The project agreement includes a "Mislocated Utility Deviation Table"⁹ that outlines the allowable deviations both vertically and horizontally.

During the RFP stage, bidders demonstrated technical solutions and financial capacity. These elements were evaluated for compliance against the requirements of the project agreement prior to the city accepting pricing from the bidders.

Preferred Proponent

On October 29, 2020, the City of Edmonton selected Marigold Infrastructure Partners (MIP) as the preferred proponent to design, build and finance VLW.

⁹ Valley Line West: Schedule 1 – Definitions and Interpretation. https://www.edmonton.ca/sites/default/files/public-files/assets/transit/Schedule1-Definitions_and_Interpretation_Appendix_1A_Redacted.pdf?cb=1659984449

Commercial and Financial Close

Commercial and Financial Close were achieved on December 22, 2020.

Construction Phase

Design and preliminary construction on the line, including landscaping and utility and drainage work, started in early 2021 with the official groundbreaking taking place on May 31, 2022.¹⁰

Governance of the Competitive Process

Edmonton established an LRT Governance Framework that included the formation of a Procurement Due Diligence Committee (PDDC) to oversee the procurement process. PDDC's role was to ensure a consistent, transparent and fair procurement process for all LRT projects in Edmonton.

This governance structure created a more agile process as the project team was not required to go back to city council for various approvals during the competitive process and was able to name a preferred bidder when the price was within the approved funding envelope. While the PDDC was largely composed of senior members of the City of Edmonton administration, the terms of reference also required the involvement of one independent private member (i.e., an individual not employed by the city).

Execution of the Competitive Process

Edmonton used a combination of SAP Ariba and Microsoft SharePoint, both web-based tools, to administer the bid process and the data room, respectively.

By using accessible web-based platforms, the city was able to engage interested parties from around the world. The city also seconded an internal procurement professional, a full-time senior buyer, to the project who helped ensure efficient administration of the process and easily accessible documents. Having team members involved from the beginning, through the development phase and into construction was a strong benefit to the execution of the procurement process.

When the pivot to an entirely virtual procurement happened at the onset of the COVID-19 pandemic, these web-based tools and dedicated team members became an important part of the pivot to a completely virtual competitive process.

¹⁰ City of Edmonton. Valley Line West LRT breaks ground in Edmonton, May 31, 2022. <https://transforming.edmonton.ca/valley-line-west-lrt-breaks-ground-in-edmonton/> (Accessed June 10, 2022).

Fairness Monitor

A joint venture of B. Larkin & Associates Ltd. and Owen D. Pawson Law Corporation was engaged by Edmonton to monitor the competitive selection process and offer an assessment of the procurement procedures.

The fairness monitor provided an opinion on whether the competitive selection process was carried out in a fair manner and in accordance with the procurement documents. The fairness monitors had access to all documents, meetings and information related to the evaluation processes throughout the RFQ and RFP. They were also present during all CCMs. Bidders were able to

contact the monitor regarding any real or perceived fairness issues. The fairness monitor concluded the process was adhered to and met all requirements for fairness, openness, and transparency.¹¹

The city also drafted its procurement documents to ensure the process was fair, transparent, written clearly and free of bias or favoritism. Edmonton developed a restricted parties list that outlined both individuals and organizations that may present any conflict of interest or unfair advantage issues. The listing included parties that were restricted from participating as a bidder or advisor to a bidder as a result of their involvement with VLSE (TransEd Partners and affiliates).



Vision for Jasper Place Revitalization near 156 Street and Stony Plain Road

¹¹ Fairness Monitor Letter Report, October 29, 2020. https://www.edmonton.ca/sites/default/files/public-files/assets/RoadsTraffic/VLW_Fairness_Report_Fall2020.pdf

Table 2: Project Timeline

<p>March 2019</p>	<p>August 18, 2020</p>
<p>City launches DBFV procurement process</p>	<p>Submission of technical proposals</p>
<p>May 2019</p>	<p>September 18, 2020</p>
<p>Three teams shortlisted</p>	<p>Release final draft project agreement¹²</p>
<p>July 2019</p>	<p>October 27, 2020</p>
<p>Two shortlisted bidders withdraw</p>	<p>Financial proposal</p>
<p>August 2019</p>	<p>October 29, 2020</p>
<p>Market sounding</p>	<p>Procurement Due Diligence Committee endorsement and approval / Announcement of preferred bidder</p>
<p>November 2019</p>	<p>December 22, 2020</p>
<p>City cancels DBFV procurement process in response to changes in the market / Information sharing with attendees at CCPPP Annual Conference</p>	<p>Commercial and Financial Close</p>
<p>January 7, 2020</p>	<p>January 2021 - December 2026</p>
<p>Procurement restarted with launch of DBF RFQ</p>	<p>Construction period</p>
<p>March 12, 2020</p>	<p>May 31, 2022</p>
<p>RFQ shortlist announcement</p>	<p>Official groundbreaking</p>
<p>March 13, 2020</p>	<p>March 31, 2025</p>
<p>RFP issued to 3 prequalified bidders</p>	<p>Phase 1 construction completion date for the scope of work occurring on the Gerry Wright OMF site</p>
<p>June 10, 2020</p>	<p>December 15, 2026</p>
<p>Release draft project agreement version 2</p>	<p>Target construction completion date</p>
<p>August 7, 2020</p>	
<p>Release draft project agreement version 3</p>	

¹² As you can see in Table 2, the Final Draft Project Agreement was released following the submission of technical proposals. This was managed by locking in key technical requirements via addendum prior to the release of version 3 of the draft while the city and bidders continued the refinement of other commercial terms, thus creating schedule efficiencies helping to ensure the project reached financial close within its one-year timeframe.

Overall Structure of the Agreement

Partner Roles and Responsibilities

Responsibilities were allocated between the partners on the basis that they should be held and managed by the party that is in the best position to do so at the best value for money, making use of each team's strengths.

As a transit extension, the project agreement is *prescriptive* to manage all technical interfaces and ultimately achieve a consistent passenger experience for the entire Valley Line LRT. The City of Edmonton was responsible for developing the project agreement and the VLW Design Guide.

The city has responsibilities as the project owner during the term of the project agreement, including (but not limited to):

- Making the payments in a timely manner as detailed within the project agreement, subject to any payment deductions for breaches or poor performance
- Granting Project Co a non-exclusive license to access and use the city lands and the infrastructure, for the purpose of the performance of the project works
- Participating as a counterparty to the Interface Agreement, and
- Providing Project Co with Stage 1 and Stage 2 LRVs for use in testing and commissioning of the infrastructure.

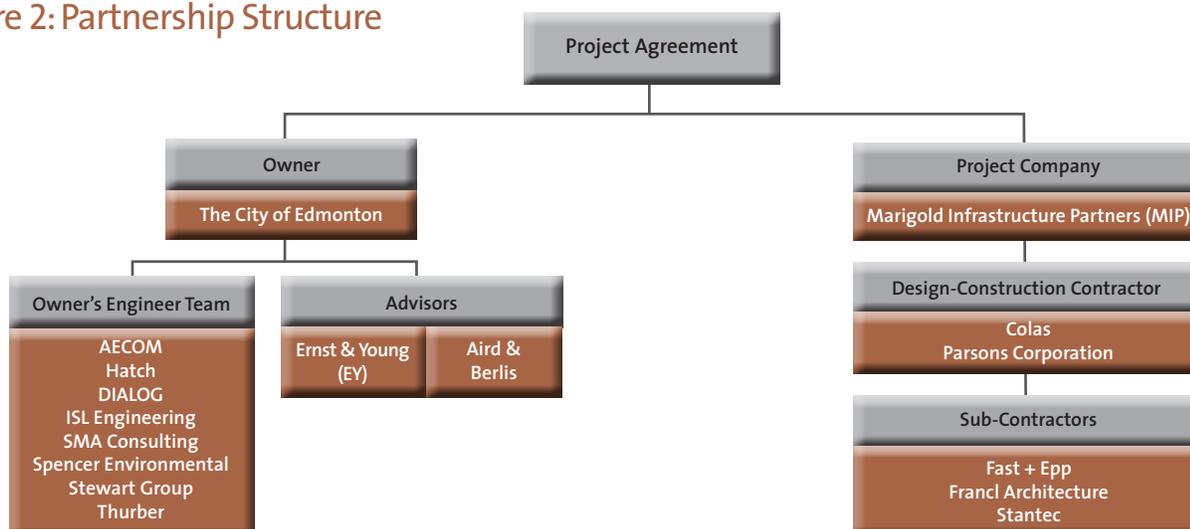
- The city is responsible for coordinating between TransEd Partners and Project Co.

As Project Co, Marigold Infrastructure Partners (MIP) is responsible for various activities throughout the term of the project agreement, including:

- Financing a portion of the design and construction costs to be repaid by the city over the construction period of the project agreement
- Completing the design, construction, and all other activities including the commissioning of the infrastructure, in accordance with all the terms of the project agreement
- Completing project management oversight, coordination, and integration of all elements and activities comprising the project
- Participating in the integration of the infrastructure and the LRVs
- Performing all infrastructure integration testing, and
- Performing all warranty work required in accordance with the project agreement.

Within MIP, the breakdown of responsibilities has Colas and Parsons equally sharing design-construction contractor responsibilities, with sub-contractors Stantec handling geotechnical work, Fast + Epp taking care of structural and Francl in charge of architectural/ Sustainable Urban Integration (SUI) enhancements.

Figure 2: Partnership Structure



Financial Arrangements

Marigold Infrastructure Partners' (MIP) financing plan is funded 100 per cent through debt. As is typical for a DBF project, no equity was required. This maximizes the use of lower-cost debt financing and avoids higher cost equity capital.

MIP brought a two-tranche debt financing solution comprising term and revolving debt facilities featuring different debt maturities to deal with the payment structure during the six-year construction period. This solution responded to market volatility, captured opportunities in the low interest rate environment and minimized total financing costs.

The financing plan involves \$278 million of revolving, short-term, floating rate, bank debt; and \$120 million of non-revolving, short-term, floating rate bank debt sourced from a group of banks.

Lenders

MIP was able to mitigate the effects of the COVID-19 financial market volatility through selection of strong Canadian and international lenders to find the optimal financing solution that (i) increased the certainty of reaching financial close, (ii) minimized the cost of capital, and (iii) ensured the stability of the project's financial structure in a context of pandemic.

MIP undertook a competitive process to obtain financing proposals to ensure not only the lowest possible pricing, but also to create competitive tension between the banks.

MIP considered different financing structures including bank solution and bond (rated and non-rated) solution. MIP delivered an execution-certain financing solution at the RFP submission date with redundancy.

Four banks form the funding club: Bank of Nova Scotia, Canadian Imperial Bank of Commerce, Sumitomo Mitsui Banking Corporation and MUFG Bank Ltd.

Each bank has significant experience in P3 projects in Canada. There is an equal allocation to all funders across each tranche. The interest rate on the two tranches of bank debt was fixed at financial close over the entire duration of the project using an interest rate swap.

The lenders act as swap providers in proportion to their lending commitment. The non-revolving short-term debt is repaid using the proceeds of the first milestone payment after 10 per cent Value-in-

the-Ground (ViG) is achieved. The revolving short-term debt is fully repaid using the milestone payments during construction and the construction completion payment.

This two-tranche approach delivered value to Edmonton because it avoided carrying private financing for longer than necessary and will ensure public funds are used in an efficient manner. Overall, the inclusion of private financing enabled VLW to make the most of the opportunities presented by a low-interest rate environment to achieve efficient risk transfer.

The timing of financial close was a challenge as it was scheduled three days before Christmas. This meant there was volatility in the market due to reduced trading, which led to multiple refreshes before the partners agreed during the rate set process.

Payments

Phase 1 Construction Completion Payment

The timing of the completion of the expansion of the Gerry Wright OMF was important to the city for integration purposes. This facility will need to be ready to receive the LRVs required for the VLW in advance of testing and commissioning.

As such, the project agreement defines a target Phase 1 construction completion date for the scope of work occurring on the Gerry Wright OMF site as March 31, 2025 (over a year before construction completion) and the payment mechanism rewards the achievement with a lump sum payment of \$50 million that functions as a pre-payment of the portion of the 20 per cent construction completion holdback that is attributable to the Phase 1 scope (i.e., Gerry Wright OMF).

Table 3: High-level summary of payments to Marigold Infrastructure Partners (MIP)

Phase 1 Construction Completion Payment	\$50,000,000
Legislative Holdback Payment	\$290,000,000
Remaining Construction Payments (cumulative)	\$1,360,000,000
Total Contract Value (approx.)	\$1,700,000,000

Responsibilities and Risk Allocation

Risk allocation relates to determining who is responsible for dealing with risks. Normally, a risk is allocated to the party that is best able to manage it or the party best able to control or minimize the impact of the risk. Risks of particular interest are as follows:

Contamination

Shared risk — Several areas along the alignment are known sites of contamination. Estimated volumes and depths of known contaminated sites were disclosed to proponents. Marigold Infrastructure Partners (MIP) is responsible to remediate contamination in these areas that exist in the construction area. The City of Edmonton provided clarity on the requirements for potential contaminated soil via the project agreement including unknown contamination.

For other sites where contamination was not known in advance, the city will compensate MIP for direct costs.

Epidemics

Shared risk — The city worked with all bidders to achieve appropriate risk sharing in response to the pandemic. MIP is provided with schedule and senior debt service relief for epidemic conditions observed within Canada, over and above an agreed upon baseline. MIP is responsible for exposure to epidemic conditions outside of Canada. This was discussed during the project’s CCMs which included both internal and external legal representation.

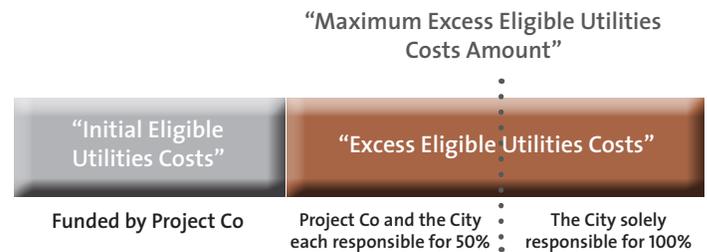
Utilities

Shared risk — Eligible utility costs above a pre-set threshold will be shared (capped liability for MIP). MIP is entitled to relief where utilities are mislocated outside of certain deviation allowances (both horizontal and vertical) as defined in the project agreement (see Schedule 1¹³ *Mislocated Utility Deviation Table* for details).

¹³ Schedule 1 – Definitions and Interpretation (pages 51 & 52)

https://www.edmonton.ca/sites/default/files/public-files/assets/transit/Schedule1-Definitions_and_Interpretation_Appendix_1A_Redacted.pdf?cb=1649431045

Figure 3: Indicative representation of the eligible utility cost sharing mechanism



Pipeline Crossing

Retained risk — The city is responsible for arranging, negotiating and entering into agreements with each pipeline company to govern the project work adjacent to and crossing existing pipelines. MIP is responsible for assisting Edmonton in negotiating the agreements, including developing schedules for the work. Some examples that will impact Project Co’s final design include equipment loading, temporary load mitigation, design support, stray current mitigation, geotechnical information and vibration studies. See below image which shows the pipelines and future location of the Gerry Wright OMF (Parcel A and B).



Procurement of LRVs

Retained risk — The city retains the risk associated with the procurement of LRVs to expand the Valley Line fleet. Edmonton will provide MIP with the *LRV Design Information Package* for use in designing the Gerry Wright OMF. MIP has responsibility to test and commission the VLW infrastructure using city supplied LRVs.

The Valley Line fleet has two different suppliers. The VLSE LRV weight and dynamic envelope were used to procure VLW LRVs to ensure interoperability. The Valley Line fleet will operate across the entire line, however the VLW LRVs will be housed in Parcel B at the Gerry Wright OMF.

Performance of the design and construction of the infrastructure

Transferred risk — MIP is responsible for the design and construction of the infrastructure. MIP’s performance is subject to the performance management regime. In response to bidder feedback, the city introduced caps on each of the construction payment adjustment (which were based on duration), non-performance event payment adjustments, and liquidated damages to address concerns about MIP’s overall risk exposure.

Environmental Impacts

Edmonton’s expansive river valley and wetlands were taken into consideration through an assessment of environmental impacts, native plants and animals. Permanent accommodation of

wildlife movement and maintenance of naturalization areas are requirements of the project agreement. Environmental compliance monitoring and inspection programs will be in place as outlined in Schedule 10¹⁴ of the project agreement.

Permitting and approvals impact

Edmonton had foresight during the development process to ensure any long lead permits or approvals were identified and managed. One example is the city initiating an application for ministerial consent from the province to cross the Transportation Utility Corridor (TUC) at Anthony Henday Drive. The proactive approach to permitting and approvals helped de-risk the project.

The city was responsible for only the following: Edmonton International Airport (EIA) approval, road plan registrations, rezoning applications, access and road closures, historically resources clearance letters, and ministerial consents. Project Co will obtain all other approvals, authorizations and permits required. Further details on what is the responsible of the city versus Project Co is available in Appendix 28-1A¹⁵ of the project agreement.



Lewis Farms Transit Centre facility

14 Valley Line West: Schedule 10; https://www.edmonton.ca/sites/default/files/public-files/assets/transit/Schedule_10_Environmental_Performance_Requirements_redacted.pdf?cb=1660061872

15 Valley Line West: Schedule 28, Part 1; https://www.edmonton.ca/sites/default/files/public-files/assets/transit/Schedule_28_Part_1_Project_ApprovalsAppendix_28-1A_Combpliance_Approvals_and_Authorization.pdf?cb=1660061872

Table 4: Allocation of key responsibilities and risks

Risks and Responsibilities	City	Project Co	Shared
Permits & Approvals			
Project approvals (including pipeline crossings)	■		
Project permits			■
Site Condition/ Environmental			
Geotechnical		■	
Known areas of contamination		■	
Newly discovered contamination	■		
Utility relocation			■
Design and Construction			
City initiated scope changes/delay	■		
Design & construction cost overruns		■	
Weather (excl. supervening events)		■	
Construction delays		■	
Traffic and safety management		■	
Design errors and omissions		■	
Resource/labour availability		■	
Deficiencies and latent defects		■	
Force majeure			■
Change in law			■
Latent defects in existing infrastructure			■
Exposure to epidemic conditions in Canada	■		
Exposure to epidemic conditions outside Canada		■	
LRVs			
Procurement of LRVs	■		

Benefits

Cost Savings

By placing a focus on procurement practices, including timely information sharing and efficient processes, Edmonton was able to achieve cost savings for the VLW. The shorter procurement period coupled with the virtual format reduced travel costs for the bidders and hosting costs for the city while preserving collaboration.



After the pandemic forced the cancellation of the in-person bidder meeting, the city introduced a “virtual information sharing” process where it issued more than 20 hours of video recordings to bidders via the data room. These videos shared the city’s project development knowledge, bringing bidders up to speed on project challenges and constraints in a format more digestible than the contract documents. The virtual information sharing sessions required a high level of effort from the city’s consultant teams. However, this helped the city maintain their procurement timetable by providing detailed information on the project to bidders as early in the process as possible.

Virtual tools and technologies improved process management efficiency and saved both parties money. Since the city was already using Google Drive, the transition to a virtual process required minimal training. The greatest amount of effort was in managing the number of virtual calls and emails. Meetings were to be scheduled with an end time five to 10 minutes before the start of another call and no meetings were to be scheduled on Thursday afternoons.

Selecting a low-floor, urban, ground level LRT, (instead of a tunneled solution, for example), helped the city manage the capital cost of the project. The expansion of the park-and-ride at the Lewis Farms terminus stop will serve visitors from surrounding municipalities looking to access Edmonton via public transit.

VLW will improve access to transportation networks and mobility around the region and save individuals transit travel time and result in fewer vehicle kilometres travelled helping decrease the likelihood of collisions.¹⁶ Edmontonians will benefit from a 35-minute travel time¹⁷ from Lewis Farms to downtown Edmonton.

The Value-for-Money (VfM) Outcome

The delivery of the project using the DBF procurement model generated positive Value-for-Money. VfM was determined by comparing the net present value of the cost of the project under a DBF delivery model to the estimated costs under a design-build delivery model. For the purposes of the project, 3.7 per cent, the average annual interest rate on the city’s long-term debt was used as the discount rate.¹⁸ Based on the analysis, the city achieved VfM of approximately \$85 million in net present value terms, representing a value for money savings of 4.4 per cent.

Community socio-economic benefits

Edmonton advances socio-economic equity through access to universally accessible spaces, services, facilities and transportation networks. VLW supports the provision of a transportation system that attracts investment and provides access to businesses throughout the region and the larger Alberta economy.

The project agreement outlines a community employment benefits (CEB) strategy that creates intentional employment, training and subcontracting opportunities for members of targeted groups. Marigold Infrastructure Partners (MIP) submitted a CEB plan and identified an individual who will act as CEB Lead as part of its bid. Elements of the submitted CEB plan were bound into the final project agreement. MIP is responsible for tracking performance against the metrics in its plan and providing annual CEB reporting to the city.

16 Valley Line West Business Case Summary - March 2019 (edmonton.ca) https://www.edmonton.ca/sites/default/files/public-files/assets/VLW_Business_Case_Summary.pdf?cb=1624675788

17 Valley Line West LRT – Downtown to Lewis Farms (Spring 2021); page 5

18 City of Edmonton - 2019 Annual Report, Note 11C [Maturities and Interest Rates] of the Notes to the Consolidated Financial Statements; 8 June 2020

The project agreement includes a table, “*Minimum Standard Target Hours, Contract Value and Employment Opportunities for Categories of Target Groups.*”¹⁹ (see Table 5 on page 26)

Targeted groups include apprentices, Indigenous Peoples, women, youth and new Canadians. Targeted businesses include small and medium, social enterprises and diversity ownership.

MIP will provide employment opportunities, training, labor recruitment and subcontracting opportunities to members of targeted groups and track results against target hire ratios. Diversity and inclusion training will be made available to all staff.



Artist: MJ Belcourt



Artist: David Garneau



Artist: Lana Whiskeyjack.

¹⁹ Schedule 4 – Design and Construction Protocols, Community Employment Benefits Plan (page 11-14) https://www.edmonton.ca/sites/default/files/public-files/assets/transit/Schedule4_Design_and_Construction_ProtocolsAppendix_4A_Redacted.pdf?cb=1649434004

Table 5: Minimum Standard Target Hours, Contract Value and Employment Opportunities for Categories of Target Groups

(Table 4-4.6 of Schedule 4 of the Project Agreement)

Targeted Groups	Definition	Target Ratio*	Employment Opportunities
Apprentices	Individuals receiving skills training for designated occupations under the supervision of a certified journeyperson.	50 apprentices	All available project trades will have apprenticeship opportunities.
Indigenous Peoples	Original peoples of North America and their descendants, including First Nations (status and non-status), Inuit and Métis	10%	Employment opportunities throughout the organization, including project management, engineering and construction will be made available.
Women	Individuals who reported identifying with the female gender	20%	Employment opportunities throughout the organization, focusing in areas traditionally underrepresented by women such as project management, engineering and construction will be made available.
Youth	Individuals between the ages of 15 to 29	10%	Training and employment opportunities for entry-level positions and intermediate positions throughout the organization.
New Canadians	Permanent residents or new citizens of Canada arriving within the past seven years who are eligible to work in Canada	10%	Employment opportunities throughout the organization, including project management, engineering and construction will be made available.

Targeted Groups	Definition	Contract Value (\$)	Contract Opportunities
Small enterprise	Businesses with less than 100 employees	\$1,800,000.00	Providing contract opportunities for goods and services across the project.
Medium enterprise	Business with between 100 and 499 employees	\$4,800,000.00	Providing contract opportunities for goods and services across the project.
Social enterprise	Businesses owned by non-profit organizations that produce and/or sell goods and services for the blended purpose of generating income and achieving social, cultural, and/or environmental aims	\$50,000.00	Providing contract opportunities for goods and services across the project.
Diversity Ownership	Businesses owned by a visible minority, Indigenous peoples, women, persons with disabilities or any other underrepresented group		

*% of total hours worked

Monitoring Community Employment Benefits

An executive summary of the CEB annual report will be posted on the city's website as outlined in MIP's Community Employment Benefits Plan. The overall summary report will include Marigold Infrastructure Partners' (MIP) experience in implementing the CEB plan, finalized target ratios and lessons learned that may be applicable to future projects. There are Non-Performance Events (NPE) for failure to provide, on each anniversary of commercial close, the annual CEB report to the city.

This is the first time Edmonton has included this framework in a large infrastructure project, which can then be used as a model for future projects and initiatives. Data collected through the implementation of CEB plan will help benchmark future targets specific to the Edmonton region.

Economic Benefits

The project encourages construction-related business investment and expansion plus demand for education, training, and apprenticeships through a stable and ongoing requirement for skilled labor in Edmonton. The economic contribution assessment

for the project estimated construction will generate millions in wages in Alberta and throughout the country. It is also expected to generate jobs across Canada.

In addition, Transit Oriented Development (TOD) will concentrate housing, shopping, and employment within a five-minute walk of transit stations, supporting more compact and livable communities thus stimulating economic activity. These contributions will aid in the economic recovery from the COVID-19 pandemic.

Key Initiatives

There were four key initiatives implemented during the development process to facilitate the project:

- Indigenous engagement
- Early engagement with utilities and pipelines
- Creation of citizen working groups
- Sourcing public art together with the Edmonton Arts Council

An infographic that summarizes the detailed consultation and development process is available under 'Project History' at edmonton.ca/valleyline.²⁰



87 Avenue Guideway

²⁰ Valley Line West LRT (Downtown to Lewis Farms), Spring 2021 https://www.edmonton.ca/sites/default/files/public-files/assets/VLW_Booklet.pdf

Indigenous Engagement

The Edmonton area has been important to Indigenous Peoples since their arrival. That's one reason why the city felt it was important to have engagement activities and partnering specifically with Indigenous Peoples, starting in 2017.

Public and Indigenous engagement were delivered in parallel, connected streams, and the city plans to provide opportunities for input in each phase of the project. Many nations have expressed that they find great value in coming together to share diverse perspectives and learnings with one another. Thus, the city is consistently working to facilitate the sharing of stories.

The city began a process to co-create a charter to help inform Edmonton's strategy, including all LRT projects, on how to best engage during different project stages. Engagement activity examples include site visits, ceremonies before and during construction, ground disturbance monitoring, plant harvesting, commissioning art for the alignment, and sharing lessons learned once a project phase has wrapped up. The city maintains open communication through phone calls, site visits and newsletters with 29 First Nations and Métis Nation communities.

Edmonton's Indigenous Relations office focused on capacity building through dedicated resources, including assigning individual city staff members to each Nation or community. This work has led to the creation of an Indigenous Framework for Edmonton.

Early Engagement with Utilities and Pipelines

The technical team and bidders were required to design around pipelines at the Gerry Wright OMF and the transportation and utility corridor while also dealing with pipeline crossing agreements.

This unique and technically challenging design at the Gerry Wright OMF results from two track crossings over a pipeline corridor. This required advanced planning by the city and attention was brought to this challenge with bidders early due to its complex nature.

The city has since concluded agreements with Plains Midstream, Pembina Pipelines and Transmountain for the pipeline corridor work. These agreements were led by the City of Edmonton.

Utility/pipeline stakeholder meetings were held virtually with bidders as part of Edmonton's early engagement strategy. These regular meetings during the competitive process were used to provide real-time information to bidders about any ongoing utility relocation and/or mitigation efforts.

Communications

Between the partners

The City of Edmonton strives to build and maintain a "culture of collaboration" on its LRT projects. By sharing information, project leadership can ensure everyone is empowered to make informed decisions and provide increased transparency, regardless of rank. Together, the team made a commitment to passion, perseverance and patience.

Partnering sessions were one way the city ensured the project team was synchronized, moving together to deliver the vision while also enabling a positive career experience for all team members. This partnering approach is now being adopted as a joint effort of the project agreement parties. This includes strategies to effectively manage the team's energy and attentiveness, a review of the VLW charter against results, and agreed actions. Top barriers were identified, and action plans were developed in the following areas: communication, decision making, lack of clarity, culture and integration.

Project team members were empowered to share information in an open and timely manner. Information sharing started early with bidders by ensuring the required information and resources were flowing seamlessly.

A key consideration during the early months of the pandemic was scheduling. The project team was conscious about ending meetings five minutes before the top or bottom of the hour to allow team members to refresh by stretching or simply having a few moments break before diving into their next meeting. Meetings over an hour in duration began with a 'breathing minute' allowing everyone to come into the present moment and refocus. By incorporating these practices, the project team was highly productive and engaged for extended periods of time. The project team also took time to celebrate project milestones.

With the public

The project team placed emphasis on listening and engaging with the public to solicit input and incorporate it into planning, ultimately working to understand their aspirations for the city. The City of Edmonton had five citizen working groups for the project.

The purpose of the groups was to provide the team and affected communities with a means to:

- Build and maintain relationships and trust
- Facilitate information sharing and dialogue
- Support the identification of issues, opportunities, and concerns
 - ◊ For example, any barriers to task completion, presenting opportunities to discuss solutions, and more clearly defining roles and responsibilities
- Seek opportunities to minimize and mitigate impacts related to detailed design and construction

Community leagues and other major stakeholder organizations along the alignment were invited to assign a member to the working group in their area, and each group has two members from the public at large, selected by their peers at a series of public meetings held in August 2017.

Initial meetings of these VLW working groups took place in fall 2017. Meetings are open to the public. Agendas and minutes are posted on the VLW web page.

Performance Monitoring

The project agreements follow typical performance monitoring and reporting requirements for design and construction. Because VLW was procured as a DBF, it excludes operations and maintenance.

The City of Edmonton's performance monitoring includes design review, providing technical knowledge and monitoring and overseeing the construction activities of Marigold Infrastructure Partner (MIP) through such things as inspections and compliance reviews.

Sample Application of a Lesson Learned

The lane closure and tree removal construction payment adjustments are interrelated. Since many of the impacted streets are lined with trees, there is a tension between when to remove trees to create space for through lanes of traffic and when to plan for lane closures. To address this, Edmonton built a calibration model that used scenario analysis to balance the rate pricing applied to lane closures and tree removals in the project agreement to minimize opportunities for gaming between these adjustments.

Performance management regime

The project agreement defines performance and quality management/ monitoring mechanisms, and a performance demonstration period during which the infrastructure is monitored in a live operating environment. Together, these elements form the performance management regime.

Project Co is required to fill in a record of comments and observations (ROCO) form that includes any issues (e.g., deficiencies, non-conformances and comments) and a closure status (i.e., accepted, observations, or rejected). Closure of all ROCO form issues to the reasonable satisfaction of the city is a condition to construction completion.

Construction payment adjustments

Performance, in accordance with the contract, is incentivized by payment adjustments.

The payment mechanism contains a set of payment adjustments pertaining to occurrences of undesirable events. These events are:

Lane Closures: This payment adjustment incentivizes MIP to minimize traffic impacts. Lane closures apply where construction activities reduce through roadway lanes based on the lesser of the number of existing lanes and the number of future lanes. A deduction applies if lane closures are greater than the bid lane closures allowance, and a credit is payable if less than what was bid allowance.

Transit Impacts: The project agreement defines the roadways where Edmonton Transit Service (ETS) operates bus services. This payment adjustment attempts to incentivize MIP to minimize the impact on day-to-day operation of the bus network by avoiding full closures or reductions to a single lane of traffic on relevant roadways. A deduction applies if actual bus impacts are greater than the bid bus impact allowance and a credit is payable if less than the bid allowance.

Tree and Forested Area Removals: A high priority of the city is to minimize the impact of constructing the LRT system on the tree population and forested areas. MIP is responsible for recording all tree removals and monetizing the aggregate value of such removals based on the tree valuation and forested areas inventory tables included in the project agreement. Where the aggregate value of removals exceeds the aggregate value of the bid allowance for planned removals a deduction will be applied to MIP.

Stony Plain Road Bridge Availability: This bridge is a key link in Edmonton. When closed, surrounding neighborhoods face substantial route detours heading downtown. The city incentivized the timely completion of the bridge by limiting the unavailability of this connection to a target number of days. If the bridge has not been certified as complete by the Independent Certifier within the target number of days, MIP will incur a daily deduction for each day over the target.

Non-Performance Event Payment Adjustments (NPEs)

The project agreement contains a predefined set of non-performance events (NPEs) that contribute to potential payment deductions at a predetermined value per occurrence. NPEs are assigned at the City of Edmonton's discretion and MIP has a duty to track and report. Performance-based contracting will continually incentivize MIP by applying key performance indicators against the contract.

The project agreement sets out the various attributes that facilitate the calculation of NPE Payment Adjustments:

- There is a total of 62 NPEs and each has a description of the NPE occurrence, a schedule section reference, rate, allocation trigger, rectification timeframe, and rectification action
- The city may assign a default point to MIP if the total value of NPE payment adjustments over any three consecutive calendar months is greater than \$1 million
- The accumulation of four or more default points triggers a termination event under the project agreement.
- Some examples include proceeding with construction without an accepted design, failure to report an environmental spill and damage to a protected tree in addition to not providing schedules or reports in the specified timeframes

Quality Management

A robust quality oversight regime was built into the project agreement. MIP has a comprehensive quality management process including non-conformance tracking and resolution. To lend added weight to measures to minimize non-compliance and ensure all non-compliances are addressed, an innovative financial deduction regime is included during construction. The regime gives MIP time to resolve non-compliances and if they are not resolved within a

certain timeframe, a financial deduction is made from the progress payment.

MIP is responsible for the quality of the project work, including the quality management system, processes, and plans with the goal of minimizing the occurrence and recurrence of quality related issues or nonconformities in both the processes and in the resultant work products.

The project agreement allows the city to undertake quality audits to monitor the compliance and consistency of MIP's application of quality management.

Performance Demonstration Period

Approximately six months after construction completion is achieved (for example, when the alignment is ready for passenger service) the performance demonstration period begins. The initial VLW performance demonstration period is 12 months; a timing that allows for the performance demonstration of the infrastructure in a full range of Edmonton climatic conditions.

MIP is responsible for identifying and reporting any failure and/or incident attributable to the infrastructure. The city is informed of all monitoring activities undertaken by MIP during this period and retains the option to witness such activities.

Lessons Learned

The COVID-19 pandemic

The COVID-19 pandemic intensified three months into the competitive procurement process. This created unexpected challenges in terms of information sharing and collaboration, the risk allocation and ability of bidders to raise financing and price the project during a period of such volatility and uncertainty, and in the City of Edmonton's ability to engage with Misericordia Hospital on traffic and helipad accommodation plans for the elevated guideway construction (to be built adjacent to the hospital).

To address these challenges the project:

- Used a collaborative process to focus on risks and revised risk allocations for epidemics to make the risk sharing more balanced
- Leveraged the city team's lived experience in managing other large LRT projects that were in delivery during the pandemic to inform procurement, and

- Showed compassion and partnering by adapting meeting plans and schedules to accommodate the hospital's (and wider health) situation without impacting the critical path for the competitive process

Constrained Corridor

Due to the project's at-grade design, there are areas on the alignment that require construction in a constrained corridor. This meant effective use of the space available for construction activities while reducing impacts to residents and commuters. To address this challenge, bidders were required to provide detailed plans that outlined laydown areas and lane closures so the city could verify their understanding of the constraints as part of the evaluation process.

The city developed a low-floor LRT Sustainable Urban Integration Guide to provide guidance and performance-based design criteria for the Valley Line. These guidelines related to the design specifications of features such as stops, stations and structures. An advantage of a low-floor LRT system is that the stops can be scaled to their surrounding context and require minimal infrastructure featuring canopies and shelters for protection for all seasons.

The project team developed a system to capture lessons learned throughout the planning and procurement processes. The team used a shared platform to document decisions and developed formal memos to ensure decision making was documented and available to go back to.

Marigold Infrastructure Partners (MIP) was able to mitigate the effects of COVID-19 financial market volatility through selection of strong Canadian and international lenders to soften the financial impact of the pandemic and through committed debt financing to provide redundancy. This allowed MIP to maximize Value-for-Money and to successfully achieve financial close with no impact on schedule or budget.

Flexible Financing Solution

Milestone payments are received throughout the project. Starting with the first payment from the city, MIP will repay the funds drawn under the short-term revolving credit facility. Any potential delay in construction progress distorted the availability of project funds. This necessitated substantial analysis surrounding the quantum of liquidated damages and their effect on the overall financing package. See the Financial Arrangement section for more details.

Optimized Security Package to Enhance Overall Project VfM

The security package was structured with no liquidity delivered at the milestone key dates, which delivered significant cost savings to the project. The feature demonstrates MIP's ability to source competitive financing for a complex project with cost-effective performance security packages required by banks.

Importance of Strong DBJV Members

Technically complex projects require strong construction partners with vast experience in similar projects to provide lenders with comfort that key risks will be managed appropriately. The experience and capabilities of the DBJV members were essential in developing a successful teaming structure and producing a competitive technical proposal.



Low floor LRT

Concluding Comments

The Valley Line West (VLW) design-build-finance P3 agreement involved genuine innovation and moved the market forward during an uncertain time.

VLW has set a new industry standard for development of large-scale complex procurements and exemplified what it means to be an open and collaborative partner.

Despite having to cancel the original DBFV procurement, the City of Edmonton created a bankable deal by listening to industry and revising the allocation of risks, responsibilities and returns between partners. The success of these efforts is shown by the fact VLW attracted three bidders that all passed the technical proposal stage,

ensuring the procurement maintained competitive tension to the end and achieved value for the city.

As an extension project, VLW required a structured integration agreement to ensure communication and collaboration amongst parties (i.e., VLSE, VLW, LRV, future Operator), integrating with existing infrastructure and rolling stock.

It is also a project with innovative financing solutions, new procurement efficiencies and inspiring partnerships rooted in transparency and trust, with MIP, the public and Indigenous communities.

The project has reimagined what's possible when people work together towards a shared vision and is setting precedents for future LRT projects across Canada and abroad.



Pedestrian-friendly zones and amenity spaces around stops and stations

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Appendix: CCPPP's National Award Case Studies 1998-2021

Defence

Communications Security Establishment Canada Long-Term Accommodation Project (2011)

Education

Quad at York University, Ontario (2018)
Saskatchewan Joint Use School Projects (2015)
Alberta School Alternative Procurement – Phase 1 (ASAP I), Alberta (2010)
O'Connell Drive Elementary School, Nova Scotia (1998)

Energy

Energy Services Acquisition Program (ESAP)/Energy Service Modernization (ESM) Project, Ottawa-Gatineau (2020)
Fort McMurray West 500-kV Transmission Project, Alberta (2018)
John Hart Generating Station Replacement Project, B.C. (2014)
Britannia Landfill Gas to Electricity Project, Ontario (2005)
Vancouver Landfill Gas Cogeneration Project, B.C. (2003)
Bruce Nuclear Power Facility, Ontario (2000)
Waterloo Landfill Gas Power Project, Ontario (2000)

Government Services

Archives of Ontario – Offsite Archival Storage (2006)
Cook Chill Food Production Centre, Ontario (2005)
DriveTest: Ontario Driver Examination Services (2004)
Transforming the Delivery of Ontario's Social Assistance System (2003)
Emergency Service Mobile Communications in Ontario (2000)
Electronic Child Health Network, Toronto, Ontario (1999)
Teranet, Ontario (1998)

Health

Cortellucci Vaughan Hospital, Ontario (2021)
New Oakville Trafalgar Memorial Hospital, Ontario (2016)
Humber River Hospital, Ontario (2015)
BC Cancer Agency Centre for the North and Fort St. John Hospital & Residential Care Project, B.C. (2012)
Centre Hospitalier de l'Université de Montréal Project (2012)
Glen Campus – McGill University Health Centre, Quebec (2010)
Women's College Hospital Redevelopment Project, Ontario (2010)
Royal Jubilee Hospital Patient Care Centre, B.C. (2009)
VIHA Residential Care and Assisted Living Capacity Initiative, B.C. (2007)
Abbotsford Regional Hospital and Cancer Centre, B.C. (2008, 2005)
Facility Management for the Royal Ottawa Health Care Group, Ontario (2000)
Devonshire Care Centre, Alberta (2000)
Shaikh Khalifa Medical Centre, United Arab Emirates (2000)

IT Infrastructure

Connecting Small Schools in Newfoundland (2003)

Justice & Corrections

Forensic Services and Coroner's Complex, Ontario (2016)
Okanagan Correctional Centre, British Columbia (2015)
Elgin County Courthouse, Ontario (2014)
Ontario Provincial Police Modernization Project (2013)
Surrey Pretrial Services Centre Expansion, B.C. (2011)
Durham Consolidated Courthouse, Ontario (2007)
Central North Correctional Centre, Ontario (2002)
Five Corners Project, B.C. (2002)

Real Estate

Aurora College Family Student Housing, Northwest Territories (1999)
Legislative Chamber, Offices and Housing, Nunavut (1999)

Recreation & Culture

L'Adresse symphonique, Quebec (2011)
SHOAL Centre: Seniors Recreation Centre, B.C. (2004)
John Labatt Centre, London, Ontario (2002)
Skyreach Place, B.C. (2000)

Social Housing

Single Room Occupancy Renewal Initiative Project, B.C. (2013)

Transportation

L.F. Wade International Airport Redevelopment Project, Bermuda (2021)
Valley Line West LRT, Alberta (2021)
Waterloo LRT ION Stage 1, Ontario (2020)
Regina Bypass, Saskatchewan (2020)
Gordie Howe International Bridge Project (2019)
Tłı̨chǫ All-Season Road Project
North Commuter Parkway & Traffic Bridge Replacement, Sask. (2018)
Iqaluit International Airport, Nunavut (2017)
Southwest Calgary Ring Road, Alberta (2016)
Disraeli Freeway and Bridges Project, Winnipeg, Manitoba (2012)
Canada Line, B.C. (2009)
Confederation Bridge, PEI (2009)
Highway 407 ETR, Ontario (2008 & 1999)
Autoroute 30, Montreal, Quebec (2008)
Northwest Anthony Henday Drive, Alberta (2008)
William R. Bennett Bridge, B.C. (2008)
Autoroute 25, Montreal, Quebec (2007)
Kicking Horse Canyon Project – Phase 2, B.C. (2007)
Golden Ears Bridge, B.C. (2006)
Anthony Henday Drive Southeast Leg Ring Road, Alberta (2005)
Sea-to-Sky Highway Improvement Project, B.C. (2005)
Sierra Yoyo Desan Resource Road, B.C. (2004)
Fredericton-Moncton Highway Project, New Brunswick (2003)
Belledune Port Authority, New Brunswick (2000)
Retendering Alberta's Highway Maintenance Contracts (2000)
Cobequid Pass Toll Highway, Nova Scotia (1998)

Water, Wastewater & Biosolids

Calgary Composting Facility, Alberta (2017)
City of Saint John Safe Clean Drinking Water Project, New Brunswick (2017)
Regina Wastewater Treatment Plant Upgrade Project, Saskatchewan (2014)
Biosolids Management Facility, Sudbury, Ontario (2013)
Britannia Mine Water Treatment Plant, B.C. (2006)
Goderich Water and Sewer Services, Ontario (2000)
Port Hardy Treatment Project, B.C. (2000)

These case studies can be obtained through CCPPP's website at www.pppcouncil.ca

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