

TRILLIUM LINE EXTENSION PROJECT
TECHNICAL EVALUATION | CONSENSUS WORKSHEET

PROONENT:	TNext	FINAL GRADE:	63.61%
DATE:	Start: 27 Sep 2018, 2:10pm End: 01 October 2018 9:45am	FINAL SCORE:	318.05

		Maximum Points	Consensus Grade	Strengths and Weaknesses
1.0 General Technical Submission				
1.1 Project Management Plan (maximum of 30 pages, excluding curriculum vitae)				
1.1.1	General Approach – Project Management Plan	15	60%	<p>Strengths Past experience in Confederation Line Stage 1. Proposed Design Architect and Safety and Security Manager are strong key individuals with relevant experience.</p> <p>Weaknesses Reference to continuity with Stage 1 Confederation Line is difficult to observe; only junior staff are being proposed for the Trillium Line and/or staff that joined the Confed Line Project very late in the term. The narrative is generic, not project-specific, and poorly written. The PMP statements in this section are not substantiated by other sections in the submission, e.g. reference to past projects with no details provided; the PMP emphasizes the end-user experience but it is not substantiated in the design (see stations and vehicle). Narrative suggests that segment 5 was separated from segment 1 because it was “added late”, which contradicts another statement that claims that the segmentation was well thought out. DMU experience in past projects is limited to regulatory approvals, with no observable systems integration scope. Organization chart doesn’t show a link between the design and construction team and the M&R team. M&R Director has no previous experience working on a relevant maintenance site. Design Manager doesn’t appear to have the relevant experience; the resume does not demonstrate that his role in the described projects was similar in scope and complexity to the Trillium Line. Systems Integration Manager has significant industry experience but none in the proposed role. The Communications and Stakeholder Engagement Director has no project experience and only seven years overall experience. Co-location strategy has a number of exceptions that are very significant, i.e. maintenance team and the Design Architect. The scope split between designers Norr and bbb is unclear. Narrative appears to describe a misunderstanding of the project agreement provisions for handover of the existing assets and assumes that Project Co will have the ability to “capture concerns” raised after a walk through with the City (section 1.1-22 of the submission) City involvement in the change management process is unobservable. Consensus: 60%</p>
1.2	Integrated Management System (maximum of 30 pages)	20	75%	<p>Strengths Demonstrates overall understanding of the requirements. Well established corporate IMS system (SNC) has been implemented in the Champlain Bridge Project.</p> <p>Weaknesses DMP has no observable feedback loop for City comments. The narrative is overall generic and lacks project-specific details. Consensus: 75%</p>
1.3	Environmental Management Plan (maximum of 20 pages, excluding (1)(l))	15	77%	<p>Strengths: Good list of Environmental Component Management Plans. Good breakdown of monitoring and reporting obligations, EA commitments, PLAAs, and stakeholder consultations. Describes use of ArcGIS data management system, and RAC (Regulatory Approval and Compliance system) for PLAAs status tracking. Individual proposed as Environmental Manager has good local experience.</p> <p>Weaknesses: Includes identification of resources but the number of staff and the resource loading is unobservable. No observable list of sensitive receivers described in the narrative. The strategy for existing contamination has limited project-specific information. Consensus: 77%</p>
1.4	Construction Communications and Stakeholder Engagement (maximum of 10 pages)	5	65%	<p>Strengths Good content in supporting stakeholder events and outreach meetings.</p> <p>Weaknesses: Resume provided for the Communications and Stakeholder Engagement Director doesn’t demonstrate project experience. Airport, NRC, CN and VIA are not mentioned in the list of stakeholders. No reference to communications strategy during the maintenance period. Guiding principles provided for content, but no description of initiatives unique to the Trillium Line. Consensus: 65%</p>

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1.5	Works Schedule PBS-1 (maximum of 10 pages excluding PBS-1)	30	65%	<p>Strengths Proposed durations provided for City permits.</p> <p>Weaknesses Narrative of the critical path is unstructured and poorly written. It highlights key issues but does not articulate the critical path to substantial completion. DMP is being prepared concurrently with major elements of the design. Narrative implies that Project Co will need the City to relax the requirements for fully coordinated design packages. Fare control delivery date is incorrectly stated as being throughout 2019. Proponent mentions that their ability to meet project timelines is contingent on the Early Works starting December 2018 (Section 1.5-3). Segments 1 and 5 are not coordinated between the narrative and PBS-1 (segment 1 in the PBS-1 includes Limebank, but Limebank is not included in segment 1 in the narrative) Poor quality time-chainage diagram; insufficient information, poorly presented. Basis of Design reports are not considered in the PBS-1.</p> <p>Consensus: 65%</p>
1.6	Risk Management Plan (maximum of 10 pages – excluding Risk Register)	5		<p>Strengths Describes management accountability of risks. Describes risk management software however does not provide a sample/extraction.</p> <p>Weaknesses The risk management approach focuses mostly on risks that are the responsibility of the City and 3rd parties, rather than Project Co risks. Generic statements with limited project-specific information and limited detail. Did not reference previous project where the risk management tools were used, or how the mentioned tools will be used to mitigate risks. Risk register was provided but the list of mitigations is limited and risks are generally addressed by monitoring rather than mitigating. The list of M&R risks is not comprehensive. Design Manager is not referenced in the integration of the risk management process with the team members. Emphasis in the narrative of “risk mitigation through the segmentation of the project” seems misplaced (project requirements impose segmentation of the line into Existing line/New line/Airport link for all proponents).</p> <p>Consensus: 73%</p>
1.7	Systems Integration Management Plan (SIMP) (maximum of 30 pages)	15	62%	<p>Strengths PBS-1 includes a list of City-owned systems integration responsibilities.</p> <p>Weaknesses Very generic information provided, without the adequate level of detail. Mentions detail in the SIMP attached, which was not included in the submission. [extracted during the completeness review] Incorrectly references TPSSs and catenary systems which emphasizes the lack of project-specific details. Narrative has a number of inaccurate statements, e.g. City upgrading head-end of “all 3 systems”; and free issued equipment. Introductory statement suggests that the SIMP attached (not actually provided) is an “example of a SIMP” rather than a project-specific SIMP.</p> <p>Consensus: 62%</p>
1.8	Early Works Agreement	NOT SCORED		

		Maximum Points	Consensus Grade	Strengths and Weaknesses
2.0	DESIGN SUBMISSION			
2.1	Civil and Guideway Design Submission (maximum of 50 pages)	25	52%	<p>Strengths: Municipal roadway restoration and alteration drawings are good.</p> <p>Weaknesses: Minimal specific details provided in the narrative. Future electrification and double tracking are mentioned, but no details of how the alignment is being designed to protect for them are provided. Future OCS and double tracking are unobservable in the drawings. Shortening of the Brookfield siding will result in a non-conformant passing siding and will affect the VIA grade separation. Further, the TNext network model indicates Brookfield siding as a pinch point (see section 3.4-17, which states that minor delays will be caused by single track usage “particularly at Brookfield”), which has unacceptable operational impacts. No rehabilitation work planned for the Rideau River Bridge spans, despite the minimum rehabilitation work described in various OSIM reports provided. Narrative states that the requirement for an E-80 live load will be addressed solely by applying a speed restriction. Bridge handrail upgrade is also not provided, which is a non-conformance with PSOS requirements.</p>

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				<p>NRC 200m run-off is not provided, which is non-conformant with PSOS requirements and has operational impacts.</p> <p>No information provided regarding System Element Clearance and Integration.</p> <p>Track design described in the narrative is not consistent with the drawings: specifically the Walkley interlocking track layout is inconsistent between the narrative and the drawing package.</p> <p>Design doesn't appear to have consideration for snow storage, clearance and handling.</p> <p>Minimum discussion on noise and vibration considerations in special trackwork.</p> <p>Ellwood diamond is mentioned to be retained for future freight but the drawings do not support this statement.</p> <p>Earl Armstrong and Leitrim are not designed to E80 loading.</p> <p>Lester rail bridge is designed for freight gradient, and TNext has eliminated the at-grade freight crossing. However, the bridge is not designed for freight loading (non-conformance with PSOS), therefore rework is required to the structure design, or reinstatement of the design of the at-grade crossing.</p> <p>Consensus: 52%</p>
2.2	Utilities, Geotechnical, Drainage and Stormwater Management, Urban Design and Landscape Architecture (maximum of 45 pages)	25	80%	
				<p>Strengths</p> <p>Geotechnical</p> <p>Describes clear geotechnical monitoring points, located logically by adjacent structures.</p> <p>Stratigraphic profile drawings are comprehensive and clear.</p> <p>Detailed description of proposed monitoring program and typical instrumentation.</p> <p>Detailed description of further geotechnical investigations to be performed.</p> <p>Good interpretation of the current conditions; noted the Leda clay concerns.</p> <p>Utilities</p> <p>State that no relocation is required for the Hydro One crossings (however proof of design is unobservable).</p> <p>Rail over road in Leitrim avoids significant portion of utility work.</p> <p>Novatech (subcontractor) has good local experience and demonstrated project understanding.</p> <p>Weaknesses</p> <p>No detail provided on integration of public art.</p> <p>Limited project-specific detail on geo-environmental contamination.</p> <p>Stormwater Management narrative is unclear as to the intent, referring to "may" and "might" in several instances.</p> <p>Consensus: 80%</p>
2.3	Systems Design Submission (maximum of 40 pages)	25	52%	
				<p>Strengths</p> <p>N/A</p> <p>Weaknesses</p> <p>Little or no detail is provided for the S&TC system: did not provide a solution and details for the Signalling and Train Control system, which ultimately affects the vehicle integration, the project schedule and the overall success of the project. (TNext submission page 2.3-35)</p> <p>The submission for the Train Control System is not definitive. It presents two options, with limited details on the first option (restating PSOS requirements), and no details on the second option. The City cannot assess compliance or evaluate a solution because TNext has not yet elected a design solution. TNext has taken a hedge position on a future choice of the S&TC system.</p> <p>Limited details regarding the coordination of systems requirements with third parties, authorities having jurisdictions, etc.</p> <p>Consensus: 52%</p>
2.4	Station Design Submission (maximum of 40 pages)	30	62%	
				<p>Strengths</p> <p>Extensive use of glazing for weather protection.</p> <p>Airport Station structure is designed to accommodate expansion of the East platform.</p> <p>New Stations include fully enclosed Communications rooms.</p> <p>Weaknesses</p> <p>Station design includes access to Stations through lengthy ramps (no stairs provided) which are non-conformant with PSOS in what concerns CPTED requirements and passenger transfer effort.</p> <p>Uplands Station single platform configuration translates into customer service impacts and erodes operational flexibility, demonstrating limited understanding of project needs.</p> <p>While the vehicle information was provided by the City, and proponents had access to the vehicle, the narrative mentions the need to "obtain further information on the vehicle metrics to confirm the vertical gap can be met at the Alstom LINT door threshold".</p> <p>Carling Station design includes a redundancy elevator that may impede passenger flow on the platform.</p> <p>Bus loops do not demonstrate that they can accommodate the required number of buses for lay-up.</p> <p>Narrative states "no existing Stations will be reused" which contradicts the approach in the drawings.</p> <p>Consensus: 65%</p>

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2.5	New Walkley Yard Design Submission (maximum of 30 pages)	20	52%	<p>Strengths N/A</p> <p>Weaknesses Design includes double slip switches which greatly restrict the yard movements, demonstrating limited understanding of project needs. To achieve redundancy leaving the yard the design considers a turn out and connection trough the adjacent freight CN yard, which demonstrates lack of understanding of the regulatory environment, and of the track conditions in the CN yard, potentially compromises the Stadler warrantee, would rely on a new commercial agreement with CN, and requires approval requirements from Transport Canada, which have not been discussed in the submission. The design addresses the requirement for "two shower rooms" with one universal shower room with two shower stalls, which does not meet the intent of PSOS. Overall layout of the yard is inadequate, e.g. Operator spaces are positioned far from the train stable area; parking facilities and approach to front entrance do not translate an intuitive path; and front entrance is at opposite end of the building to the street entrance. MSF building design does not address the lifecycle requirements, which is non-conformant with PSOS requirements. Tent temporary structures are used in several instances but there is no discussion on the lifecycle and durability of those structures. Additionally these structures undermine the sustainability and LEED certification goals. The layout includes five different fueling stations which translate into broader environmental contamination concerns. Generator backup facilities appear to be inadequate to meet minimum requirements.</p> <p>Consensus: 52%</p>
2.6	Vehicle Fleet Design Submission (maximum of 30 pages)	20	45%	<p>Strengths Wabtec (subcontractor) has previous experience integrating systems into the Stadler vehicles. Past experience in the safety certification of Alstom LINT.</p> <p>Weaknesses TNext states that the City has yet to obtain Alstom information which TNext requires in order to progress the design and integration of on-board equipment (Sections 2.6-7 and 2.6-13 of the submission). This information is not forthcoming and translates into a fatal flaw in TNext's approach to the Existing Vehicle Fleet design. Lack of design solution by TNext also affects the station design (see comment in section 2.4 – Station Design). TNext's previous experience in similar projects is focused on oversight, QA roles, OE roles, and regulatory approvals, but doesn't demonstrate actual knowledge and experience in the execution of the scope of work. The train control system is unknown and therefore cannot be described in the interface between the vehicle and the system.</p> <p>Consensus: 45%</p>
2.7	Airport Link (No limit)	NOT SCORED		
2.8	System Safety and Security Certification (Maximum Pages 15)	10		<p>Strengths Key individual is strong in relation to rail systems experience, and experience with rail system certification. Provided a comprehensive listing of key issues. Approach to re-certification, operation and maintenance hazards, and monitoring risks on an on-going basis is good.</p> <p>Weaknesses Narrative is generic with limited project-specific information.</p> <p>Consensus: 75%</p>
2.9	Dow's Lake Tunnel Design Submission (maximum of 10 pages)	10		<p>Strengths Approach to the pumping system (proposing a five pump system) is unique. Significant enhancements proposed to the pump house building however lacking site plan.</p> <p>Weaknesses Narrative is vague on crack repairs. Assumed design fire load of 33,6MW which may no longer be applicable.</p> <p>Consensus: 79%</p>

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3.0 CONSTRUCTION SUBMISSION				
3.1	Emergency Response Plan (maximum of 20 pages)	10	72%	
				<p>Strengths Describes integration with IMS. Good outline of roles and responsibilities. Approach acknowledges the unique environment at the Airport and describes passed experience working at the Airport. Provides example of a crisis team.</p> <p>Weaknesses Very generic descriptions, lacking project-specific information. No description about responding to roadways adjacent to the Lands. Limited detail provided on potential railroad incidents (VIA, CN).</p> <p>Consensus: 72%</p>
3.2	Traffic and Transit Management Plan and Construction Access Management Plan (maximum of 40 pages)	25	79%	
				<p>Strengths Demonstrates past experience on Stage 1, and working with CN under CROR. Good understanding of third parties involved in the project, e.g. Carlton, CN, VIA, NRC. Commitment to keeping transit running at South Keys and Bayview during construction. Propose a temporary MUP bridge at Carlton, which is a good solution to maintain pedestrian access across the corridor. Design proposes rail over road structures which minimize traffic impact.</p> <p>Weaknesses Limited detail on construction access management. Haul route map was of inappropriate scale, and limited detail, and there was no description provided as to how the haul operations will take place. Lacks detail on specific plans and schedules for some of the major impacts.</p> <p>Consensus: 79%</p>
3.3	Construction Plan (maximum of 40 pages, excludes staging drawings)	40	70%	
				<p>Strengths Demonstrates good passed experience, and provides lessons learned from Stage 1. Team members are currently working at the Airport. Approach to construction considers release of areas after construction. Airport staging drawings are comprehensive and address potential access/egress staging issues.</p> <p>Weaknesses Narrative is very brief on protection and relocation of utility infrastructure. Staging drawings are only provided at select locations and lack details on the scope of work. Narrative tends to be overall repetitive and generic, and lacks detail substantiating the statements made. The ability to self-perform work is not substantiated. Appears to misunderstand the schedule of the interim projects. Does not acknowledge the schedule constraints related to performing works on the existing line.</p> <p>Consensus: 70%</p>
3.4	System Testing and Commissioning Plan (maximum of 25 pages)	25	56%	
				<p>Strengths Figure 1 provides a good interpretation of the layering of PA requirements, EN50126 and ISO15288 over the V-model.</p> <p>Weaknesses Narrative indicates that "trial running is not a test" which does not meet the intent of the PA. The TNext modelling articulates pinch points at the Brookfield siding. Despite this pinch point, TNext has chosen to reduce the length of the Brookfield siding. In the network model, TNext indicate that delays due to dwell time variations and waiting at sidings for single track usage are not included in the calculations. This demonstrates a clear misunderstanding of the requirement, which is to account for all system delays and use that information to inform the track alignment. Provides no recognition of specific training requirements Did not address how a single platform approach at Uplands would work operationally. Scope and requested definitions for minor deficiencies are not provided. The process to be followed leading to the request to the Independent Certifier for the issuance of the Substantial Completion Certificate is not explained in sufficient detail. Narrative does not illustrate the testing and commissioning interfaces and responsibility split as it relates to the Communication System and head-end management platform at the TOCC and BCC.</p> <p>Consensus: 56%</p>
3.5	Health and Safety Certification (no page limit)	NOT SCORED		
3.6	Mobility Matters Lanes (maximum of 5 pages)	5	60%	

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			<p>Strengths N/A</p> <p>Weaknesses Did not provide hours or costs in the target letter, which demonstrates a lack of understanding of the importance of the Target Letter. Provided a limited narrative.</p> <p>Consensus: 60%</p>

	Maximum Points	Consensus Grade	Strengths and Weaknesses
4.0 MAINTENANCE AND REHABILITATION SUBMISSION			
4.1	Maintenance & Rehabilitation Approach to Part 1 of Schedule 15-3 of the Project Agreement (maximum of 30 pages)	40	
			<p>Strengths N/A</p> <p>Weaknesses Provides no description of the approach of the Maintenance Director to day-to-day maintenance of rail transit according to pre-established performance specifications. States the mobilization of the M&R team on May 2021, which raises the question on who will be maintaining the existing line from May 2020. There is no description on "how the Maintenance and Rehabilitation Services are to be executed in a timely, diligent, safe and professional manner". Plan for mobilization is highly generic with no reasonable level of detail provided. In many instances the narrative simply restates the PSOS requirements and no specific details are provided. Proposed key Individual does not demonstrate direct infrastructure of vehicle maintenance experience. Provides no information regarding the organizations and service providers that are going to be used. No detail provided on the Rideau River Bridge rehabilitation plan during the Maintenance Period, despite the issue being raised in the submission (section 4.1-6 of the submission). No details provided on Work Safety Programs or Emergency Response Protocols.</p> <p>Consensus: 60%</p>
4.2	Maintenance & Rehabilitation Approach to Appendix A (Maintenance Performance Requirements) to Schedule 15-3 of the Project Agreement (maximum of 30 pages)	40	52%
			<p>Strengths N/A</p> <p>Weaknesses Overall very limited detail, demonstrating limited understanding of the requirements. Planning schedule for M&R has limited reference to PSOS maintenance standards; a number of sections just paraphrase the submission requirements with no additional detail. The plan for M&R mobilization is extremely generic; no plan is provided for maintenance prior to and during the shutdown (NRC spur, Ellwood diamond, and Walkley diamond). No details provided on communications with Capital Rail, OMCIAA, VIA and CN, and no details on the interface with these parties, other than a reference to a single point of contact. Includes a weak response on minimizing impacts on operations, and does not address mitigation of paymech deductions and KPis. LRV maintenance doesn't differentiate between Alstom and Stadler vehicles. Limited detail on snow and ice removal. No information provided on custodial maintenance.</p> <p>Consensus: 52%</p>
4.3	Maintenance & Rehabilitation Approach to Appendix B (Asset Preservation) to Schedule 15-3 of the Project Agreement (maximum of 25 pages (excluding lifecycle work schedule))	35	65%
			<p>Strengths The submission mentions the Capital Rail bridge safety management plan.</p> <p>Weaknesses Responses include general and non-committal statements, lacking project-specific detail and providing no mention to past experience or lessons learned. Proposes to leave assets in service passed their OEM based recommendation evoking "value for money", but this is not substantiated with other information regarding benefits to the City besides cost savings, nor with a reasonable process to ensure the deferral is done in a safe manner. No detail provided regarding the compliance with regulatory testing and inspection. Provided no information regarding the scope, activities, and processes associated with meeting performance criteria. No reference to condition based maintenance and how it will be applied to the two fleets. Limited detail regarding the interface with stakeholders (Capital Rail, OMCIAA, VIA and CN), other than the mention to a single point of contact.</p> <p>Consensus: 65%</p>
4.4	Maintenance & Rehabilitation: Approach to Appendix C (Expiry Date Requirements) to Schedule 15-3 and Schedule 23 – Expiry Transition Procedure of the Project Agreement (maximum of 5 pages)	10	70%
			<p>Strengths N/A</p>

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				<p>Weaknesses The requested Handover Maintenance Plan is only briefly discussed.</p> <p>General statements and generally accepted practices.</p> <p>Consensus: 70%</p>