

### SCHEDULE 15-3 MAINTENANCE AND REHABILITATION REQUIREMENTS

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## PART 1 MAINTENANCE AND REHABILITATION

### ARTICLE 1 MAINTENANCE AND REHABILITATION REQUIREMENTS

#### 1.1 Responsibility for Maintenance and Rehabilitation

- (a) Throughout the Maintenance Term, Project Co shall carry out and be fully responsible for the Maintenance Services in accordance with the terms of this Project Agreement and in such a manner as to comply with and ensure satisfaction of the requirements of this Schedule and all other applicable Project Agreement requirements.
- (i) This Schedule has three (3) Appendices that are interrelated and collectively outline the scope of the Maintenance Services:
- A. Appendix A (Maintenance Performance Requirements) defines general maintenance requirements during the Maintenance Term;
  - B. Appendix B (Asset Preservation) defines the requirements and performance measures for preserving and maintaining the System's integrity with a view of proactive asset preservation practices during the Maintenance Term;
  - C. Appendix C (Expiry Date Requirements) defines the condition of System and their remaining service life before it is turned back to the City on the Expiry Date.
- (ii) Table 1.1 sets out a summary list of activities comprising the Maintenance and Rehabilitation with reference to the relevant Appendix of this Schedule 15-3.

| <b>TABLE 1.1</b><br>Maintenance References             |                 |                   |
|--|-----------------|-------------------|
| <b>Activity</b>  | <b>Appendix</b> | <b>Attachment</b> |
| <b>Appendix A Maintenance Performance Requirements</b> |                 |                   |
| Maintenance and Rehabilitation Plan                    | A               | 1                 |
| Operations Service Plan                                | A               | 2                 |
| Systems Maintenance Services                           | A               | 3                 |
| Track Maintenance Services                             | A               | 4                 |
| Vehicle Maintenance Services                           | A               | 5                 |
| Facilities Maintenance Services                        | A               | 6                 |
| Passenger Station Maintenance Services                 | A               | 7                 |
| Tunnel Maintenance Services                            | A               | 8                 |

| <b>TABLE 1.1</b><br>Maintenance References |                 |                   |
|--|-----------------|-------------------|
| <b>Activity</b>                            | <b>Appendix</b> | <b>Attachment</b> |
| Structure Maintenance Services             | A               | 9                 |
| Alignment Maintenance Services             | A               | 10                |
| Help Desk Services                         | A               | 11                |
| Maintenance Records and Reporting          | A               | 12                |
| Maintenance Activities and Coordination    | A               | 13                |
| Operations and Maintenance Interface       | A               | 14                |
| Maintenance Responsibility Table           | A               | 15                |
| Vandalism and Graffiti                     | A               | 16                |
| <b>Appendix B Asset Preservation</b>       |                 |                   |
| Asset Management Plan                      | B               | Not Applicable    |
| <b>Appendix C Expiry Date Requirements</b> |                 |                   |
| Handover Maintenance Plan                  | C               | Not Applicable    |

- (b) The geographical boundaries within which Project Co shall carry out the Maintenance Services include all areas within the Lands and outside of the Lands to the extent that certain Maintenance Services relate to a portion of the New Municipal Infrastructure. The performance of the Maintenance Services in respect of the System shall begin on the Revenue Service Availability Date, subject to the following exceptions:
- (i) Temporary roads and detours shall be maintained by Project Co from the commencement of the phase of construction works in accordance with Schedule 15-2 Part 1, Article 1.9 of the Design and Consturction Schedule until the commencement of the Maintenance Term according to Good Industry Practice, be safe for travel, and meet the intent of the requirements in Appendix A of this Schedule for ongoing maintenance.
  - (ii) New Municipal Infrastructure—The Design and Construction Specifications, Appendix A and Appendix C of the Maintenance Specifications apply to the New Municipal Infrastructure until such New Municipal Infrastructure is handed back to the City in accordance with Schedule 15-2 Part 1, Article 23 of the Design and Construction Specifications. The requirements of Schedule 24 – Expiry Transition Procedure shall not apply to New Municipal Infrastructure.
  - (iii) Existing Infrastructure—Such existing Infrastructure shall be maintained by Project Co in accordance with Appendix A of the Maintenance Specifications, and at a minimum, at

the same condition as when handed over to Project Co from the commencement of the phase of construction works in accordance with Schedule 15-2 Part 1 Article 1.9 of the Design and Construction Schedule until the commencement of the Maintenance Term. Exclusions to the requirements of Appendix A for the purposes of maintaining the existing Infrastructure until the commencement of the Maintenance Term are further defined in Appendix A of this Schedule.

- (iv) From the commencement of the Maintenance Term to the Expiry Date, and unless stated otherwise in this schedule or the Project Agreement, , all Infrastructure that falls within the Lands shall be subject to all applicable requirements of this Project Agreement, which include the Maintenance Specifications in their entirety. For further certainty, all existing Infrastructure, which in whole or in part forms part of the OLRT System and is part of Project Co's Maintenance and Rehabilitation requirements shall be maintained to a condition as prescribed in this schedule.
- (v) New System Infrastructure – From Substantial Completion or Substantial Completion of the Fixed Components or Substantial Completion of the Vehicle Component to Revenue Service Availability Date, Project Co shall perform all Maintenance Services, and for further certainty, notwithstanding the requirements of Schedule 14 – Commissioning,

## **1.2 General Maintenance and Rehabilitation Obligations**

- (a) Project Co is responsible for all maintenance, and construction means, methods and techniques used to undertake the Maintenance Services and must provide all aspects (including labour, plant, equipment and materials) necessary for the performance of the Maintenance Services. Project Co shall in a timely and professional manner and in accordance with the requirements of this Project Agreement:
  - (i) execute the Maintenance Services diligently, expeditiously and in a thorough and worker-like manner consistent with Schedule 11 – Quality Management;
  - (ii) execute the Maintenance Services diligently, expeditiously and in a thorough and worker-like manner consistent with Schedule 17 – Environmental Obligations;
  - (iii) ensure that no works other than the Maintenance Services under this Project Agreement are performed on the Lands by Project Co or any person for whom Project Co is responsible at law;
  - (iv) use plant, equipment, and materials that:
    - are of a kind that are consistent with the Output Specifications, and for further certainty:
      - i where technological advancement and/or upgrades are necessary, the replacing or re-specifying of the system, subsystem or component shall be with one that is equal or better in form, fit and function when compared with the original Output Specification requirement; and

- ii notwithstanding the requirements of Appendix C, when obsolescence of system components occurs, replacement of the system components shall only be necessary where the system component fails to comply with the Design Life or Output Specification requirements and not simply by virtue of the system component becoming obsolete, or as may be otherwise agreed by the City pursuant to Article 1.2(a)(iv)C;
  - B. are new, of good quality, and are used, handled, stored, and installed in accordance with Applicable Law and Good Industry Practice with respect to health and safety so as not to be hazardous or dangerous; and
  - C. where they differ from the Output Specifications, have been substituted with the City's prior written consent in accordance with the Project Agreement.
- (b) Project Co shall appoint a Maintenance Director who shall, throughout the Maintenance Term and irrespective of such person's other responsibilities, have defined authority and full responsibility for ensuring, in respect of all Maintenance Services, compliance with all requirements of Schedule 15-3.
- (c) Without limiting the generality of the foregoing, the job specification and responsibilities of the Maintenance Director shall include the following:
- (i) directing all aspects of the Maintenance Services;
  - (ii) ensuring Maintenance Services issues and obligations are addressed and requirements are met in accordance with this Project Agreement;
  - (iii) establishing and maintaining professional working relationships with Relevant Authorities and Stakeholders through the City;
  - (iv) liaising with the City and with Relevant Authorities (through the City) as required and acting as the single point representative for Project Co on all matters relating to the Maintenance Services;
  - (v) coordinate with the Environmental/Sustainability Director with respect to the preparation and submission to the City of all reports required under the Environmental Approvals and other Permits, Licences and Approvals;
  - (vi) directing the preparation and submission to the City of any additional reports that may be required under the terms of the Project Agreement; and
  - (vii) supporting and maintaining working relationships with relevant First Nations, through the City.

### **1.3 Maintenance and Rehabilitation Performance Measure System Framework**

- (a) The performance measures for Maintenance Services are structured as described below:

- (i) Performance measures and requirements stating the minimum criteria and measures for requirements relating to the Maintenance Services to be met by Project Co, which consist of the following:
  - A. Maintenance performance measures that define the minimum performance criteria for Asset Classes and System management requirements reflecting the expectations of System Users with respect to day-to-day serviceability (including condition and response times), as specified in Appendix A to this Schedule.
  - B. Asset Preservation Performance Measures (APPMs) that define the minimum asset preservation criteria during the Maintenance Term to achieve the desired levels of service and to limit the extent of asset consumption, as specified in Appendix B to this Schedule.
  - C. Expiry Date requirements define the remaining service life and condition of System before it is turned over to the City, as specified in Appendix C to this Schedule.
- (ii) The submission of reports on a regular basis in an auditable format with sufficient detail of Project Co's activities and how the Project objectives are being met, as specified in Appendix A, B and C of this Schedule.

#### **1.4 Availability of Maintenance Director or Substitute**

- (a) Project Co shall ensure that:
  - (i) the Maintenance Director; or
  - (ii) in the case of any temporary absence or unavailability of the Maintenance Director, one or more suitable substitutes, each with the qualifications and authority to act in the place and instead of the Maintenance Director during such absence or unavailability;
  - (iii) is at all times during the Maintenance Term available by telephone, email, and facsimile transmission or other appropriate means of communication, 24 hours per day, seven (7) days a week to respond on behalf of Project Co and its applicable Construction Contractor or Maintenance Provider to any matters relating to the Maintenance Services.

#### **1.5 Construction Activities during Maintenance Period**

- (a) The Project Agreement requirements relating to design and construction, including the Design and Construction Specifications apply, mutatis mutandis, to any design and Construction Activities carried out as part of the Maintenance Services by Project Co during the Maintenance Term.

#### **1.6 Condition of System**

- (a) Project Co, at its expense, shall ensure that upon the Expiry Date, each element of the System will:



- (i) comply in all respects with the applicable requirements set out in Appendices A, B, and C to this Schedule; and
  - (ii) meet all other Project Agreement requirements, as applicable.
- (b) If the Project Agreement is terminated prior to the Expiry Date, the System must meet the requirements of Appendices A and B to this Schedule 15-3 at the relevant Termination Date.

#### **1.7 References**

- (a) Article 2.12 of Schedule 1 – Definitions and Interpretation applies to all documents listed in any Article titled “References” or otherwise referred to as a “Reference Document” in this Schedule 15-3, including Appendices A, B, and C hereto.

## APPENDIX A MAINTENANCE PERFORMANCE REQUIREMENTS

### ARTICLE 1 MAINTENANCE OF SYSTEM

#### 1.1 Introduction

- (a) The specifications in this Schedule 15-3 apply to the Maintenance of the System.
- (b) Project Agreement
  - (i) Any capitalized term used in this Schedule 15-3 but not defined herein has the meaning given to it in the Project Agreement.
  - (ii) Each reference in this Schedule 15-3 to “Section”, “Article”, “Appendices” and “Schedule” is a reference to a Section of, an Article of, an Appendix to or a Schedule to this Schedule 15-3, except where expressly stated otherwise.

#### 1.2 Project Co to Maintain

- (a) Project Co will have complete control of (subject to the rights and obligations of the City pursuant to the Project Agreement) and responsibility for the Maintenance of the System during the Maintenance Term.
- (b) Project Co shall, in addition to and without derogation from its Maintenance obligations set out in Article 1.2(a), perform the Maintenance Services in accordance with this Schedule and otherwise in accordance with terms of the Project Agreement, to the extent that it provides for Project Co’s performance of Maintenance Services that are not set out in this Schedule 15-3.
- (c) So long as the Project Agreement remains in effect and has not been terminated in accordance with its terms and conditions, Project Co shall be unconditionally obligated to perform the Maintenance Services throughout and diligently at all times during the Maintenance Term in accordance with the Project Agreement, notwithstanding the existence of any Dispute, including any Dispute respecting Payments. For further certainty, in no event shall the existence of a Dispute or the fact that a Party has invoked the Maintenance Dispute Resolution Procedure exempt Project Co, for any period of time during the Maintenance Term, from the fulfillment of its obligations to perform the Maintenance Services pursuant to the Project Agreement. For further certainty, Project Co’s obligation to perform the Maintenance Services shall be subject to any Time Relief granted to Project Co by the provisions of the Project Agreement (including the Maintenance and Rehabilitation Requirements) following the occurrence of a Relief Event.
  - (i) In the event that a Dispute exists which relates to monetary matters, including, without limitation, any amount payable by a Party to the other under the Project Agreement, the Parties shall pay to each other all amounts payable under the Project Agreement which are not the subject matter of a Dispute, in compliance with the terms and conditions of the Project Agreement, notwithstanding the existence of a Dispute respecting amounts

payable or other monetary matters under the Project Agreement, or the fact that a Party has invoked or may invoke the Maintenance Dispute Resolution Procedure with respect to such Dispute, subject to the City's rights contained in Article 14.4 (City's Right of Set-Off) of the Project Agreement.

### **1.3 Scope of Maintenance**

#### **(a) General**

- (i) Project Co shall conduct all Maintenance, on and for the System, as and when required, so as to meet and maintain the Standard.
- (ii) Project Co shall preform or cause to be performed all inspection and testing on and for the System, as and when required, so as to meet and maintain the Standard.

#### **(b) Fixed and Vehicle Component Maintenance Requirements**

- (i) In performing the Maintenance Project Co shall provide all Maintenance with respect to the System including, but not limited to, all required Preventive Maintenance, Corrective Maintenance, Custodial Maintenance and Handover Maintenance for the System.

#### **(c) Custodial Maintenance**

- (i) Project Co will provide Custodial Maintenance within and for the Custodial Maintenance Areas.
- (ii) Project Co shall provide Custodial Maintenance for the Custodial Maintenance Areas, in accordance with the Standards set out in Appendix A.

#### **(d) Corrective Maintenance**

- (i) If at any time during the Maintenance Term:
  - A. a Defect or a Deficiency in any design or construction of the System undertaken during the Maintenance Term, is discovered; or
  - B. for any reason any element of the System requires Corrective Maintenance, Project Co will undertake Corrective Maintenance in a timely way, in accordance with the requirements of the Project Agreement.
- (ii) Project Co shall perform the Corrective Maintenance in a manner that minimizes:
  - A. the interference to or adverse effect on the Passengers; and
  - B. interference which prevents compliance with the Operational Requirements and Specifications or the Revenue Service Hours required by the City's Operations Service Plan.

- (e) Preventive Maintenance
  - (i) Project Co shall perform Preventive Maintenance for the System.
  - (ii) Project Co shall provide Preventive Maintenance pursuant to the Annual Preventive Maintenance Plan as described in Article 1.4 (a)(ii).
  - (iii) Project Co shall replace System components prior to or upon expiry of their Design Life.
- (f) Allocation of Maintenance Services
  - (i) Project Co is responsible for Maintenance of the System and for ensuring that the Maintenance of the System is sufficient to permit the Operation of the System in accordance with the Operation Requirements and Specifications. Project Co is responsible for all elements of Maintenance on the System, excepting any element of maintenance which is expressly identified by the Project Agreement as the responsibility of the City or other Person (“**Person**” for purposes of this Article 1.3(f) shall exclude the Parties). For further certainty, any element of Maintenance for the System which is not expressly provided for by the Project Agreement shall be the obligation of Project Co. For further certainty, Project Co is not responsible for the Operation of the System.
- (g) Training
  - (i) Notwithstanding Article 3.3, Project Co shall be responsible for providing training services for personnel carrying out Maintenance Services including:
    - A. preparing, revising, coordinating and scheduling Maintenance training programs as required;
    - B. providing training to newly-hired Maintenance Employees and providing ongoing re-certification training to existing Employees as required;
    - C. providing ongoing staff development training;
    - D. providing training to Service Providers employed by Project Co to carry out Maintenance Services on the System;
    - E. maintaining up to date training records on all Maintenance Employees; and
    - F. maintaining up to date training manuals for Operation and Maintenance Services.
  - (ii) Project Co shall be responsible for all training required to the City and third parties the City considers necessary, acting reasonably, as a result of any changes to the System.

#### **1.4 Maintenance and Rehabilitation Plan**

- (a) Project Co shall develop and submit pursuant to Schedule 10 – Review Procedure a Maintenance and Rehabilitation Plan which includes but is not limited to the requirements of this schedule.

The Maintenance and Rehabilitation Plan shall be submitted 90 days prior to the Testing and Commissioning phase as prescribed in Schedule 14 of the Project Agreement.

- (i) The Maintenance and Rehabilitation Plan shall, at all times, comply with the Standard.
  - (ii) The Maintenance and Rehabilitation Plan shall, without limitation and at all times during the Maintenance Term, include the following for the System:
    - A. a Custodial Maintenance Plan;
    - B. a Corrective Maintenance Plan; and
    - C. a Preventive Maintenance Plan.
  - (iii) Starting the Contract Year following Revenue Service, Project Co shall provide an Annual Preventive Maintenance Plan for each Contract Year which shall comply with the Maintenance and Rehabilitation Plan. The Annual Preventive Maintenance Plan shall be submitted to the City at least 60 days prior to the commencement of the Contract Year to which the Annual Preventive Maintenance Plan applies. The City shall be entitled to review and provide commentary to Project Co in respect of the Annual Preventive Maintenance Plan.
- (b) Project Co shall ensure that it has sufficient staff, equipment and materials, and that there shall be proper procedures and processes in place to fulfill its obligations to perform Custodial Maintenance, Preventive Maintenance and Corrective Maintenance. Project Co shall ensure that Project Co and Contractors employed in the execution of the Maintenance Services implement policies, processes and procedures to remedy any Epidemic Defect in a timely and effective manner in order to maintain Project Co's obligations to provide the Scheduled Revenue Service Vehicles and in accordance with the Vehicle Maintenance Requirements and Standards in Appendix A.
- (c) Compliance with Maintenance Plans
- (i) Project Co shall perform Maintenance in accordance with and implement the Maintenance and Rehabilitation Plan.
- (d) Revision of M&R Plan
- (i) Project Co may at any time during the Maintenance Term, propose a revision to the Maintenance and Rehabilitation Plan, which Project Co shall propose in accordance with Schedule 10.
    - A. In the event that a proposed revision pursuant to Article 1.4(d):
      - i does not comply with the Standard;
      - ii results in increased costs to the City in any Contract Year of the Maintenance Term; or



iii results in any adverse change to Operations;

the proposed revision shall constitute a variation and the provisions of Schedule 22 shall apply. For further certainty, in the event that a proposed revision constitutes a Variation pursuant to this Article 1.4(d), the Maintenance and Rehabilitation Plan shall not be amended except in accordance with Schedule 22.

- (ii) In the event that a proposed revision does not constitute a Variation pursuant to Article 1.4(d), should the City determine that it disagrees with the proposed revisions, the City may refer the matter to Schedule 27 of the Project Agreement (Dispute Resolution Procedure) for a resolution.
- (iii) The City may at any time during the Maintenance Term, in its Discretion, propose a revision to the Maintenance and Rehabilitation Plan, and the provisions of Schedule 22.
- (iv) In the event that the proposed revision does not constitute a Variation, subject to Article 1.4 (d)(v), the Maintenance and Rehabilitation Plan shall be deemed to have been amended in accordance with a proposed revision pursuant to Schedule 10, failing which the Maintenance and Rehabilitation Plan shall not be amended except as mutually agreed between the Parties or in accordance with the Schedule 27.
- (v) Notwithstanding Article 1.4 (d)(iv), the Maintenance and Rehabilitation Plan shall be deemed to be amended pursuant to Schedule 22.

## **1.5 Maintenance Coordination**

### **(a) General**

- (i) Subject to this Article 1.5, Project Co and the City shall coordinate the Maintenance Services and the Operations, respectively, so as to facilitate effective implementation of both the Maintenance and Rehabilitation Requirements and the Operational Requirements and Specifications, provided that:
  - A. at no time shall Operations be adversely affected by Maintenance Services; and
  - B. notwithstanding the provisions of Article 1.5 including Article 1.5(d) (Approval of Scheduled Maintenance Services) or Article 1.5(e) (Major Maintenance Shutdown Periods), Project Co shall use best/commercially reasonable efforts to prevent any complete or partial shutdowns of the System.

### **(b) Coordination Meetings**

- (i) Project Co shall communicate daily with the City Representative to discuss, review and coordinate daily activities for Maintenance of the components of the System and all other related issues.
- (ii) Project Co shall attend a weekly meeting with the City to discuss, review and coordinate Maintenance of the System and all other related issues, including without limitation the

implementation of the Maintenance and Rehabilitation Plan, compliance with the maintenance requirements and standards defined in the Attachments to Appendix A.

- (iii) Project Co shall meet with the City to determine if Track outages are required to accommodate the Maintenance Services which Project Co plans to undertake within the System. Such meetings shall be scheduled once weekly, between Project Co, the City and any third parties whose attendance the City in its Discretion deems necessary. Project Co shall, at least one week prior to any such meeting, advise the City of any proposed Maintenance Services on the Track or System Right of Way which is scheduled to take place during the week immediately following that meeting, provided that in the event the nature of any proposed Maintenance Services is so as to require earlier notice for purposes of coordination with Operations, Project Co shall provide the City with sufficient prior notice to effect such coordination.

(c) Quarterly Performance Review

- (i) The City shall, on a quarterly basis during each Contract Year, conduct a formal review of Project Co's performance of the Maintenance Services as well as the co-ordination between the City's operational scope of responsibility and Project Co's scope of maintenance responsibility (the "Quarterly Performance Review"). The Quarterly Performance Review shall include a written report drafted by the City ("Quarterly Performance Report") which includes an assessment of:
  - A. Review of data collected pursuant to the Project Agreement respecting Project Co's performance of the Maintenance Services, including but not limited to the Performance Monitoring Reports and Daily Operating Reports for the relevant quarter;
  - B. Specific incidents or failures to meet the service standards set out in Schedule 15-3 occurring during the relevant quarter, in particular repeated incidents or failures;
  - C. Logistical, scheduling, and/or co-ordination issues occurring during the relevant quarter;
  - D. Follow-up and progress reporting on Action Plans previously issued and implemented by Project Co;
  - E. Functioning of the contract management and interface framework set out in the Project Agreement, including performance monitoring, daily meetings, Helpdesk mechanism; and
  - F. Other issues relevant to the performance of the Maintenance Services in accordance with the standards set out in Schedule 15-3 and/or a smooth interface between the City and Project Co in relation to the operation and maintenance of the System.

- (ii) The City and Project Co shall meet to review the Quarterly Performance Report (“Quarterly Performance Review Meeting”). The City shall provide Project Co with a draft copy of the Quarterly Performance Report at least five (5) Business Days in advance of the meeting. Project Co shall have the opportunity to respond, both during the meeting and in writing following the meeting, concerning any identified performance issues.
  - (iii) The City shall provide a finalized Quarterly Performance Report no later than ten (10) days following the performance review meeting between the City and Project Co. The City may, as part of such Quarterly Performance Report, issue a directive to Project Co to provide an Action Plan to address any identified issues in Project Co’s performance of the Maintenance Services, provided that any such identified performance issues shall be limited to:
    - A. Repeated or systemic failures to provide the Maintenance Services in accordance with the standards set out in Schedule 15-3;
    - B. Co-ordination issues between the City and Project Co; or
    - C. Levels of performance which have triggered, during the relevant quarter, the issuance of a Warning Notice, Monitoring Notice, exercise of the City’s Remedial Rights, or an Event of Default, under the terms of the Project Agreement.
  - (iv) If so required by the City, Project Co shall provide such Action Plan for the City’s review and approval within twenty-one (21) days of the City’s written request. The Action Plan shall include:
    - A. A clear statement of the performance issues to be addressed;
    - B. A clear statement of the methodology to address each issue;
    - C. A timeline for implementing the methodology;
    - D. Clear performance measures and performance targets for each identified issue; and
    - E. An expected timeline for when the methodology will yield the identified performance improvement targets.
  - (v) The City shall review the Action Plan within five (5) days of receipt and shall, acting reasonably, approve the Action Plan or decline to approve the Action Plan, providing details and a date for re-submission.
- (d) Approval of Scheduled Maintenance Services
- (i) Project Co shall obtain the prior approval of the City Representative for the scheduling of all Maintenance Services on the System. The City may impose reasonable conditions on the performance of such work by Project Co so as to ensure the Operation of the System

in accordance with the Operational Requirements and Specifications and the Safety Management System, and Project Co shall comply with all such conditions. The City's approval of Project Co's proposed Maintenance Services shall not be unreasonably withheld, however Project Co acknowledges that the Operation of the System in accordance with the Operational Requirements and Specifications and the Safety Management System shall be paramount.

- (ii) Project Co shall coordinate all Custodial Maintenance, Preventive Maintenance and Corrective Maintenance Services on the System with the City. Project Co shall advise the City in advance, and where reasonably possible on the occasion of weekly Track outage meetings identified in Article 1.5(b), of all such planned Preventive Maintenance and Corrective Maintenance, and the City and Project Co shall mutually establish the Schedule for such Maintenance. In no event shall Project Co perform such Maintenance within the Alignment without receiving prior approval from the City or TSCC as required by this Article. Project Co shall coordinate Preventive Maintenance and Corrective Maintenance activities with the TSCC:
  - A. All employees of Project Co performing Maintenance on the areas between or adjacent to the tracks are governed by the LRT Rules and the Standard Operating Procedures;
  - B. All employees of Project Co performing Maintenance shall receive clearance from the TSCC to enter and perform Maintenance Services on the areas between or adjacent to the tracks;
  - C. All employees of Project Co performing Maintenance on the areas between or adjacent to the tracks shall be certified in LRT Rules and Standard Operating Procedures;
  - D. No equipment other than hand tools shall be operated in proximity to the areas between or adjacent to the tracks without prior approval of the TSCC;
  - E. Neither Drivers of Trains nor Employees operating Non-Revenue Vehicles shall operate on the track or in areas between or adjacent to the tracks unless the Drivers and / or Employees are certified to operate the Trains or Vehicles in accordance with the LRT Rules and Standard Operating Procedures, and has received appropriate clearance in accordance with Article 1.5(d)(ii);
  - F. Maintenance on the areas between or adjacent to the tracks shall be performed outside of Revenue Service Hours, unless the City approves the performance of specified Maintenance Services during Revenue Service Hours in accordance with Article 1.5(d)(ii) such approval not to be unreasonably withheld or delayed; and
  - G. Subject to Article 1.5(d)(ii)(F), in the event that Project Co carries out approved Maintenance Services during Revenue Service Hours, the Payment Mechanism

shall continue to apply and Project Co shall be held accountable for all Availability Failures, Quality Failures, and/or Service Failures which occur during such period.

(e) Major Maintenance Shutdown Periods

(i) Project Co shall be permitted to shut down portions of the System during Revenue Service Hours in order to carry out major maintenance on the track, systems, or structures, subject to the conditions set out in this Article 1.5(e), for a maximum of eighty (80) hours during each Contract Year. Each such period of permitted System shutdown shall be termed a “Major Maintenance Shutdown Period”.

A. During a Major Maintenance Shutdown Period, Project Co shall not be subject to deductions under the Payment Mechanism for the portions of the System which Project Co has shutdown pursuant to this article.

B. Project Co must obtain the written approval of the City Representative, not to be unreasonably withheld, to schedule a Major Maintenance Shutdown Period. Project Co’s request for approval shall be submitted to the City Representative at least forty-five (45) calendar days in advance of the proposed Major Maintenance Shutdown Period, and shall include but not be limited to:

- i the duration of such period;
- ii start time;
- iii end time;
- iv portion of the System to be shutdown and / or otherwise affected by the shutdown period, including a written explanation / rationale of the limits of the portion of the System proposed to be shutdown;
- v purpose of the planned Maintenance Services to be carried out during the shutdown period including a written explanation of why a Major Maintenance Shutdown period is required to perform the Maintenance Services; and
- vi Traffic and transit management plans pursuant to Article 1.5(h).

C. A Major Maintenance Shutdown Period shall only be scheduled during weekends, certain holidays, and during weekdays between the hours of 23:30 and the start of the Scheduled Station Hours on the following service day.

D. Unused time shall be carried over into a subsequent Contract Year to a maximum of 160 hours.



- E. A Major Maintenance Shutdown Period shall only be permitted on portions of the System, and for further certainty, the shutdown of the entire System is not permitted.
  - F. The City shall provide a written response within 15 calendar days of receiving Project Co's request in compliance with the provisions in article 1.5(e)(B).
- (f) Specific Coordination Requirements
  - (i) The City and Project Co shall establish LRT Rules and Standard Operating Procedures for the coordination of Maintenance and Operations activities and personnel at the Maintenance and Storage Facility, and Project Co shall comply with such rules and procedures. The rules and procedures shall include, without limitation, the coordination of Maintenance activities with the entry of Trains into and their removal from Revenue Service. Any negligent act or omission with respect to the Operation of the System by a City employee employed in the Operation of the System, or a failure by the City or a City employee employed in the Operation of the System to comply with the LRT Rules and Standard Operating Procedures shall be a Relief Event, to the extent that any such negligent act or omission or failure materially adversely affects, or increases the cost of, the performance by Project Co of the Maintenance Services.
  - (ii) Project Co acknowledges that the City shall conduct training of City employees in accordance with the Safety Management System, including its ability to conduct City employee training as required during Off-Peak Periods and outside of Revenue Service Hours, and Project Co shall make reasonable efforts to cooperate with the City to accommodate all training activities in accordance with training programs approved by the City. The City and Project Co shall jointly determine the requirements for and scheduling of all such training activities, provided that the City shall have final authority to establish such requirements and scheduling. The City shall be entitled to vary the requirements for such training in response to Operations requirements. Project Co shall ensure that Vehicles are available for use in such training activities as required and directed by the City.
  - (iii) Upon either the TSCC or Project Co becoming aware of the failure of any System or City owned assets, equipment or component of the System, that Party shall inform the other Party of the failure. Upon discovering or becoming aware of a failure, the City shall take immediate action to reduce, to the extent reasonably possible, loss of Scheduled Revenue Service Vehicle Kilometres and Project Co shall immediately commence Corrective Maintenance, as required.
  - (iv) Project Co shall obtain the prior approval of the City for the scheduling of all inspection and testing activities to be carried out on the System, such approval not to be unreasonably withheld or delayed.

- (v) Project Co shall establish a plan detailing Project Co's Maintenance strategy in the event of the failure of any system, equipment or component of the System. The plan shall include response and repair strategies in the event of:
  - A. failures which immobilize Trains or the System;
  - B. problems or failures which may result in the immobilization of Trains or the System;
  - C. problems or failures unlikely to result in the immobilization of Trains or the System; and
  - D. a Train- or System-immobilizing failure occurring in the tunnel portions of the System.
- (vi) Project Co shall record any incidence of the failure of any system, equipment or component of the System and shall document the actions taken by Project Co to restore the System to the required Design and Construction Performance Requirements.
- (vii) In addition to the requirements of Schedule 15-2, Part 1, Article 11 and to be included as part of the LRT Rules and Procedures, Project Co shall develop policies and procedures associated with weather related events and/or natural disasters, including but not limited to:
  - A. winter snow and / or freezing rain;
  - B. severe wind;
  - C. extreme rainfalls and / or hail;
  - D. lightning;
  - E. earthquakes;
  - F. extreme hot or cold temperatures; and
  - G. flooding.

Project Co shall, in coordination with the City, define roles and responsibilities of the Parties, communication / reporting protocols, resources available and / or contingent dependent on the severity of the event, standard operating procedures, prior to, during and after the event, and procedures for recovery of System or System components which are partially or completely not functional as a result of the event.

- (g) Emergency and Safety Procedures and Investigations shall be in accordance with Schedule 15-2.

- (h) Traffic and Transit Management During Maintenance Term
- (i) Project Co is responsible for traffic management in accordance with the Ontario Traffic Manual and any Applicable Law relating to the protection of the safety of the Existing Provincial Highways, Existing Major Municipal Roadways, Existing Transitway, Minor Municipal Roadways and Other Affected Municipal and Federal Roadways Users, Project Co Parties and Other Contractors.
  - (ii) Project Co is responsible for transit management to the extent required by Project Co to coordinate Maintenance Activities with OC Transpo pursuant to Article 1.5.
  - (iii) Project Co shall coordinate with the City, OC Transpo, and other Relevant Authorities when planning and developing Traffic and Transit Management Plans.
  - (iv) Project Co's Traffic and Transit Management Plans shall include but are not limited to the following:
    - A. Maintenance and Rehabilitation Services affecting traffic and / or transit services;
    - B. Anticipated duration of the Maintenance and Rehabilitation Services;
    - C. Planned lane closures, full closures, lane shifts, detour routes and diversions;
    - D. Key Individuals responsible for implementation and management of Traffic and Transit Management Plan;
    - E. Provisions for Permits and / or Approvals required by the City, OC Transpo, or Relevant Authorities, including permitted times for lane closures, full closures, lane shifts, detour routes and diversions, and detouring and / or mitigation measures to maintain transit services; and
    - F. Coordination with Others that may be required as a result of the implementation of Project Co's Traffic and Transit Management Plans.
  - (v) Prior to implementation of Traffic and Transit Management Plans, Project Co shall obtain all required permits and approvals from the City, OC Transpo, and Relevant Authorities.
  - (vi) During implementation of Traffic and Transit Management Plans, Project Co shall:
    - A. coordinate with the City, OC Transpo, and other Relevant Authorities on all closures, full closures, detour routes, lane shifts and diversions on roads that intersect or cross Major Municipal Roadways, Transitway and Minor Municipal Roadways.
    - B. obtain all required closure permits or approvals.
    - C. notify the City, OC Transpo, and Relevant Authorities immediately of any changes to a closure, full closure, detour route, lane shift and diversion, or

anticipated problems that may delay the opening time / removal of the traffic control measures and / or removal of detouring and / or mitigation measures to maintain transit services, stating the closure / permit notification number and details of the changes to and/or problems with the closure, full closure, detour route, lane shift and diversion.

- (vii) Project Co shall be responsible for any such delays to the Operation of the System that result from the Traffic and Transit Management Plans and for further certainty Project Co shall be subject to all penalties resulting from loss in service as provided in this Schedule 15-3 and Schedule 20.
- (i) Costs Incurred by Project Co
  - (i) The City shall not reimburse Project Co for costs incurred by Project Co as a result of any Maintenance Emergency.
  - (ii) The City shall reimburse Project Co for costs incurred by Project Co as a direct result of performing its obligations in response to a Non-Maintenance Emergency on the System (the “**Emergency Costs**”), in accordance with the procedure set out in Schedule 22 – Variation Procedure.
  - (iii) In the event that an Emergency is confirmed or determined by the City to be a Non-Maintenance Emergency, the City shall promptly so notify Project Co. Within 10 Business Days following the City’s notification with respect to a Non-Maintenance Emergency, Project Co shall submit to the City an invoice for its Emergency Costs determined in accordance with Schedule 22 – Variation Procedure, with the changes necessitated by context.
  - (iv) Upon receipt of an invoice from Project Co pursuant to Schedule 22 – Variation Procedure, the City shall evaluate the invoiced amount of the Emergency Costs to Project Co on the basis of the City’s record of the actions taken by Project Co in response to the Non-Maintenance Emergency. The City shall pay all amounts it determines to be due and payable as Emergency Costs.
  - (v) In the event that the City’s evaluation of the Emergency Costs differs from the invoiced amount, Project Co may refer the matter to the Maintenance Dispute Resolution Procedure.

## 1.6 Compliance

- (a) Inspection and Right of Access
  - (i) In addition to the rights stated elsewhere in the Project Agreement, the City shall have all rights with respect to oversight and monitoring of Project Co’s performance, to inspect and audit the System including the Vehicles in order to provide assurance that Project Co is performing its obligations under the Project Agreement.

- (ii) The City shall ensure that any interference with the performance of the Maintenance Services which may be caused by any inspection conducted or authorized by the City is limited to the minimum interference necessary to conduct such inspection.
- (iii) Notwithstanding Article 1.7 the City, subject to Article 1.6(a)(ii), shall be entitled to inspect and audit the System and/or the records and reports required to be kept under the Project Agreement, including without limitation (i) work orders and (ii) records of expenses respecting any Non-Maintenance Repair, upon reasonable prior notice, and without prior notice to Project Co where such inspection and/or audit is undertaken for cause related to:
  - A. an Emergency;
  - B. an Environmental Event or reasonable evidence that same may have occurred or have the potential to occur, including the presence or potential presence of Hazardous Substances on the System;
  - C. the occurrence of or reasonable evidence of the occurrence of illegal activities either on the System or with respect to the Maintenance or Operation of the System;
  - D. an incident which is the subject matter of an investigation, inquiry or prosecution by Relevant Authorities; or
  - E. upon the City's identification of an existing or potential material Safety issue on the System.
- (iv) Where the City exercises its right to inspect or audit, a representative of Project Co shall be present during such inspection or audit. In no event shall the City's exercise of its right to inspect or audit or the presence or absence of a representative of Project Co during any such inspection or audit relieve Project Co of any of its obligations under this Schedule 15-3. The City's right to inspect and audit the records and reports required to be kept under the Project Agreement shall be subject to the right of Project Co to withhold financial information unrelated to information the City would reasonably require to exercise to the City's rights and obligations under the Project Agreement.
- (v) The City has a right, at all reasonable times during the Maintenance Term, subject to Article 1.6(a)(vii), to access and inspect the System (including carrying out sample checks) and any work Project Co undertakes on the System, so as to confirm:
  - A. the adequacy of the supervision by Project Co for any Maintenance; and
  - B. that the System is being maintained in accordance with the terms of the Project Agreement.
- (vi) The City may at any time appoint an agent for the purposes of carrying out any inspection or audit pursuant to the Project Agreement. The City will in a timely way advise Project



Co of any requirement for Corrective Maintenance or Custodial Maintenance of which it becomes aware.

- (vii) The City may at any time advise Project Co that it requires access to the Maintenance and Storage Facility or other facility controlled by Project Co for the purposes of inspecting Vehicles or other elements of the System. The City shall provide notice to Project Co two (2) Business Days in advance of any planned inspection or audit for which it or its agents require access to the Maintenance and Storage Facility.
- (viii) Upon the City's request, acting reasonably, Project Co shall grant the City access to the Maintenance and Storage Facility for the purpose of conducting educational tours of the System for the public and other interested Persons, provided that the City shall give Project Co reasonable prior notice of any planned tour of the Maintenance and Storage Facility and provided that the City's conduct of any such tour shall not impede performance of the Maintenance Services.

(b) Safety Audit

- (i) Without limitation of the rights of the City pursuant to Article 1.6(a) and otherwise provided in this Agreement, the City shall be entitled at any time during the Maintenance Term to inspect and audit the System (including the Maintenance and Storage Facility) and the records and reports required to be kept under the Project Agreement, including without limitation records of work orders respecting the Maintenance Services, for the purpose of conducting a Safety Audit. The City shall provide Project Co with such prior notice of any Safety Audit as is reasonable in the circumstance, except in the circumstances in which no notice is required pursuant to Article 1.6(a)(iii).
- (ii) Project Co shall cooperate with the City to facilitate any Safety Audit. Project Co shall grant to the City and its agents, upon the City's request, access to the Maintenance and Storage Facility and all Vehicles located therein for purposes of conducting a Safety Audit.

(c) Review of Performance

- (i) Project Co shall comply with the requirements of the ISO 9001: 2008 standards for quality management systems, as amended from time to time. For further certainty, Project Co shall conduct regularly scheduled reviews of its performance in meeting the Standard and provide to the City a written report on such performance. Project Co shall participate in consultations with the City regarding Project Co's performance.
- (ii) In the event that, upon review of Project Co's performance, as reported by Project Co or otherwise, or at any other time during the Maintenance Term, it is determined by the City, in consultation with Project Co, that Project Co's performance is failing to meet the Standard in any respect, then in addition to and not in derogation from all other remedies and obligations of the City and Project Co under the Project Agreement, Project Co shall

be obligated to improve its performance in respect of the relevant matter so as to meet the Standard.

(d) City's Remedial Action

(i) Without prejudice to any other express rights of the City under the Project Agreement or otherwise, if in the City's reasonable opinion remedial action is required immediately because:

- A. there is an Emergency and delay would risk damage to the System, the Real Property Interests, adjacent lands or personal property;
- B. there is a public Safety concern and delay could result in personal injury or death; or
- C. a Project Co Event of Default has occurred,

or where a provision of this Schedule 15-3 expressly permits the City to take remedial action, then the City may give a notice to Project Co (the "**Remedial Action Notice**") that the City will take or cause to be taken remedial action without any requirement for further notice or delay. The City may take remedial action pursuant to Article 1.6(d)(i)A or 1.6(d)(i)B without first delivering a Remedial Action Notice, but shall deliver the Remedial Action Notice thereafter. Project Co may inspect any such remedial action undertaken by the City during the performance of the remedial action, or, in the event the remedial action is taken pursuant to Articles 1.6(d)(i)A or 1.6(d)(i)B, upon receipt of the Remedial Action Notice or earlier with the consent of the City.

(e) Payment for the City Remedial Action

(i) In the event that the City takes remedial action:

- A. pursuant to Article 1.6(d)(i)C; or
- B. otherwise pursuant to Article 1.6(d) in the event the remedial action would not, if performed by Project Co, constitute a Non-Maintenance Repair;

(ii) Project Co shall be responsible to the City for 115% of the cost incurred by the City to complete any remedial action. For further certainty, the City shall be entitled pursuant to Article 34.13 (City's Right of Set Off) of the Project Agreement to subtract the cost incurred by the City to complete any remedial action, plus an administration fee of 15% of such cost, from any Payments due to Project Co under the Project Agreement. Any Maintenance Dispute which arises in connection with this Article 1.6(e) shall be settled pursuant to the Maintenance Dispute Resolution Procedure.

(f) Warranties Unaffected by Remedial Action

(i) The Parties agree that:

- A. no remedial action which the City may undertake in accordance with Article 1.6(d)(i)C shall affect, alter, reduce or qualify any warranty provided by Project Co in respect of the System, including without limitation the Vehicle and Fixed Equipment Warranties and Fixed Facilities Warranties provided in Schedule 34 – Vehicle and Fixed Equipment Warranties to the Project Agreement and the Fixed Facilities Warranties; and
  - B. no remedial action which the City may undertake in accordance with Article 1.6(d)(i)A or 1.6(d)(i)B shall affect, alter, reduce or qualify any warranty provided by Project Co in respect of the System, including without limitation the Vehicle and Fixed Equipment Warranties provided in Schedule 34 – Vehicle and Fixed Equipment Warranties to the Project Agreement and the Fixed Facilities Warranties, provided that the City does not perform or cause to be performed maintenance on the subject of the warranty as part of such remedial action, excepting in the event of negligence by the City with respect to maintenance the City performs or causes to be performed on the subject of the warranty as part of such remedial action and only to the extent of any such negligence.
- (ii) For further certainty, despite any remedial action undertaken by the City in accordance with Article 1.6(d), all warranties provided by Project Co pursuant to the Project Agreement shall remain in full force and effect without alteration until the date specified by the warranty for its expiry, except as otherwise provided by this Article 1.6(f).
  - (iii) Project Co shall deliver to the City, as a Project Co Escrow Document, an acknowledgment by the Vehicle and E&M Contractor of the terms of Article 1.6(f)(i).
- (g) Remedies Cumulative
    - (i) For further certainty and without limiting Article 64.14 of the Project Agreement, all of the rights and remedies of the City contained in the Project Agreement including this Schedule 15-3 are cumulative and not alternative. The City may exercise separately or simultaneously any and all rights and remedies contained in this Schedule 15-3 and/or otherwise contained in the Project Agreement.

## **1.7 Access to Maintenance Records**

- (a) The City's Right to Information
  - (i) Without derogation from any of the other rights of the City under the Project Agreement including this Schedule 15-3, the City shall have the right to obtain from Project Co, and Project Co shall deliver to the City as soon as possible and in no event later than seven (7) days following a written request by the City, any reasonable information which is in the possession of or available to Project Co and which is directly related to the Maintenance Services or the System. Notwithstanding any provisions in this Schedule 15-3 which entitle the City to obtain access to or require production of information which is in the possession of or available to Project Co, Project Co shall not be required to

deliver any business records which are legally privileged (save for reports prepared by environmental consultants other than in contemplation of litigation) or contain confidential financial information which confidential information is not reasonably required by the City for its purposes.

(b) Audits and Inspections

- (i) The City may, upon prior written notice of one (1) week to Project Co, inspect and audit the records and reports required to be kept under the Project Agreement, including financial records respecting the Maintenance Services. The City's right to inspect and audit the records and reports required to be kept under the Project Agreement shall be subject to the right of Project Co to withhold financial information unrelated to information the City would reasonably require for its purposes related to the City's rights and obligations under the Project Agreement. The City shall be entitled to make copies or take extracts of Project Co's documents subject to providing Project Co with a list of the documents or extracts that have been taken. Such inspection and/or audit may take place at any reasonable time during Project Co's regular business hours at Project Co's place of business in the Maintenance and Storage Facility or such other location where such records are regularly kept. Such inspection and audit shall be at the City's cost.
- (ii) Prior to any inspection or audit by the City, Project Co may require the City and its auditors to execute confidentiality agreements acceptable to Project Co, acting reasonably, in respect of the subject matter of the audit or inspection, subject to requirements of Law where information or portions thereof cannot be kept confidential.

## 1.8 Records and Reporting

(a) Records and Reporting Obligations

- (i) Project Co will record and retain for review and audit by the City, upon the City's request, the following information:
  - A. Comprehensive Custodial Maintenance, Preventive Maintenance, Corrective Maintenance, Handover Maintenance and other Maintenance records for the System including without limitation all Defects and Deficiencies identified, the date and time of the Maintenance activity undertaken in response, detailed work orders, the scope of the activity including the labour and materials used and their cost, payroll burden and indication of compliance or non-compliance with the Maintenance and Rehabilitation Plan;
  - B. records of all purchases, supplier invoices and transactions related to Non-Maintenance Repairs;
  - C. automatically collected comprehensive electronic records of all Train movements including actual arrival and departure times at all Stations in the format described in Schedule 15-2 to the Project Agreement;



- D. automatically collected electronic Passenger counts;
  - E. automatically collected electronic records of all security alarms, equipment status or failure indicators, including the nature of the indicator, the date and time of occurrence and the date and time of the indicator clearance;
  - F. automatically or manually recorded descriptions of the actions initiated to respond to the incidents reported in the Attachments;
  - G. automatically or manually recorded information regarding incidents involving Passenger and employee Security or Safety, including the date and time of occurrence and the response taken;
  - H. automatically or manually recorded incidents involving damage to or Deficiencies existing in the System affecting Passengers, including date and time of occurrence and response taken;
  - I. automatically recorded Vehicle time and distance operated information for each Vehicle for the life of the Vehicle;
  - J. maintenance activities undertaken in response to a Non-Maintenance Repair and the costs of such activities;
  - K. the records in respect of Events of Vandalism and associated Vandalism Repair Costs required by Section 8.0 of Attachment 16 to this Schedule 15-3; and
  - L. all such other reports, records and information regarding the System which the City may reasonably require from time to time.
- (ii) Project Co shall prepare monthly status reports identifying all Maintenance performed on the System within the last quarter of each Contract Year (the “**Monthly Activity Report**”), and shall submit the Monthly Activity Reports to the City for review within seven (7) business days after each completed quarter.
  - (iii) Project Co shall use an electronic asset management system (the “**Maintenance Management System**”) to track Maintenance activities performed on all major components of the System, including all information which Project Co is required to record pursuant to Article 1.8(a)(i). Project Co shall prepare monthly summary reports of such Maintenance activities, which shall be submitted to the City as part of the Monthly Activity Report. The City shall have access to the Maintenance Management System at all times for purposes of review, and for further certainty including remote access by a secured web based software for sharing information.
  - (iv) The “**Maintenance Management System**” shall include reliability and maintainability monitoring and reporting capabilities. Project Co shall produce monthly reliability and maintainability reports including a two year moving history for all major systems and subsystems, including but not limited to:



- A. Light Rail Vehicles;
  - B. Train Control and Signaling;
  - C. Track and Maintenance of Way;
  - D. Substations and Overhead Catenary;
  - E. Structures;
  - F. Facilities including passenger stations and the Maintenance & Storage Facility;
  - G. Shop Equipment; and
  - H. Maintenance of Way Equipment.
- (v) Project Co shall produce reliability and maintainability reports utilizing key performance indicators including but not limited to:
- A. Mean Distance Between Maintenance Failures;
  - B. Mean Distance Between All Failures;
  - C. Mean Time Between Maintenance Failures;
  - D. Mean Time Between All Failures;
  - E. Mean Time to Repair;
  - F. Mean Time to Restore;
  - G. LRV Fleet Availability;
  - H. Backlog of Deferred Maintenance; and
  - I. Campaign/Modifications Programs
- (vi) As part of the Maintenance Management System as described in Article 1.8(iii), Project Co shall prepare and submit to the City a daily report (the “**Daily Report**”), in accordance with Appendix A, which shall include, but not be limited to:
- A. Deficiencies of which Project Co has become aware;
  - B. Maintenance Services which has been undertaken or completed in respect of Deficiencies;
  - C. All Deficiencies reported by the City, including through any report submitted pursuant to Appendix A.
- (vii) Reports

- A. Project Co shall prepare all reports related to the Maintenance Services, to be submitted by the City to any federal, provincial or municipal governmental agency, railways and any other third party. Project Co shall also promptly furnish to the City copies of any citations or complaints issued to Project Co by an enforcement or regulatory body which affect the Maintenance Services or the Vehicles. Project Co will advise the City and the disposition of such citations or complaints will be coordinated through the City.
- (b) Licence, Certificate and Permit Records
  - (i) Project Co shall be responsible for completing or cause to be completed all regulatory inspections and testing necessary for the licences, certificates and permits associated with the System.
  - (ii) Project Co shall maintain and furnish to the City records of all licences, certificates, and permits required to be obtained for the performance of the Maintenance Services and Operation of the System.
- (c) Environmental Records, Samplings, and Reports, Project Co shall comply with Schedule 17 – Environmental Obligations.

### **1.9 Changes Required by the City to Maintain City Assets**

Without limiting the definition or scope of a “Variation” in Schedule 22, the City may, without invalidating the Project Agreement, require a Variation from time to time during the Maintenance Term to:

- (a) Inspect assets to be maintained by the City of Ottawa including but not limited to various existing retaining wall and/or bridge structures.
- (b) To effect repairs to assets to be maintained by the City of Ottawa using City resources or resources contracted to the City of Ottawa.
- (c) To contract with Project Co for repairs to City assets in the event that Project Co prices to perform the work are considered reasonable and commercially acceptable.

Upon the City performing work on, under, over or adjacent to the right of way requiring Project Co-supplied equipment or personnel, Project Co will respond in accordance with Schedule 22 – Variation Procedure. With respect to the matters described in this Article 1.9, Schedule 22 – Variation Procedure shall apply provided that Project Co will be entitled to its Direct Costs (as such term is defined in Schedule 22 – Variation Procedure), with markup of 5% in accordance with Schedule 22 – Variation Procedure.

### **1.10 Utilities**

- (a) Project Co shall be responsible for all utility work for the System, including but not limited to:

- (i) Relocation and / or installation of new utilities resulting from Project Co's responsibility and performance of the requirements included Schedule 15-3;
  - (ii) Removal and / or decommissioning of existing utilities resulting from Project Co's responsibilities and performance of the requirements included in Schedule 15-3; and
  - (iii) All approvals, permits, and costs determined by the utility provider resulting from Project Co's performance of the requirements included in Article 1.10. For further certainty, all such approvals and permits shall be contemplated as Project Co Permits.
- (b) For further clarity, the City shall be responsible for all regular monthly service charges associated with the operation of the System throughout the Maintenance Term, excluding any service charges resulting from Article 1.10 (a).

**ARTICLE 2 MAINTENANCE AND PERFORMANCE STANDARDS****2.1 Applicable Standards**

- (a) Project Co shall at all times and in all respects undertake the Maintenance required:
  - (i) to meet the Design and Construction Performance Requirements for the System;
  - (ii) so that the Design Life of the System including its components and subsystems is realized throughout the Maintenance Term;
  - (iii) in accordance with Law;
  - (iv) in accordance with the Safety Management System;
  - (v) in accordance with the Security Management System;
  - (vi) to permit the Operation of the System to meet all Scheduled Revenue Service Kilometres in accordance with the Operations Service Plan;
  - (vii) to ensure that the Maintenance of the System is sufficient to permit the Operation of the System (to the extent that Maintenance is relevant to Operation) to meet the Operational Requirements and Specifications, including without limitation the Headway required by the Operational Requirements and Specifications, subject to traffic issues, issues related to the Operation of the System, or any other matters unrelated to Design, Construction and Maintenance; and
  - (viii) to meet or exceed the Maintenance and Service requirements including for further certainty the Attachments to this Schedule.

**2.2 Quality Performance Criteria**

- (a) Project Co shall comply with the requirements set out in this Schedule and the Project Agreement.
- (b) In event that the City identifies or is notified of a Deficiency in the System which constitutes a failure to meet the Quality Performance Criteria, as defined in the Attachments to this Appendix, including as a result of any report by a Driver, the City shall promptly provide notification to Project Co of the existence of the Deficiency through the Help Desk Services.

**ARTICLE 3 OPERATION OF THE SYSTEM****3.1 Operation by City**

- (a) The City shall be responsible for the Operation of the System.

**3.2 Service Level**

- (a) The City shall determine the Service Level to be provided by Project Co. in accordance with the Operations Service Plan at all times during the Maintenance Term, subject to the notice periods provided for in Section 3.3, below. For clarity, the City may:
  - (i) Require a Service Level Increase;
  - (ii) Require a Service Level Decrease; or
  - (iii) Modify a Service Level and require Project Co. to provide such modified level of service.
- (b) Unless otherwise agreed by Project Co. and the City, on the Revenue Service Availability Date Project Co. shall be required to provide Service Level 1.
- (c) The City may vary any aspect of the Operations Service Plan in its sole discretion, subject to the notice periods provided for in Section 3.3, below, and subject to any rights of Project Co. granted by this Section 3 to the extent that such variance of the Operations Service Plan results in a Major Service Change, Medium Service Change, or Minor Service Change.

**3.3 Booking Process**

- (a) The City shall provide to Project Co, at least thirty (30) calendar days prior to the commencement of each quarterly Booking (quarterly Booking dates are normally January 1, end of April, End of June, and start of September of each year), the Revenue Service requirements for that Booking period in the form of:
  - (i) confirmation of the Service Level and Operations Service Plan for that Booking period;
  - (ii) the number of Vehicles constituting the minimum required fleet for the duration of the Peak and Off-Peak Periods during that Booking period, in accordance with the relevant Service Level (the “**Scheduled Revenue Service Vehicles**”); and
  - (iii) the Train consist assignments and pull-out schedule during that Booking period.
- (b) The City may modify the Booking for a given day (including the Train consist assignments and Scheduled Revenue Service Vehicles for any period of the service day) provided that the City gives Project Co at least seven (7) days’ notice.
- (c) The City may request a modification to the Booking for a given day (including the Train consist assignments and Scheduled Revenue Service Vehicles for any period of the service day) less than seven (7) days before the proposed modification.



- (i) If such a request is made, less than seven (7) days before the proposed Booking modification, Project Co and the City shall mutually make reasonable efforts to provide the modified level of service while preserving Project Co's ability to fulfill its Maintenance Services obligations.

### 3.4 Hand Off of Trains

- (a) Project Co shall ensure that, at the start of Revenue Service each Peak Period and each Off-Peak Period, the Scheduled Revenue Service Vehicles are composed into Train consists according to the Booking requirements and are made available to the City, in accordance with the Vehicle Availability Standards of Appendix A, to be entered into Revenue Service.
- (b) Project Co, shall develop clear procedures, in consultation with the City for the hand off of Trains between Project Co and the City at the start of each Peak or Off-Peak period as required pursuant to Schedule 15-4 – OLRT Regulatory Framework., LRT Rules, and Standard Operation Procedures.
- (c) Project Co and the City shall mutually make reasonable efforts such that during Off-Peak Periods and outside of Revenue Service Hours, Vehicles which are not in Revenue Service and which the City in its Discretion has not elected to utilize for Driver training, special events or other purposes as the City shall determine, from time to time, shall be made available to Project Co in the Maintenance and Storage Facility for Maintenance activities. The City shall, in exercising its Discretion, take into account the obligations of Project Co to perform the Maintenance Services.

### 3.5 Major Service Changes – Service Level Increase

- (a) The City may require a Service Level Increase by providing written notice to Project Co clearly indicating the desired new Service Level and the date on which such new Service Level is to be implemented, which must be not less than thirty (30) months from the date of the notice ("Service Level Increase Date"). On the Service Level Increase Date, the scope of Project Co's Maintenance Services obligations including the number of Scheduled Revenue Service Vehicles which the City is entitled to book, shall become based on the requested Service Level.
- (b) A Service Level Increase shall trigger a change in the Annual Service Payment and Volume Payment, in accordance with Schedule 20 – Payment Mechanism, on the Service Level Increase Date.
- (c) Project Co shall implement the Service Level Increase earlier than the thirty (30) month period, in the following circumstances:
  - (i) If additional vehicle fleet capacity, sufficient to provide the Service Level Increase, is or will be available to Project Co within a shorter period of time; or
  - (ii) If the City and Project Co mutually agree to implement the Service Level Increase at an earlier date.

**3.6 Major Service Changes – Service Level Decrease**

- (a) The City may require a Service Level Decrease by providing written notice to Project Co clearly indicating the desired new Service Level and the date on which such new Service Level is to be implemented, which must be not less than six (6) months from the date of the notice (“Service Level Decrease Date”). On the Service Level Decrease Date, the scope of Project Co’s Maintenance Services obligations including the number of Scheduled Revenue Service Vehicles which the City is entitled to book, shall become based on the requested Service Level.
- (b) The City and Project Co may mutually agree to implement the Service Level Decrease earlier than the six (6) month period.
- (c) A Service Level Decrease shall trigger a change in the Annual Service Payment and Volume Payment, as a City-initiated Variation following the process set out in Schedule 22 – Variations, provided that:
  - (i) The pricing provided by Project Co in its Proposal for the new Service Level which has been requested by the City through the Service Level Decrease, shall serve as the basis for the revised Annual Service Payment and Volume Payment to be arrived at through the Variation process and, in the absence of any demonstratable evidence of increased costs presented by Project Co pursuant to (ii), below, shall presumptively be the revised Annual Service Payment and Volume Payment;
  - (ii) Project Co must clearly demonstrate any additional costs resulting from the Service Level Decrease which justify an Annual Service Payment and/or Volume Payment in excess of that put forward in Project Co’s Proposal for the relevant Service Level; and
  - (iii) Project Co’s claim for additional costs pursuant to (ii), above, shall be limited to:
    - A. Breakage or termination costs related to labor which was required to maintain the in-service vehicle fleet associated with the higher Service Level but which is no longer required to maintain the in-service vehicle fleet associated with the lower Service Level; and
    - B. Costs related to the maintenance of any Surplus Vehicle Fleet. Project Co shall take all commercially reasonable steps to minimize costs associated with Surplus Vehicle Fleet.
- (d) Following a Service Level Decrease, Project Co shall continue to provide Maintenance Services to the Surplus Vehicle Fleet, as required, such that the Surplus Vehicle Fleet remains capable of meeting the Vehicle Availability Standards. This obligation is subject to Project Co’s obligation in 3.6(c)(iii)(B), above, to take commercially reasonable steps to minimize costs in doing so.
- (e) Following a Service Level Decrease, the City may, in its sole discretion, take steps to sell, transfer, lease, find alternative uses for, or otherwise dispose of any Surplus Vehicle Fleet.

**3.7 Other Major Service Changes**

- (a) Any other Major Service Change shall trigger a change in the Annual Service Payment and Volume Payment, as a City-initiated Variation following the process set out in Schedule 22 – Variations, provided that:
  - (i) Any revisions to the Annual Service Payment and/or Volume Payment shall be determined based on unit costs reflected in Project Co's pricing for the Service Level(s) which most closely resemble the parameters used for the Major Service Change.

**3.8 Medium Service Changes**

- (a) An amendment of the Operations Service Plan which results in a Medium Service Change shall entitle Project Co to apply for additional compensation under the Variation process, provided that any such additional compensation shall be limited to costs related to the portion of Revenue Service Vehicle Kilometers in excess of 120% of the relevant Baseline Vehicle Kilometers.
- (b) Where a Medium Service Change is apparent retroactively (for example, at the end of a Contract Year when the total Revenue Service Vehicle Kilometers for that Contract Year is found to have exceeded 120% of the Baseline Vehicle Kilometers), then Project Co may apply for retroactive lump sum compensation.
- (c) Where a Medium Service Change is apparent in advance (for example, a variation to the Operations Service Plan for an upcoming Contract Year which will result in Revenue Service Vehicle Kilometers for that Contract Year in excess of 120% of the Baseline Vehicle Kilometers), then Project Co may apply for compensation in the form of adjustments to the forthcoming Annual Service Payment and/or the Volume Payment.

**3.9 Minor Service Changes**

- (a) An amendment to the Operations Service Plan which results in a Minor Service Change shall not constitute a Variation, and for further certainty shall not result in any adjustment to the Annual Service Payment or other compensation to Project Co outside of the Payment Mechanism.

**3.10 Driver Training**

- (a) Following the Revenue Service Commencement Date, the City shall provide all required training and certification of Drivers of Revenue Service Trains.

**3.11 LRT Rules and Procedures**

- (a) Project Co shall abide by the LRT Rules and Standard Operating Procedures, where applicable, in its performance of the Maintenance Services.
- (b) Project Co shall cooperate with the City in the ongoing development of the LRT Rules and Standard Operating Procedures throughout the Maintenance Term, including the identification and implementation of such changes and adjustments to the LRT Rules and Standard Operating

Procedures as the City may in its Discretion, but with the participation of Project Co, deem advisable.

- (c) Project Co shall prepare and abide by Maintenance policy and procedure manuals as required in Schedule 14 of the Project Agreement which set out instructions to employees and technical procedures for the provision of Maintenance Services. All policy and procedure manuals shall comply with the provisions of this Schedule 15-3. Project Co shall provide ongoing training to its Employees and shall monitor the performance of all Maintenance Services so as to ensure the policies and procedures are complied with.
- (d) Project Co shall implement quality control and assurance procedures, including without limitation the requirements set out in Schedule 11 of the Project Agreement, as amended from time to time, in respect of the Maintenance Services.

**ARTICLE 4 SPECIFIC CITY RESPONSIBILITIES**

- (a) The City shall be responsible for the following maintenance obligations with respect to the System.
- (i) existing retaining walls that are within the Lands which have not been modified or altered or improved in any manner by Project Co, and for further certainty as identified in the Maintenance Responsibility Table in Attachment 15;
  - (ii) existing bridges that are within the Lands which have not been modified or altered or improved by Project Co in any manner as part of Project Co's Work, and for further certainty as identified in the Maintenance Responsibility Table in Attachment 15;
  - (iii) communications systems (to the extent of the obligations identified as City responsibilities in the Maintenance Responsibility Table);
  - (iv) existing watermains that fall within the Lands, and for further certainty are not contemplated as part of the New Municipal Infrastructure;
  - (v) existing sewers, that fall within the Lands, and for further certainty are not contemplated as part of the New Municipal Infrastructure;
  - (vi) existing street lights and illumination that fall within the Lands which have not been modified or altered or improved in any manner by Project Co;
  - (vii) existing traffic signals that are within the Lands which have not been modified or altered or improved in any manner by Project Co;
  - (viii) existing utilities that are within the Lands which have not been modified or altered or improved in any manner by Project Co; and
  - (ix) existing artwork that are within the Lands, and for further certainty as described in Schedule 15-2, Part 1, Article 13 and Data Room.
- (b) If existing Infrastructure that falls within the Lands is modified or altered or improved by Project Co, Project Co shall be responsible for the existing Infrastructure which modifications, alterations, or improvements have adversely or are considered detrimental to the life cycle or asset preservation requirements and Project Co using all applicable regulations, codes, and specifications and applying engineering principles and Good Industry Practices cannot demonstrate to the City, with the City acting reasonably, that the modifications or alterations or improvements are not detrimental to the existing Infrastructure.



**ARTICLE 5 SECURITY****5.1 System Security**

- (a) The City shall provide Security for the System, except as otherwise expressly provided in this Schedule. The City shall have governing and paramount authority for all matters of Security on or relating to the System. Project Co shall cooperate with the City to ensure the Safety and Security of the public, Passengers, employees and the System.

**5.2 Project Co's Security Obligations**

- (b) Project Co shall be responsible for locking and unlocking all doors or gates required to:
- (i) control Passenger access to the System, and for further certainty by ensuring the Passenger Stations are available pursuant to the Station Access Standard as described in Attachment 7 of Appendix A to this Schedule;. This includes ensuring, in cooperation with Transit Law Enforcement Unit, that all Passengers have left the public areas of the OLRT system prior to lockdown.
  - (ii) restrict unauthorized entry or trespassing to the System through engineering controls, and for further certainty to ensure the System is unavailable and not accessible by unauthorized persons, public, or Passengers; or
  - (iii) control or allow Passenger and workers egress or evacuation from the System when an emergency situation is declared and emergency response and preparedness requires evacuation from the System as being part of the Standard Operating Procedures for such an emergency.
- (c) Project Co shall provide Security for the Maintenance and Storage Facility, subject to the City's governing and paramount authority for Security as provided in Article 5.1(a). Project Co shall, without limitation:
- (i) erect and maintain fencing along the perimeter of the Maintenance and Storage Facility to prevent unauthorized entry;
  - (ii) establish and monitor Security measures so as to protect the Maintenance and Storage Facility from unauthorized entry, criminal activity and vandalism, which measures may include but shall not be limited to:
    - A. security alarm systems;
    - B. Maintenance staff competently trained in the provision of Security for the System, working 24 hours per day from Monday to Sunday;
    - C. card access entry systems;
    - D. closed circuit television systems; and

- E. the establishment of secure public zones;
  - (iii) respond to incidents of unauthorized entry to or criminal activity within the Maintenance and Storage Facility. Project Co shall notify the City of such incidents in accordance with the Standard Operating Procedures.
- (d) Project Co shall establish policies and procedures with respect to Security for the Maintenance and Storage Facility in compliance with this Schedule. Project Co's Security policies and procedures shall be submitted to the City for its review and approval.
- (e) Project Co's performance of the Maintenance Services, including its Security obligations, shall comply with:
  - (i) the Standard Operating Procedures regarding Security for the System;
  - (ii) any Security policies and procedures and Security Standards with respect to the System; and
  - (iii) any directions or instructions from the City with respect to the City's Security policies and procedures.
- (f) In the event that, in the ordinary course of its performance of the Maintenance Services, Project Co becomes aware of any criminal or other activity on the System which it appears may pose a threat to the Safety and Security of the public and/or the System, Project Co shall immediately notify the City of such activity.
- (g) For further certainty, in the event of an Emergency, or in the event that, in the Discretion of the City, it shall be desirable for insuring the Safety or Security of the public, Passengers or the System, the City shall have the right to establish additional Security measures for the System, and Project Co shall immediately comply with such additional Security measures as directed by the City.
- (h) In furtherance of the authority of the City referred to in this Schedule, the City shall be entitled to approve any and all plans and procedures of Project Co with respect to the Security obligations of Project Co contained in Article 5.1 and to make inspections from time to time in the City's Discretion to ascertain whether Project Co is in compliance with the Security obligations of Project Co contained in Article 5.2.
- (i) The provisions contained in Article 5.2 shall not derogate from Project Co's primary responsibility to provide all Security for the Maintenance and Storage Facility.

### **5.3 Project Co's Employees**

- (a) Project Co shall establish and implement a system of security clearance and identification with respect to its employees, to be approved by the City. Project Co's system of security clearance and identification shall comply with the Employee Security Standard. Project Co shall ensure that each of its employees have met the Employee Security Standard.

**5.4 Compliance with System Security**

- (a) Project Co shall comply with any and all decisions of the City respecting matters of Security affecting the System. The City may direct Project Co to effect compliance with the Security Standard and Project Co shall forthwith act in accordance with such directions in the performance of the Maintenance Services under this Schedule 15, including its Security obligations. In the event that the City amends the Security Standard, the City shall issue a City Direction and Project Co shall forthwith comply with the amended Security Standard in its performance of the Maintenance Services, including its Security obligations.

**5.5 Changes to Security**

- (a) For further certainty, in the event that the City amends the Employee Security Standard or the Security Standard with the result that Project Co's costs of compliance are increased, the amendment shall constitute a Variation and the provisions of Schedule 22 – Variation Procedure shall apply. The City shall make reasonable efforts to inform Project Co of any change to the Employee Security Standard where such change affects the Employees.

**ARTICLE 6 TECHNICAL CAPACITY**

- (a) Project Co shall ensure that, as a result of Project Contracts and Sub-Contracts into which it has entered in accordance with the Project Agreement, it has the necessary professional capabilities, qualifications, licences, skilled personnel, experience, expertise and financial resources, and that it shall provide the necessary tools, equipment and materials, to perform the Maintenance Services in an efficient, professional and timely manner in accordance with the terms and conditions of the Project Agreement.
- (b) Project Co shall ensure that the management assigned to the Maintenance Services, including the management of Project Co, Project Contractors and the Sub-Contractors, as applicable, shall have knowledge and expertise in the area of maintenance of LRT systems, and all components thereof including LRVs, sufficient to fulfill Project Co's obligations under the Project Agreement, and additionally that such management shall have authority to make decisions concerning the daily functions and management of the Maintenance Services consistent with the Project Agreement.
- (c) Technical Support
  - (i) In addition to the requirements of Schedule 14 and notwithstanding Project Co's obligations included in this schedule, Project Co shall provide sufficient technical support and capacity during the Maintenance Term. In fulfilling this requirement, Project Co shall:
    - A. coordinate with the City for the most efficient and least disruptive effect on the Operation of the System, when the Operation of the System is impaired as a result of any Maintenance Service deficiency;
    - B. coordinate Project Co service providers and deploy Corrective Maintenance Plans required to address any Maintenance Service deficiency; and
    - C. consider lessons learned during this period and propose any improvements to the Maintenance and Rehabilitation Plan, LRT Rules and Procedures, and Standard Operating Procedures.

**APPENDIX A – ATTACHMENT 1**  
**MAINTENANCE AND REHABILITATION PLAN**

**Project Co shall prepare and submit the Maintenance and Rehabilitation Plan to be attached as Appendix A Attachment 1 in accordance with this Schedule.**



**APPENDIX A – ATTACHMENT 2****OPERATIONS SERVICE PLAN**

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*The Operations Service Plan is a “living” document . The City controls the Operations Service Plan and may amend or change the Operations Service Plan within the terms of the Project Agreement, and may be required to compensate Project Co. for such changes in accordance with the terms of the Project Agreement.*

*The Operations Service Plan attached at Financial Close is a baseline reference document. It defines the Service Levels for the duration of the PA and acts as a reference point for measuring any variation from the service level that Project Co. based its Proposal on.*

| Sheet             | Instructions   |
|-------------------|--|
| General           | <p>1. Proponents shall only enter inputs in cells which are shaded blue.</p> <p>2. Proponents may not alter, delete, reformat or otherwise change the Interactive Spreadsheet unless specifically instructed to do so by the Sponsors.</p>   |
| Sponsors' Input   | 1. Proponents shall not make any inputs to this sheet. This sheet contains baseline data and input parameters established by the Sponsors.   |
| Output Summary    | 1. Proponents shall not make any inputs to this sheet. This sheet presents outputs for establishing the Preliminary Service Plan and the operations and service quantities for RFP Schedule 6 - Price Form.  |
| Service Level 1-9 | <p>1. Proponents shall enter key rolling stock and performance parameters at the top of each Service Plan sheet, as well as proposed consist lengths in the lower portion of each Service Plan sheet.</p> <p>2. For purposes of bidding and developing the Preliminary Service Plan, off-peak run times are assumed to be the same as peak run times.</p> <p>3. Existing values currently in spreadsheet are generic hypothetical values. Proponents should update all values to reflect their proposed configurations.</p> <p>4. Proponents will input parameters including:</p> <ul style="list-style-type: none"> <li>- Number of seats per vehicle</li> <li>- Total standing area per vehicle</li> <li>- Proposed EB and WB terminal to terminal run time, excluding terminal time</li> <li>- Proposed consist lengths for each period of each service day type (Mon-Thr, Fri, Sat, Sun)</li> </ul> <p>5. These input parameters are processed by the Interactive Spreadsheet, along with the Sponsor inputs, to calculate vehicle capacity, required service levels (headways), peak vehicle demand, driver hours and other service quantities.</p> |

## Parameters set by City / OC Transpo

Peak Passenger Comfort Load Standard - Standees/m<sup>2</sup>  
 Off-peak Passenger Comfort Load Standard - Standees/m<sup>2</sup>  
 Minimum seated share of required service capacity  
 Minimum Terminal Time at each terminal  
 Terminal time below which step-back operation required  
 Length of Alignment (km)

|       |
|-------|
| 3.33  |
| 0.80  |
| 40%   |
| 3.00  |
| 3.00  |
| 12.65 |

| Calendar Year       |                |       |       |                    |                                  | 2018-2019                        |                                 | 2020-2021                        |                                 | 2022-2024                        |                                 | 2025-2027                        |                                 | 2028-2030                        |                                 | 2031-2035                        |                                 | 2036-2040                        |                                 | 2041-2045                        |                                 | 2046-2048                        |                                 |
|---------------------|----------------|-------|-------|--------------------|----------------------------------|----------------------------------|---------------------------------|----------------------------------|---------------------------------|----------------------------------|---------------------------------|----------------------------------|---------------------------------|----------------------------------|---------------------------------|----------------------------------|---------------------------------|----------------------------------|---------------------------------|----------------------------------|---------------------------------|----------------------------------|---------------------------------|
| Service Level       |                |       |       |                    |                                  | 1                                |                                 | 2                                |                                 | 3                                |                                 | 4                                |                                 | 5                                |                                 | 6                                |                                 | 7                                |                                 | 8                                |                                 | 9                                |                                 |
| Contract Year       |                |       |       |                    |                                  | 1 to 2                           |                                 | 3 to 4                           |                                 | 5 to 7                           |                                 | 8 to 10                          |                                 | 11 to 13                         |                                 | 14 to 16                         |                                 | 19 to 23                         |                                 | 24 to 28                         |                                 | 29 to 31                         |                                 |
| Days per year       | Time periods   | Start | End   | Duration of period | Maximum Policy Headway (minutes) | Minimum Service Capacity (pphpd) | Avg Bi-Dir Pass Load per Period | Minimum Service Capacity (pphpd) | Avg Bi-Dir Pass Load per Period | Minimum Service Capacity (pphpd) | Avg Bi-Dir Pass Load per Period | Minimum Service Capacity (pphpd) | Avg Bi-Dir Pass Load per Period | Minimum Service Capacity (pphpd) | Avg Bi-Dir Pass Load per Period | Minimum Service Capacity (pphpd) | Avg Bi-Dir Pass Load per Period | Minimum Service Capacity (pphpd) | Avg Bi-Dir Pass Load per Period | Minimum Service Capacity (pphpd) | Avg Bi-Dir Pass Load per Period | Minimum Service Capacity (pphpd) | Avg Bi-Dir Pass Load per Period |
| Monday-Thursday     |                |       |       |                    |                                  |                                  |                                 |                                  |                                 |                                  |                                 |                                  |                                 |                                  |                                 |                                  |                                 |                                  |                                 |                                  |                                 |                                  |                                 |
| 201                 | Early morning  | 5:00  | 6:30  | 1.5                | 8.0                              | 1,351                            | 676                             | 1,435                            | 717                             | 1,518                            | 759                             | 1,619                            | 809                             | 1,833                            | 917                             | 2,371                            | 1,185                           | 2,492                            | 1,246                           | 2,619                            | 1,309                           | 2,698                            | 1,349                           |
| 201                 | Morning peak   | 6:30  | 9:00  | 2.5                | 5.0                              | 10,700                           | 9,428                           | 11,360                           | 10,010                          | 12,020                           | 10,591                          | 12,817                           | 11,294                          | 14,515                           | 12,790                          | 18,772                           | 16,541                          | 19,730                           | 17,385                          | 20,737                           | 18,273                          | 21,365                           | 18,826                          |
| 201                 | Midday         | 9:00  | 14:45 | 5.75               | 5.0                              | 4,168                            | 5,195                           | 4,425                            | 5,515                           | 4,682                            | 5,836                           | 4,993                            | 6,223                           | 5,654                            | 7,047                           | 7,313                            | 9,114                           | 7,686                            | 9,579                           | 8,078                            | 10,068                          | 8,323                            | 10,373                          |
| 201                 | Afternoon peak | 14:45 | 18:00 | 3.25               | 5.0                              | 8,833                            | 11,019                          | 9,377                            | 11,699                          | 9,922                            | 12,379                          | 10,580                           | 13,199                          | 11,982                           | 14,948                          | 15,496                           | 19,332                          | 16,287                           | 20,319                          | 17,118                           | 21,356                          | 17,636                           | 22,003                          |
| 201                 | Early evening  | 18:00 | 21:30 | 3.5                | 5.0                              | 2,156                            | 3,622                           | 2,288                            | 3,846                           | 2,421                            | 4,069                           | 2,582                            | 4,339                           | 2,924                            | 4,914                           | 3,782                            | 6,355                           | 3,975                            | 6,679                           | 4,178                            | 7,020                           | 4,304                            | 7,233                           |
| 201                 | Late evening   | 21:30 | 23:00 | 1.5                | 8.0                              | 1,377                            | 871                             | 1,462                            | 925                             | 1,547                            | 978                             | 1,650                            | 1,043                           | 1,868                            | 1,181                           | 2,416                            | 1,528                           | 2,540                            | 1,606                           | 2,669                            | 1,688                           | 2,750                            | 1,739                           |
| 201                 | Night          | 23:00 | 1:00  | 2                  | 15.0                             | 300                              | 416                             | 319                              | 442                             | 337                              | 467                             | 360                              | 498                             | 407                              | 564                             | 527                              | 730                             | 583                              | 767                             | 582                              | 806                             | 599                              | 831                             |
| Friday              |                |       |       |                    |                                  |                                  |                                 |                                  |                                 |                                  |                                 |                                  |                                 |                                  |                                 |                                  |                                 |                                  |                                 |                                  |                                 |                                  |                                 |
| 51                  | Early morning  | 5:00  | 6:30  | 1.5                | 8.0                              | 1,351                            | 676                             | 1,435                            | 717                             | 1,518                            | 759                             | 1,619                            | 809                             | 1,833                            | 917                             | 2,371                            | 1,185                           | 2,492                            | 1,246                           | 2,619                            | 1,309                           | 2,698                            | 1,349                           |
| 51                  | Morning peak   | 6:30  | 9:00  | 2.5                | 5.0                              | 10,700                           | 9,428                           | 11,360                           | 10,010                          | 12,020                           | 10,591                          | 12,817                           | 11,294                          | 14,515                           | 12,790                          | 18,772                           | 16,541                          | 19,730                           | 17,385                          | 20,737                           | 18,273                          | 21,365                           | 18,826                          |
| 51                  | Midday         | 9:00  | 14:45 | 5.75               | 5.0                              | 4,168                            | 5,195                           | 4,425                            | 5,515                           | 4,682                            | 5,836                           | 4,993                            | 6,223                           | 5,654                            | 7,047                           | 7,313                            | 9,114                           | 7,686                            | 9,579                           | 8,078                            | 10,068                          | 8,323                            | 10,373                          |
| 51                  | Afternoon peak | 14:45 | 18:00 | 3.25               | 5.0                              | 8,833                            | 11,019                          | 9,377                            | 11,699                          | 9,922                            | 12,379                          | 10,580                           | 13,199                          | 11,982                           | 14,948                          | 15,496                           | 19,332                          | 16,287                           | 20,319                          | 17,118                           | 21,356                          | 17,636                           | 22,003                          |
| 51                  | Early evening  | 18:00 | 21:30 | 3.5                | 5.0                              | 2,156                            | 3,622                           | 2,288                            | 3,846                           | 2,421                            | 4,069                           | 2,582                            | 4,339                           | 2,924                            | 4,914                           | 3,782                            | 6,355                           | 3,975                            | 6,679                           | 4,178                            | 7,020                           | 4,304                            | 7,233                           |
| 51                  | Late evening   | 21:30 | 23:00 | 1.5                | 8.0                              | 1,377                            | 871                             | 1,462                            | 925                             | 1,547                            | 978                             | 1,650                            | 1,043                           | 1,868                            | 1,181                           | 2,416                            | 1,528                           | 2,540                            | 1,606                           | 2,669                            | 1,688                           | 2,750                            | 1,739                           |
| 51                  | Night          | 23:00 | 2:00  | 3                  | 8.0                              | 713                              | 507                             | 757                              | 538                             | 802                              | 570                             | 955                              | 608                             | 968                              | 688                             | 1,252                            | 890                             | 1,316                            | 935                             | 1,383                            | 983                             | 1,425                            | 1,013                           |
| Saturday (see note) |                |       |       |                    |                                  |                                  |                                 |                                  |                                 |                                  |                                 |                                  |                                 |                                  |                                 |                                  |                                 |                                  |                                 |                                  |                                 |                                  |                                 |
| 53                  | Daytime        | 6:00  | 18:00 | 12                 | 5.0                              | 1,593                            | 6,967                           | 1,691                            | 7,397                           | 1,789                            | 7,827                           | 1,908                            | 8,346                           | 2,160                            | 9,452                           | 2,794                            | 12,224                          | 2,937                            | 12,847                          | 3,086                            | 13,503                          | 3,180                            | 13,912                          |
| 53                  | Evening        | 19:00 | 23:00 | 4                  | 8.0                              | 1,171                            | 1,603                           | 1,243                            | 1,702                           | 1,315                            | 1,801                           | 1,402                            | 1,920                           | 1,588                            | 2,175                           | 2,054                            | 2,812                           | 2,159                            | 2,956                           | 2,269                            | 3,107                           | 2,337                            | 3,201                           |
| 53                  | Night          | 23:00 | 2:00  | 3                  | 8.0                              | 713                              | 507                             | 757                              | 538                             | 802                              | 570                             | 955                              | 608                             | 968                              | 688                             | 1,252                            | 890                             | 1,316                            | 935                             | 1,383                            | 983                             | 1,425                            | 1,013                           |
| Sunday (see note)   |                |       |       |                    |                                  |                                  |                                 |                                  |                                 |                                  |                                 |                                  |                                 |                                  |                                 |                                  |                                 |                                  |                                 |                                  |                                 |                                  |                                 |
| 60                  | Daytime        | 8:00  | 19:00 | 11                 | 5.0                              | 1,254                            | 4,933                           | 1,331                            | 5,238                           | 1,408                            | 5,542                           | 1,502                            | 5,909                           | 1,701                            | 6,692                           | 2,200                            | 8,655                           | 2,312                            | 9,097                           | 2,430                            | 9,561                           | 2,503                            | 9,851                           |
| 60                  | Evening        | 19:00 | 23:00 | 4                  | 10.0                             | 701                              | 1,401                           | 744                              | 1,488                           | 787                              | 1,574                           | 840                              | 1,679                           | 951                              | 1,901                           | 1,230                            | 2,459                           | 1,358                            | 2,584                           | 1,358                            | 2,716                           | 1,399                            | 2,798                           |

## Notes:

- Does not include Monday-Friday summer and other seasonal service reductions
- Saturday level of service also operated on Boxing Day
- Sunday level of service also operated on New Year's, Good Friday, Victoria Day, Civic Holiday, Labour Day, Thanksgiving Day, and Christmas Day
- Does not include extra service scheduled on Canada Day

| Calendar Year                        | 2018-2019 |       |         |                 | 2020-2021    |                 |              |         | 2022-2024       |              |                 |              | 2025-2027 |                 |              |                 | 2028-2030    |         |                 |              | 2031-2035       |              |         |                 | 2036-2040    |                 |              |         | 2041-2045       |              |                 |              | 2046-2048 |       |      |        |        |       |
|--------------------------------------|-----------|-------|---------|-----------------|--------------|-----------------|--------------|---------|-----------------|--------------|-----------------|--------------|-----------|-----------------|--------------|-----------------|--------------|---------|-----------------|--------------|-----------------|--------------|---------|-----------------|--------------|-----------------|--------------|---------|-----------------|--------------|-----------------|--------------|-----------|-------|------|--------|--------|-------|
| Service Level                        | 1         |       |         |                 | 2            |                 |              |         | 3               |              |                 |              | 4         |                 |              |                 | 5            |         |                 |              | 6               |              |         |                 | 7            |                 |              |         | 8               |              |                 |              | 9         |       |      |        |        |       |
| Contract Year                        | 1 to 2    |       |         |                 | 3 to 4       |                 |              |         | 5 to 7          |              |                 |              | 8 to 10   |                 |              |                 | 11 to 13     |         |                 |              | 14 to 18        |              |         |                 | 19 to 23     |                 |              |         | 24 to 28        |              |                 |              | 29 to 31  |       |      |        |        |       |
| Summary Totals                       |           |       |         |                 |              |                 |              |         |                 |              |                 |              |           |                 |              |                 |              |         |                 |              |                 |              |         |                 |              |                 |              |         |                 |              |                 |              |           |       |      |        |        |       |
| Peak Vehicles in Service             | 30        |       |         |                 | 33           |                 |              |         | 35              |              |                 |              | 36        |                 |              |                 | 42           |         |                 |              | 52              |              |         |                 | 54           |                 |              |         | 56              |              |                 |              | 59        |       |      |        |        |       |
| Annual Revenue Trunk Miles           | 75,805    |       |         |                 | 76,707       |                 |              |         | 78,786          |              |                 |              | 80,947    |                 |              |                 | 87,271       |         |                 |              | 104,279         |              |         |                 | 108,107      |                 |              |         | 107,290         |              |                 |              | 107,534   |       |      |        |        |       |
| Aggregate Annual Driver Hours Target | 73,805    |       |         |                 | 76,707       |                 |              |         | 78,786          |              |                 |              | 81,707    |                 |              |                 | 89,031       |         |                 |              | 107,177         |              |         |                 | 111,005      |                 |              |         | 113,586         |              |                 |              | 113,330   |       |      |        |        |       |
| Annual Revenue Vehicle Miles/Truck   | 3,042,837 |       |         |                 | 3,777,935    |                 |              |         | 5,910,690       |              |                 |              | 4,071,371 |                 |              |                 | 4,457,830    |         |                 |              | 5,408,188       |              |         |                 | 5,775,960    |                 |              |         | 6,116,556       |              |                 |              | 6,427,071 |       |      |        |        |       |
| Daily Totals                         |           |       |         |                 |              |                 |              |         |                 |              |                 |              |           |                 |              |                 |              |         |                 |              |                 |              |         |                 |              |                 |              |         |                 |              |                 |              |           |       |      |        |        |       |
| Time periods                         | Start     | End   | Headway | Rev Trunk Miles | Driver Hours | Rev Trunk Miles | Driver Hours | Headway | Rev Trunk Miles | Driver Hours | Rev Trunk Miles | Driver Hours | Headway   | Rev Trunk Miles | Driver Hours | Rev Trunk Miles | Driver Hours | Headway | Rev Trunk Miles | Driver Hours | Rev Trunk Miles | Driver Hours | Headway | Rev Trunk Miles | Driver Hours | Rev Trunk Miles | Driver Hours | Headway | Rev Trunk Miles | Driver Hours | Rev Trunk Miles | Driver Hours |           |       |      |        |        |       |
| Monday/Thursday                      |           |       |         |                 |              |                 |              |         |                 |              |                 |              |           |                 |              |                 |              |         |                 |              |                 |              |         |                 |              |                 |              |         |                 |              |                 |              |           |       |      |        |        |       |
| Early morning                        | 5:00      | 6:30  | 8:00    | 13.30           | 13.30        | 721             | 8:00         | 13.30   | 13.30           | 721          | 8:00            | 13.30        | 13.30     | 721             | 8:00         | 13.30           | 13.30        | 721     | 8:00            | 13.30        | 13.30           | 721          | 8:00    | 13.30           | 13.30        | 721             | 7:51         | 13.35   | 13.35           | 722          | 7:28            | 13.11        | 13.11     | 703   | 7:45 | 13.68  | 13.68  | 431   |
| Morning peak                         | 6:30      | 9:00  | 3:12    | 37.50           | 37.50        | 2,156           | 3:10         | 40.00   | 40.00           | 2,397        | 3:00            | 42.50        | 42.50     | 2,534           | 2:59         | 45.00           | 45.00        | 2,700   | 3:15            | 53.50        | 53.50           | 3,150        | 3:15    | 55.00           | 55.00        | 3,411           | 3:46         | 67.50   | 72.50           | 4,302        | 1:42            | 79.00        | 75.00     | 4,464 | 1:38 | 72.50  | 77.50  | 4,548 |
| Midday                               | 9:00      | 14:45 | 4:42    | 63.25           | 63.25        | 3,720           | 4:25         | 69.00   | 69.00           | 4,040        | 4:11            | 74.75        | 74.75     | 4,379           | 3:55         | 74.75           | 74.75        | 4,336   | 4:18            | 86.25        | 86.25           | 5,046        | 2:40    | 108.25          | 108.25       | 6,526           | 2:41         | 115.00  | 115.00          | 6,912        | 2:24            | 120.75       | 132.25    | 7,281 | 2:11 | 130.75 | 132.25 | 7,328 |
| Afternoon peak                       | 14:45     | 18:00 | 3:05    | 42.25           | 42.25        | 2,534           | 3:50         | 45.50   | 45.50           | 2,700        | 3:38            | 45.50        | 45.50     | 2,700           | 3:38         | 45.50           | 45.50        | 2,700   | 3:38            | 45.50        | 45.50           | 2,700        | 3:38    | 45.50           | 45.50        | 2,700           | 3:38         | 45.50   | 45.50           | 2,700        | 3:38            | 45.50        | 45.50     | 2,700 | 3:38 | 45.50  | 45.50  | 2,700 |
| Early evening                        | 18:00     | 21:00 | 3:00    | 38.50           | 38.50        | 2,250           | 3:00         | 38.50   | 38.50           | 2,250        | 3:00            | 38.50        | 38.50     | 2,250           | 3:00         | 38.50           | 38.50        | 2,250   | 3:00            | 38.50        | 38.50           | 2,250        | 3:00    | 38.50           | 38.50        | 2,250           | 3:00         | 38.50   | 38.50           | 2,250        | 3:00            | 38.50        | 38.50     | 2,250 | 3:00 | 38.50  | 38.50  | 2,250 |
| Late evening                         | 21:00     | 23:00 | 2:00    | 10.50           | 10.50        | 569             | 2:00         | 10.50   | 10.50           | 569          | 2:00            | 10.50        | 10.50     | 569             | 2:00         | 10.50           | 10.50        | 569     | 2:00            | 10.50        | 10.50           | 569          | 2:00    | 10.50           | 10.50        | 569             | 2:00         | 10.50   | 10.50           | 569          | 2:00            | 10.50        | 10.50     | 569   | 2:00 | 10.50  | 10.50  | 569   |
| Night                                | 23:00     | 1:00  | 2:00    | 8.00            | 8.00         | 400             | 2:00         | 8.00    | 8.00            | 400          | 2:00            | 8.00         | 8.00      | 400             | 2:00         | 8.00            | 8.00         | 400     | 2:00            | 8.00         | 8.00            | 400          | 2:00    | 8.00            | 8.00         | 400             | 2:00         | 8.00    | 8.00            | 400          | 2:00            | 8.00         | 8.00      | 400   | 2:00 | 8.00   | 8.00   | 400   |
| Friday                               |           |       |         |                 |              |                 |              |         |                 |              |                 |              |           |                 |              |                 |              |         |                 |              |                 |              |         |                 |              |                 |              |         |                 |              |                 |              |           |       |      |        |        |       |
| Early morning                        | 5:00      | 6:30  | 8:00    | 13.30           | 13.30        | 721             | 8:00         | 13.30   | 13.30           | 721          | 8:00            | 13.30        | 13.30     | 721             | 8:00         | 13.30           | 13.30        | 721     | 8:00            | 13.30        | 13.30           | 721          | 8:00    | 13.30           | 13.30        | 721             | 7:51         | 13.35   | 13.35           | 722          | 7:28            | 13.11        | 13.11     | 703   | 7:45 | 13.68  | 13.68  | 431   |
| Morning peak                         | 6:30      | 9:00  | 3:12    | 37.50           | 37.50        | 2,156           | 3:10         | 40.00   | 40.00           | 2,397        | 3:00            | 42.50        | 42.50     | 2,534           | 2:59         | 45.00           | 45.00        | 2,700   | 3:15            | 53.50        | 53.50           | 3,150        | 3:15    | 55.00           | 55.00        | 3,411           | 3:46         | 67.50   | 72.50           | 4,302        | 1:42            | 79.00        | 75.00     | 4,464 | 1:38 | 72.50  | 77.50  | 4,548 |
| Midday                               | 9:00      | 14:45 | 4:42    | 63.25           | 63.25        | 3,720           | 4:25         | 69.00   | 69.00           | 4,040        | 4:11            | 74.75        | 74.75     | 4,379           | 3:55         | 74.75           | 74.75        | 4,336   | 4:18            | 86.25        | 86.25           | 5,046        | 2:40    | 108.25          | 108.25       | 6,526           | 2:41         | 115.00  | 115.00          | 6,912        | 2:24            | 120.75       | 132.25    | 7,281 | 2:11 | 130.75 | 132.25 | 7,328 |
| Afternoon peak                       | 14:45     | 18:00 | 3:05    | 42.25           | 42.25        | 2,534           | 3:50         | 45.50   | 45.50           | 2,700        | 3:38            | 45.50        | 45.50     | 2,700           | 3:38         | 45.50           | 45.50        | 2,700   | 3:38            | 45.50        | 45.50           | 2,700        | 3:38    | 45.50           | 45.50        | 2,700           | 3:38         | 45.50   | 45.50           | 2,700        | 3:38            | 45.50        | 45.50     | 2,700 | 3:38 | 45.50  | 45.50  | 2,700 |
| Early evening                        | 18:00     | 21:00 | 3:00    | 38.50           | 38.50        | 2,250           | 3:00         | 38.50   | 38.50           | 2,250        | 3:00            | 38.50        | 38.50     | 2,250           | 3:00         | 38.50           | 38.50        | 2,250   | 3:00            | 38.50        | 38.50           | 2,250        | 3:00    | 38.50           | 38.50        | 2,250           | 3:00         | 38.50   | 38.50           | 2,250        | 3:00            | 38.50        | 38.50     | 2,250 | 3:00 | 38.50  | 38.50  | 2,250 |
| Late evening                         | 21:00     | 23:00 | 2:00    | 10.50           | 10.50        | 569             | 2:00         | 10.50   | 10.50           | 569          | 2:00            | 10.50        | 10.50     | 569             | 2:00         | 10.50           | 10.50        | 569     | 2:00            | 10.50        | 10.50           | 569          | 2:00    | 10.50           | 10.50        | 569             | 2:00         | 10.50   | 10.50           | 569          | 2:00            | 10.50        | 10.50     | 569   | 2:00 | 10.50  | 10.50  | 569   |
| Night                                | 23:00     | 1:00  | 2:00    | 8.00            | 8.00         | 400             | 2:00         | 8.00    | 8.00            | 400          | 2:00            | 8.00         | 8.00      | 400             | 2:00         | 8.00            | 8.00         | 400     | 2:00            | 8.00         | 8.00            | 400          | 2:00    | 8.00            | 8.00         | 400             | 2:00         | 8.00    | 8.00            | 400          | 2:00            | 8.00         | 8.00      | 400   | 2:00 | 8.00   | 8.00   | 400   |
| Saturday (see note)                  |           |       |         |                 |              |                 |              |         |                 |              |                 |              |           |                 |              |                 |              |         |                 |              |                 |              |         |                 |              |                 |              |         |                 |              |                 |              |           |       |      |        |        |       |
| Daytime                              | 6:00      | 14:00 | 8:00    | 147.50          | 147.50       | 4,073           | 8:00         | 147.50  | 147.50          | 4,073        | 8:00            | 147.50       | 147.50    | 4,073           | 8:00         | 147.50          | 147.50       | 4,073   | 8:00            | 147.50       | 147.50          | 4,073        | 8:00    | 147.50          | 147.50       | 4,073           | 8:00         | 147.50  | 147.50          | 4,073        | 8:00            | 147.50       | 147.50    | 4,073 | 8:00 | 147.50 | 147.50 | 4,073 |
| Evening                              | 14:00     | 23:00 | 9:00    | 28.00           | 28.00        | 722             | 9:00         | 28.00   | 28.00           | 722          | 9:00            | 28.00        | 28.00     | 722             | 9:00         | 28.00           | 28.00        | 722     | 9:00            | 28.00        | 28.00           | 722          | 9:00    | 28.00           | 28.00        | 722             | 9:00         | 28.00   | 28.00           | 722          | 9:00            | 28.00        | 28.00     | 722   | 9:00 | 28.00  | 28.00  | 722   |
| Night                                | 23:00     | 1:00  | 2:00    | 8.00            | 8.00         | 400             | 2:00         | 8.00    | 8.00            | 400          | 2:00            | 8.00         | 8.00      | 400             | 2:00         | 8.00            | 8.00         | 400     | 2:00            | 8.00         | 8.00            | 400          | 2:00    | 8.00            | 8.00         | 400             | 2:00         | 8.00    | 8.00            | 400          | 2:00            | 8.00         | 8.00      | 400   | 2:00 | 8.00   | 8.00   | 400   |
| Sunday (see note)                    |           |       |         |                 |              |                 |              |         |                 |              |                 |              |           |                 |              |                 |              |         |                 |              |                 |              |         |                 |              |                 |              |         |                 |              |                 |              |           |       |      |        |        |       |
| Daytime                              | 6:00      | 10:00 | 4:00    | 125.58          | 125.58       | 3,466           | 5:00         | 125.58  | 125.58          | 3,466        | 5:00            | 125.58       | 125.58    | 3,466           | 5:00         | 125.58          | 125.58       | 3,466   | 5:00            | 125.58       | 125.58          | 3,466        | 5:00    | 125.58          | 125.58       | 3,466           | 5:00         | 125.58  | 125.58          | 3,466        | 5:00            | 125.58       | 125.58    | 3,466 | 5:00 | 125.58 | 125.58 | 3,466 |
| Evening                              | 10:00     | 14:00 | 4:00    | 34.00           | 34.00        | 967             | 4:00         | 34.00   | 34.00           | 967          | 4:00            | 34.00        | 34.00     | 967             | 4:00         | 34.00           | 34.00        | 967     | 4:00            | 34.00        | 34.00           | 967          | 4:00    | 34.00           | 34.00        | 967             | 4:00         | 34.00   | 34.00           | 967          | 4:00            | 34.00        | 34.00     | 967   | 4:00 | 34.00  | 34.00  | 967   |

Notes:  
 - Does not include Monday/Friday weekend and other seasonal service reductions  
 - Sunday level of





**Preliminary Service Plan / Operations Matters**  
**Worksheet - Service Level 2 2020-2021**

| Parameters to be provided by Proponent                          |               |       |
|---|---------------|-------|
| What are cars left from by period, ending:                      | Stops per car | 121   |
| Standing room per car (square metres):                          |               | 24    |
| OD Peak terminal to terminal run time - start to stop (minutes) |               | 52.50 |
| WB Peak terminal to terminal run time - start to stop (minutes) |               | 52.50 |

| Calculated  |       |
|---|-------|
| Peak service capacity per car divided to meet peak requirements | 800   |
| Off peak service capacity per car                               | 160   |
| Two way run time without terminal time (minutes)                | 44.63 |

| Service design by time period |               |                |       |       |                    | Capacity and service level calculations |                                  |                |                    |                                      |   |                  |                                   |                |                 |                   |                   |  |                     | Operations Matters and Service Quantities |                |                                |                 |                                |                                 |                         |                         |                        |                      |                     |                    |                   |
|-------------------------------|---------------|----------------|-------|-------|--------------------|---|----------------------------------|----------------|--------------------|--------------------------------------|---|------------------|-----------------------------------|----------------|-----------------|-------------------|-------------------|--|---------------------|---|----------------|--------------------------------|-----------------|--------------------------------|---------------------------------|-------------------------|-------------------------|------------------------|----------------------|---------------------|--------------------|-------------------|
| Day type                      | Days per year | Time periods   | Start | End   | Duration of period | Maximum Policy Headway (minutes)        | Minimum Service Capacity (pphrd) | Cars per train | Capacity per train | trips per hour required for capacity | Headway (seconds) required (capacity or policy) | Two-way Run Time | Min Terminal Time @ each terminal | Min Cycle Time | Trains required | Vehicles required | Actual Cycle time | Adjusted Terminal Time @ each terminal | Adjusted Cycle Time | Headway (decimals) to be provided         | Headway (mins) | Step-back needed at terminals? | Drivers on duty | Hours of drivers' work per day | Hours of drivers' work per year | Number of One-Way Trips | Rev Train Hours per day | Annual Rev Train Hours | Rev Train Km per day | Annual Rev Train Km | Rev Veh Km per day | Annual Rev Veh Km |
| Monday-Thursday               | 201           | Early morning  | 5:00  | 6:30  | 1.5                | 8.0                                     | 1,435                            | 2              | 326                | 4.4                                  | 6,000   | 44.63            | 3.00                              | 50.63          | 7               | 14                | 56.00             | 5.66                                   | 56.00               | 8.900                                     | 8.90           | -                              | 7               | 13.3                           | 2,673                           | 28.5                    | 13.3                    | 2,673                  | 361                  | 72,466              | 721                | 144,931           |
|                               | 201           | Morning peak   | 6:30  | 9:00  | 2.5                | 6.0                                     | 11,360                           | 2              | 650                | 18.9                                 | 3,163   | 44.63            | 3.00                              | 50.63          | 18              | 32                | 56.70             | 3.04                                   | 50.70               | 3,169                                     | 3.10           | -                              | 16              | 40.0                           | 8,040                           | 94.7                    | 40.0                    | 8,040                  | 1,158                | 240,704             | 2,395              | 481,408           |
|                               | 201           | Midday         | 9:00  | 14:45 | 5.75               | 6.0                                     | 4,425                            | 2              | 326                | 13.6                                 | 4,425   | 44.63            | 3.00                              | 50.63          | 12              | 24                | 53.04             | 4.21                                   | 53.04               | 4,420                                     | 4.25           | -                              | 12              | 93.0                           | 13,688                          | 156.1                   | 63.0                    | 13,688                 | 1,975                | 356,921             | 3,949              | 799,647           |
|                               | 201           | Afternoon peak | 14:45 | 18:00 | 3.15               | 6.0                                     | 9,377                            | 2              | 650                | 15.6                                 | 3,833   | 44.63            | 3.00                              | 50.63          | 14              | 26                | 53.70             | 4.56                                   | 53.70               | 3,833                                     | 3.90           | -                              | 14              | 45.5                           | 9,146                           | 101.5                   | 45.5                    | 9,146                  | 1,395                | 256,355             | 2,570              | 518,610           |
|                               | 201           | Early evening  | 18:00 | 21:30 | 3.5                | 6.0                                     | 2,086                            | 2              | 326                | 7.0                                  | 5,000   | 44.63            | 3.00                              | 50.63          | 11              | 22                | 55.00             | 5.10                                   | 55.00               | 5,000                                     | 5.00           | -                              | 11              | 38.5                           | 7,739                           | 84.0                    | 28.5                    | 7,739                  | 1,093                | 213,583             | 2,125              | 427,165           |
|                               | 201           | Late evening   | 21:30 | 23:00 | 1.5                | 8.0                                     | 1,482                            | 2              | 326                | 4.5                                  | 8,000   | 44.63            | 3.00                              | 50.63          | 7               | 14                | 56.00             | 5.66                                   | 56.00               | 8,900                                     | 8.90           | -                              | 7               | 10.5                           | 2,111                           | 22.5                    | 10.5                    | 2,111                  | 295                  | 57,210              | 569                | 114,410           |
| 201                           | Night         | 23:00          | 1:00  | 2     | 16.0               | 319                                     | 2                                | 326            | 1.0                | 15,000                               | 44.63   | 3.00             | 50.63                             | 4              | 8               | 60.00             | 7.69              | 60.00                                  | 15,000              | 15.00                                     | -              | 4                              | 8.0             | 1,608                          | 16.0                            | 8.0                     | 1,608                   | 202                    | 40,642               | 405                 | 81,285             |                   |
| Friday                        | 51            | Early morning  | 5:00  | 6:30  | 1.5                | 8.0                                     | 1,435                            | 2              | 326                | 4.4                                  | 6,000   | 44.63            | 3.00                              | 50.63          | 7               | 14                | 56.00             | 5.66                                   | 56.00               | 8,900                                     | 8.90           | -                              | 7               | 13.3                           | 678                             | 28.5                    | 13.3                    | 678                    | 361                  | 18,367              | 721                | 36,774            |
|                               | 51            | Morning peak   | 6:30  | 9:00  | 2.5                | 6.0                                     | 11,360                           | 2              | 650                | 18.9                                 | 3,163   | 44.63            | 3.00                              | 50.63          | 18              | 32                | 56.70             | 3.04                                   | 50.70               | 3,169                                     | 3.10           | -                              | 16              | 40.0                           | 2,040                           | 94.7                    | 40.0                    | 2,040                  | 1,158                | 61,274              | 2,395              | 121,148           |
|                               | 51            | Midday         | 9:00  | 14:45 | 5.75               | 6.0                                     | 4,425                            | 2              | 326                | 13.6                                 | 4,425   | 44.63            | 3.00                              | 50.63          | 12              | 24                | 53.04             | 4.21                                   | 53.04               | 4,420                                     | 4.25           | -                              | 12              | 93.0                           | 1,519                           | 156.1                   | 63.0                    | 1,519                  | 1,975                | 100,711             | 3,949              | 241,428           |
|                               | 51            | Afternoon peak | 14:45 | 18:00 | 3.15               | 6.0                                     | 9,377                            | 2              | 650                | 15.6                                 | 3,833   | 44.63            | 3.00                              | 50.63          | 14              | 26                | 53.70             | 4.56                                   | 53.70               | 3,833                                     | 3.90           | -                              | 14              | 45.5                           | 2,321                           | 101.5                   | 45.5                    | 2,321                  | 1,395                | 85,940              | 2,570              | 131,000           |
|                               | 51            | Early evening  | 18:00 | 21:30 | 3.5                | 6.0                                     | 2,086                            | 2              | 326                | 7.0                                  | 5,000   | 44.63            | 3.00                              | 50.63          | 11              | 22                | 55.00             | 5.10                                   | 55.00               | 5,000                                     | 5.00           | -                              | 11              | 38.5                           | 1,964                           | 84.0                    | 28.5                    | 1,964                  | 1,093                | 56,153              | 2,125              | 108,388           |
|                               | 51            | Late evening   | 21:30 | 23:00 | 1.5                | 8.0                                     | 1,482                            | 2              | 326                | 4.5                                  | 8,000   | 44.63            | 3.00                              | 50.63          | 7               | 14                | 56.00             | 5.66                                   | 56.00               | 8,900                                     | 8.90           | -                              | 7               | 10.5                           | 535                             | 22.5                    | 10.5                    | 535                    | 295                  | 14,518              | 569                | 29,032            |
| 51                            | Night         | 23:00          | 2:00  | 3     | 8.0                | 757                                     | 2                                | 326            | 2.0                | 6,000                                | 44.63   | 3.00             | 50.63                             | 7              | 14              | 56.00             | 5.66              | 56.00                                  | 8,900               | 8.90                                      | -              | 7                              | 21.0            | 1,071                          | 45.0                            | 21.0                    | 1,071                   | 599                    | 28,092               | 1,139               | 58,063             |                   |
| Saturday (see note)           | 83            | Daytime        | 6:00  | 19:00 | 13                 | 5.0                                     | 1,691                            | 1              | 163                | 10.4                                 | 5,000   | 44.63            | 3.00                              | 50.63          | 11              | 11                | 56.00             | 5.18                                   | 56.00               | 5,000                                     | 5.00           | -                              | 11              | 147.5                          | 7,822                           | 332.0                   | 147.5                   | 7,822                  | 4,973                | 215,885             | 4,073              | 215,885           |
|                               | 83            | Evening        | 19:00 | 23:00 | 4                  | 8.0                                     | 1,243                            | 1              | 163                | 7.6                                  | 7,888   | 44.63            | 3.00                              | 50.63          | 7               | 7                 | 56.00             | 5.23                                   | 56.00               | 7,889                                     | 7.52           | -                              | 7               | 29.0                           | 1,484                           | 81.0                    | 28.0                    | 1,484                  | 772                  | 40,886              | 772                | 40,886            |
|                               | 83            | Night          | 23:00 | 2:00  | 3                  | 8.0                                     | 757                              | 1              | 163                | 4.8                                  | 8,000   | 44.63            | 3.00                              | 50.63          | 7               | 7                 | 56.00             | 5.66                                   | 56.00               | 8,900                                     | 8.90           | -                              | 7               | 21.0                           | 1,113                           | 45.0                    | 21.0                    | 1,113                  | 599                  | 30,170              | 599                | 30,170            |
| Sunday (see note)             | 83            | Daytime        | 6:00  | 19:00 | 13                 | 5.0                                     | 1,371                            | 1              | 163                | 8.2                                  | 5,000   | 44.63            | 3.00                              | 50.63          | 11              | 11                | 56.00             | 5.14                                   | 56.00               | 5,000                                     | 5.00           | -                              | 11              | 126.6                          | 7,535                           | 274.0                   | 126.6                   | 7,535                  | 3,496                | 207,906             | 3,496              | 207,906           |
|                               | 83            | Evening        | 19:00 | 23:00 | 4                  | 10.0                                    | 744                              | 1              | 163                | 4.6                                  | 10,000  | 44.63            | 3.00                              | 50.63          | 6               | 6                 | 60.00             | 7.69                                   | 60.00               | 10,000                                    | 10.00          | -                              | 6               | 34.0                           | 1,440                           | 44.0                    | 24.0                    | 1,440                  | 607                  | 36,432              | 607                | 36,432            |
| Annual Total                  |               |                |       |       |                    |   |                                  |                |                    |                                      |   |                  |                                   |                |                 |                   |                   |  |                     |   |                |                                | 26,769          | 170,339                        | 76,707                          | 2,154,818               | 3,777,633               |                        |                      |                     |                    |                   |

**Notes:**

\* One-way trip counts for first period of day adjusted to include revenue service trips beginning prior to start of period to comply with requirements in PA Schedule 15-2, Part 1, 2.4 - Hours of Operation

- Does not include Monday-Friday summer and other seasonal service reductions

- Saturday level of service also operated on Boxing Day

- Sunday level of service also operated on New Year's Day, Good Friday, Victoria Day, Civic Holiday, Labour Day, Thanksgiving Day, and Christmas Day

- Does not include extra service scheduled on Canada Day

- Friday Early Morning through Early Evening train length and round trip time same as Monday-Thursday

Preliminary Service Plan / Operations Matters  
Worksheet - Service Level 3 2022-2024

|  |       |  |  |  |  |
|--|-------|--|--|--|--|
| Parameters to be provided by Proponent<br>(Also see cars per train by period, below) |       |  |  |  |  |
| Seats per car  | 120   |  |  |  |  |
| Standing room per car (square metres)  | 54.1  |  |  |  |  |
| EB Peak terminal to terminal run time - start to stop (minutes)                      | 22:28 |  |  |  |  |
| WB Peak terminal to terminal run time - start to stop (minutes)                      | 27:3  |  |  |  |  |

|   |       |  |  |  |  |
|---|-------|--|--|--|--|
| Calculated  |       |  |  |  |  |
| Peak service capacity per car (based on min. seated requirements) | 300   |  |  |  |  |
| Off-peak service capacity per car                                 | 163   |  |  |  |  |
| Two-way run time without terminal time (minutes)                  | 44:55 |  |  |  |  |

| Service design by time period |               |                |       |       | Capacity and service level calculations |                                  |                                  |                |                    |                                      |   |                  |                                    |                 |                 |                   |                   |  |                     | Operations Matters and Service Quantities |               |                                |                 |                                |                                 |                           |                         |                     |                      |                           |       |         |
|-------------------------------|---------------|----------------|-------|-------|---|----------------------------------|----------------------------------|----------------|--------------------|--------------------------------------|---|------------------|------------------------------------|-----------------|-----------------|-------------------|-------------------|--|---------------------|---|---------------|--------------------------------|-----------------|--------------------------------|---------------------------------|---------------------------|-------------------------|---------------------|----------------------|---------------------------|-------|---------|
| Day type                      | Days per year | Time periods   | Start | End   | Duration of period                      | Maximum Policy Headway (minutes) | Minimum Service Capacity (pshpd) | Cars per train | Capacity per train | Trips per hour required for capacity | Headway (decimal) required capacity or policy | Two-way Run Time | Min. Terminal Time @ each terminal | Min. Cycle Time | Trains required | Vehicles required | Avail. Cycle time | Adjusted Terminal Time @ each terminal | Adjusted Cycle Time | Headway (decimal) to be provided          | Headway (max) | Stop-back needed at terminals? | Drivers on duty | Hours of drivers' work per day | Hours of drivers' work per year | Number of One-Way Trips * | Rev Train Hours per day | Annual Rev Train Km | Rev Train Km per day | Annual Rev Veh Km per day |       |         |
| Monday-Thursday               | 201           | Early morning  | 5:00  | 6:30  | 1.5                                     | 6.0                              | 1,518                            | 2              | 325                | 4.7                                  | 8.060   | 44:58            | 3:00                               | 50:58           | 7               | 14                | 58.06             | 5:66                                   | 58.00               | 8:00                                      | 8:00          | -                              | 7               | 13.3                           | 2,873                           | 28.5 *                    | 13.3                    | 2,873               | 361                  | 72,495                    | 721   | 144,981 |
|                               | 201           | Morning peak   | 6:30  | 9:00  | 2.5                                     | 5.0                              | 12,020                           | 2              | 650                | 20.6                                 | 2.966   | 44:58            | 3:00                               | 50:57           | 17              | 34                | 50.99             | 3:12                                   | 50.92               | 2:58                                      | 2:58          | -                              | 17              | 42.5                           | 8,543                           | 160.3                     | 42.5                    | 8,543               | 1,287                | 264,888                   | 2,534 | 509,378 |
|                               | 201           | Midday         | 9:00  | 14:45 | 5.75                                    | 5.0                              | 4,682                            | 2              | 325                | 14.4                                 | 4.177   | 44:58            | 3:00                               | 50:58           | 13              | 26                | 54.31             | 4:61                                   | 54.31               | 4:17                                      | 4:17          | -                              | 13              | 74.8                           | 15,625                          | 165.2                     | 74.8                    | 15,625              | 2,088                | 416,932                   | 4,179 | 839,963 |
|                               | 201           | Afternoon peak | 14:45 | 18:00 | 3.25                                    | 5.0                              | 9,922                            | 2              | 650                | 16.5                                 | 3.628   | 44:58            | 3:00                               | 50:58           | 14              | 28                | 50.79             | 3:06                                   | 50.79               | 3:68                                      | 3:38          | -                              | 14              | 45.5                           | 9,146                           | 167.5                     | 45.5                    | 9,146               | 1,360                | 273,312                   | 2,720 | 546,624 |
|                               | 201           | Early evening  | 18:00 | 21:30 | 3.5                                     | 5.0                              | 2,421                            | 2              | 325                | 7.4                                  | 5.000   | 44:58            | 3:00                               | 50:58           | 11              | 22                | 55.09             | 5:16                                   | 55.00               | 5:00                                      | 5:00          | -                              | 11              | 38.5                           | 7,739                           | 84.0                      | 38.5                    | 7,739               | 1,048                | 211,593                   | 2,125 | 427,185 |
|                               | 201           | Late evening   | 21:30 | 23:00 | 1.5                                     | 6.0                              | 1,547                            | 2              | 325                | 4.7                                  | 8.060   | 44:58            | 3:00                               | 50:58           | 7               | 14                | 58.06             | 5:66                                   | 58.00               | 8:00                                      | 8:00          | -                              | 7               | 16.5                           | 2,111                           | 22.5                      | 16.5                    | 2,111               | 285                  | 57,210                    | 569   | 114,419 |
|                               | 201           | Night          | 23:00 | 1:00  | 2                                       | 15.0                             | 337                              | 2              | 325                | 1.0                                  | 15.000  | 44:58            | 3:00                               | 50:58           | 4               | 8                 | 50.06             | 7:66                                   | 50.00               | 15:00                                     | 15:00         | -                              | 4               | 8.0                            | 1,808                           | 16.0                      | 8.0                     | 1,808               | 202                  | 40,882                    | 402   | 81,368  |
| Friday                        | 51            | Early morning  | 5:00  | 6:30  | 1.5                                     | 6.0                              | 1,518                            | 2              | 325                | 4.7                                  | 8.060   | 44:58            | 3:00                               | 50:58           | 7               | 14                | 56.60             | 5:66                                   | 56.60               | 8:06                                      | 8:06          | -                              | 7               | 13.3                           | 473                             | 38.5 *                    | 13.3                    | 473                 | 361                  | 18,187                    | 721   | 16,774  |
|                               | 51            | Morning peak   | 6:30  | 9:00  | 2.5                                     | 5.0                              | 12,020                           | 2              | 650                | 20.0                                 | 2.968   | 44:58            | 3:00                               | 50:57           | 17              | 34                | 50.92             | 3:12                                   | 50.92               | 2:58                                      | 2:58          | -                              | 17              | 42.5                           | 2,188                           | 160.3                     | 42.5                    | 2,188               | 1,287                | 64,829                    | 1,554 | 129,246 |
|                               | 51            | Midday         | 9:00  | 14:45 | 5.75                                    | 5.0                              | 4,682                            | 2              | 325                | 14.4                                 | 4.177   | 44:58            | 3:00                               | 50:58           | 13              | 26                | 54.31             | 4:61                                   | 54.31               | 4:17                                      | 4:17          | -                              | 13              | 74.8                           | 3,812                           | 165.2                     | 74.8                    | 3,812               | 2,088                | 106,563                   | 4,179 | 213,125 |
|                               | 51            | Afternoon peak | 14:45 | 18:00 | 3.25                                    | 5.0                              | 9,922                            | 2              | 650                | 16.5                                 | 3.628   | 44:58            | 3:00                               | 50:58           | 14              | 28                | 50.79             | 3:06                                   | 50.79               | 3:68                                      | 3:38          | -                              | 14              | 45.5                           | 2,321                           | 167.5                     | 45.5                    | 2,321               | 1,360                | 69,368                    | 2,720 | 138,886 |
|                               | 51            | Early evening  | 18:00 | 21:30 | 3.5                                     | 5.0                              | 2,421                            | 2              | 325                | 7.4                                  | 5.000   | 44:58            | 3:00                               | 50:58           | 11              | 22                | 55.09             | 5:16                                   | 55.00               | 5:00                                      | 5:00          | -                              | 11              | 38.5                           | 1,384                           | 84.0                      | 38.5                    | 1,384               | 1,048                | 64,789                    | 2,125 | 108,985 |
|                               | 51            | Late evening   | 21:30 | 23:00 | 1.5                                     | 6.0                              | 1,547                            | 2              | 325                | 4.7                                  | 8.060   | 44:58            | 3:00                               | 50:58           | 7               | 14                | 58.06             | 5:66                                   | 58.00               | 8:00                                      | 8:00          | -                              | 7               | 16.5                           | 349                             | 22.5                      | 16.5                    | 349                 | 285                  | 14,579                    | 569   | 59,022  |
|                               | 51            | Night          | 23:00 | 2:00  | 3                                       | 8.0                              | 802                              | 2              | 325                | 2.5                                  | 8.000   | 44:58            | 3:00                               | 50:58           | 7               | 14                | 58.06             | 5:66                                   | 58.00               | 8:00                                      | 8:00          | -                              | 7               | 21.0                           | 1,071                           | 45.0                      | 21.0                    | 1,071               | 569                  | 28,532                    | 1,159 | 58,063  |
| Saturday (see note)           | 93            | Daytime        | 6:00  | 19:00 | 13                                      | 5.0                              | 1,789                            | 1              | 163                | 11.0                                 | 5.000   | 44:58            | 3:00                               | 50:58           | 11              | 11                | 50.50             | 5:16                                   | 50.00               | 5:00                                      | 5:00          | -                              | 11              | 147.6                          | 7,822                           | 222.0 *                   | 147.6                   | 7,822               | 4,073                | 216,895                   | 4,073 | 215,885 |
|                               | 93            | Evening        | 19:00 | 23:00 | 4                                       | 6.0                              | 1,315                            | 1              | 163                | 6.1                                  | 7.427   | 44:58            | 3:00                               | 50:58           | 7               | 7                 | 58.06             | 3:69                                   | 52.00               | 7:47                                      | 7:28          | -                              | 7               | 26.0                           | 1,484                           | 64.5                      | 26.0                    | 1,484               | 816                  | 43,272                    | 816   | 43,272  |
|                               | 93            | Night          | 23:00 | 2:00  | 3                                       | 6.0                              | 802                              | 1              | 163                | 4.9                                  | 8.000   | 44:58            | 3:00                               | 50:58           | 7               | 7                 | 58.06             | 3:66                                   | 56.00               | 8:00                                      | 8:00          | -                              | 7               | 21.0                           | 1,113                           | 43.0                      | 21.0                    | 1,113               | 568                  | 30,170                    | 568   | 30,170  |
| Sunday (see note)             | 89            | Daytime        | 8:00  | 19:00 | 11                                      | 5.0                              | 1,408                            | 1              | 163                | 8.6                                  | 5.600   | 44:58            | 3:00                               | 50:58           | 11              | 11                | 56.60             | 5:16                                   | 55.00               | 5:00                                      | 5:00          | -                              | 11              | 125.6                          | 7,835                           | 274.0 *                   | 125.6                   | 7,835               | 3,488                | 267,958                   | 3,488 | 297,988 |
|                               | 89            | Evening        | 19:00 | 23:00 | 4                                       | 10.0                             | 787                              | 1              | 163                | 4.8                                  | 10.300  | 44:58            | 3:00                               | 50:58           | 6               | 6                 | 60.60             | 7:66                                   | 60.00               | 10:00                                     | 10:00         | -                              | 6               | 24.0                           | 1,440                           | 48.0                      | 24.0                    | 1,440               | 807                  | 36,433                    | 807   | 38,432  |
| Annual Total                  |               |                |       |       |   |                                  |                                  |                |                    |                                      |   |                  |                                    |                 |                 |                   |                   |  |                     |   |               | -                              | 6               | 78.785                         | 78.785                          | 175.676                   | 78.785                  | 175.676             | 2,020,937            | 1,916,860                 |       |         |

Notes:

- \* One-way trip counts for first period of day adjusted to include revenue service trips beginning prior to start of period to comply with requirements in PA Schedule 15-2, Part 1, 2.4 - Hours of Operation
- Does not include Monday-Friday summer and other seasonal service reductions
- Saturday level of service also operated on Boxing Day
- Sunday level of service also operated on New Year's, Good Friday, Victoria Day, Civic Holiday, Labour Day, Thanksgiving Day, and Christmas Day
- Does not include extra service scheduled on Canada Day
- Friday Early Morning through Early Evening train length and round trip time same as Monday-Thursday

Preliminary Service Plan / Operations Matters  
Worksheet - Service Level 4 2025-2027

Parameters to be provided by Proponent

(Also see cars per train by period, below)

Cars per car

Standing room per car (square metres)

EB Peak terminal to terminal run time - start to skip (minutes)

WB Peak terminal to terminal run time - start to skip (minutes)

Calculated

Peak service capacity per car (linked to min. loaded requirements)

Off peak service capacity per car

Two-way run time without terminal time (minutes)

Service design by time period

Capacity and service level calculations

Operations Matters and Service Quantities

| Day type            | Days per year | Time periods   | Start | End   | Duration of period | Maximum Policy Headway (minutes) | Minimum Service Capacity (pphr) | Cars per train | Capacity per train | Vehs per hour required for capacity | Headway (decimal) required (capacity or policy) | Two-way Run Time | Min Terminal Time @ each terminal | Min Cycle Time | Trains required | Vehicles required | Avail. Cycle time | Adjusted Terminal Time @ each terminal | Adjusted Cycle Time | Headway (decimal) to be provided | Headway (min) | Step-back needed at terminals? | Drivers on duty | Hours of drivers' work per day | Hours of drivers' work per year | Number of One-Way Trips | Rev Trains Hours per day | Annual Rev Trains Hours | Rev Trains Km per day | Annual Rev Trains Km | Rev Veh Km per day | Annual Rev Veh Km |
|---------------------|---------------|----------------|-------|-------|--------------------|----------------------------------|---------------------------------|----------------|--------------------|-------------------------------------|---|------------------|-----------------------------------|----------------|-----------------|-------------------|-------------------|--|---------------------|----------------------------------|---------------|--------------------------------|-----------------|--------------------------------|---------------------------------|-------------------------|--------------------------|-------------------------|-----------------------|----------------------|--------------------|-------------------|
| Monday-Thursday     | 201           | Early morning  | 5:00  | 5:30  | 1.5                | 5.0                              | 1,619                           | 2              | 326                | 5.0                                 | 6.000   | 44.817           | 3.00                              | 50.82          | 7               | 14                | 56.00             | 5.09                                   | 55.00               | 6.000                            | 6.000         | -                              | 7               | 13.3                           | 2,673                           | 28.5 *                  | 13.3                     | 2,673                   | 361                   | 72,466               | 721                | 144,931           |
|                     |               | Morning peak   | 6:30  | 9:00  | 2.5                | 5.0                              | 12,817                          | 2              | 690                | 21.4                                | 2.809   | 44.817           | 2.41                              | 50.43          | 18              | 36                | 50.58             | 2.87                                   | 50.56               | 2.809                            | 2.809         | Y                              | 26              | 50.0                           | 10,565                          | 106.8                   | 46.0                     | 9,045                   | 1,351                 | 271,576              | 3,702              | 543,152           |
|                     |               | Midday         | 9:00  | 14:45 | 5.75               | 5.0                              | 4,993                           | 2              | 326                | 15.3                                | 3.818   | 44.817           | 3.00                              | 50.82          | 13              | 26                | 50.83             | 3.06                                   | 50.95               | 3.818                            | 3.818         | -                              | 19              | 74.8                           | 15,625                          | 178.1                   | 74.8                     | 15,625                  | 2,228                 | 447,826              | 4,436              | 896,658           |
|                     |               | Afternoon peak | 14:45 | 18:00 | 3.15               | 5.0                              | 10,580                          | 2              | 690                | 17.8                                | 3.403   | 44.817           | 3.00                              | 50.82          | 15              | 30                | 51.04             | 3.11                                   | 51.04               | 3.403                            | 3.403         | -                              | 19              | 48.8                           | 9,795                           | 114.6                   | 48.8                     | 9,795                   | 1,450                 | 291,434              | 2,900              | 582,868           |
|                     |               | Early evening  | 18:00 | 21:30 | 3.5                | 5.0                              | 2,582                           | 2              | 326                | 7.9                                 | 5.000   | 44.817           | 3.00                              | 50.82          | 11              | 22                | 50.00             | 5.09                                   | 55.00               | 5.000                            | 5.000         | -                              | 11              | 38.5                           | 7,729                           | 84.0                    | 38.5                     | 7,729                   | 1,069                 | 212,581              | 2,125              | 425,165           |
|                     |               | Late evening   | 21:30 | 23:00 | 1.5                | 8.0                              | 1,650                           | 2              | 326                | 5.1                                 | 6.000   | 44.817           | 3.00                              | 50.82          | 7               | 14                | 56.00             | 5.00                                   | 55.00               | 6.000                            | 6.000         | -                              | 7               | 10.5                           | 2,111                           | 22.5                    | 10.5                     | 2,111                   | 285                   | 57,210               | 569                | 114,419           |
|                     |               | Night          | 23:00 | 1:00  | 2                  | 15.0                             | 280                             | 2              | 326                | 1.1                                 | 15.000  | 44.817           | 3.00                              | 50.82          | 4               | 8                 | 50.00             | 7.00                                   | 60.00               | 15.000                           | 15.000        | -                              | 4               | 8.0                            | 1,808                           | 16.0                    | 8.0                      | 1,808                   | 202                   | 40,402               | 495                | 91,385            |
| Friday              | 51            | Early morning  | 5:00  | 5:30  | 1.5                | 8.0                              | 1,619                           | 2              | 326                | 5.0                                 | 6.000   | 44.817           | 3.00                              | 50.82          | 7               | 14                | 56.00             | 5.09                                   | 55.00               | 6.000                            | 6.000         | -                              | 7               | 13.3                           | 2,673                           | 28.5 *                  | 13.3                     | 2,673                   | 361                   | 72,466               | 721                | 144,931           |
|                     |               | Morning peak   | 6:30  | 9:00  | 2.5                | 5.0                              | 12,817                          | 2              | 690                | 21.4                                | 2.809   | 44.817           | 2.41                              | 50.43          | 18              | 36                | 50.58             | 2.87                                   | 50.56               | 2.809                            | 2.809         | Y                              | 26              | 50.0                           | 10,565                          | 106.8                   | 46.0                     | 9,045                   | 1,351                 | 271,576              | 3,702              | 543,152           |
|                     |               | Midday         | 9:00  | 14:45 | 5.75               | 8.0                              | 4,993                           | 2              | 326                | 15.3                                | 3.818   | 44.817           | 3.00                              | 50.82          | 13              | 26                | 50.83             | 3.06                                   | 50.95               | 3.818                            | 3.818         | -                              | 19              | 74.8                           | 15,625                          | 178.1                   | 74.8                     | 15,625                  | 2,228                 | 447,826              | 4,436              | 896,658           |
|                     |               | Afternoon peak | 14:45 | 18:00 | 3.15               | 5.0                              | 10,580                          | 2              | 690                | 17.8                                | 3.403   | 44.817           | 3.00                              | 50.82          | 15              | 30                | 51.04             | 3.11                                   | 51.04               | 3.403                            | 3.403         | -                              | 19              | 48.8                           | 9,795                           | 114.6                   | 48.8                     | 9,795                   | 1,450                 | 291,434              | 2,900              | 582,868           |
|                     |               | Early evening  | 18:00 | 21:30 | 3.5                | 5.0                              | 2,582                           | 2              | 326                | 7.9                                 | 5.000   | 44.817           | 3.00                              | 50.82          | 11              | 22                | 50.00             | 5.09                                   | 55.00               | 6.000                            | 6.000         | -                              | 11              | 38.5                           | 7,729                           | 84.0                    | 38.5                     | 7,729                   | 1,069                 | 212,581              | 2,125              | 425,165           |
|                     |               | Late evening   | 21:30 | 23:00 | 1.5                | 8.0                              | 1,650                           | 2              | 326                | 5.1                                 | 6.000   | 44.817           | 3.00                              | 50.82          | 7               | 14                | 56.00             | 5.00                                   | 55.00               | 6.000                            | 6.000         | -                              | 7               | 10.5                           | 2,111                           | 22.5                    | 10.5                     | 2,111                   | 285                   | 57,210               | 569                | 114,419           |
|                     |               | Night          | 23:00 | 1:00  | 2                  | 8.0                              | 855                             | 2              | 326                | 2.6                                 | 6.000   | 44.817           | 3.00                              | 50.82          | 7               | 14                | 56.00             | 5.09                                   | 55.00               | 6.000                            | 6.000         | -                              | 7               | 21.0                           | 1,671                           | 45.0                    | 21.0                     | 1,671                   | 569                   | 28,932               | 1,139              | 58,063            |
| Saturday (see note) | 53            | Daytime        | 6:00  | 19:00 | 13                 | 5.0                              | 1,908                           | 2              | 326                | 11.7                                | 5.000   | 44.817           | 3.00                              | 50.82          | 11              | 11                | 55.00             | 5.09                                   | 55.00               | 5.000                            | 5.000         | -                              | 11              | 147.6                          | 7,822                           | 322.0 *                 | 147.6                    | 7,822                   | 4,073                 | 215,805              | 4,073              | 215,885           |
|                     |               | Evening        | 19:00 | 23:00 | 4                  | 8.0                              | 1,402                           | 2              | 326                | 8.6                                 | 6.000   | 44.817           | 3.00                              | 50.82          | 8               | 8                 | 50.00             | 5.49                                   | 55.80               | 6.000                            | 6.000         | -                              | 8               | 32.0                           | 1,698                           | 68.5                    | 32.0                     | 1,698                   | 871                   | 46,141               | 871                | 46,141            |
|                     |               | Night          | 23:00 | 1:00  | 2                  | 8.0                              | 855                             | 2              | 326                | 5.2                                 | 6.000   | 44.817           | 3.00                              | 50.82          | 7               | 7                 | 55.00             | 5.38                                   | 55.00               | 6.000                            | 6.000         | -                              | 7               | 21.0                           | 1,113                           | 45.0                    | 21.0                     | 1,113                   | 569                   | 30,170               | 569                | 30,170            |
| Sunday (see note)   | 80            | Daytime        | 8:00  | 19:00 | 11                 | 5.0                              | 1,502                           | 2              | 326                | 9.2                                 | 5.000   | 44.817           | 3.00                              | 50.82          | 11              | 11                | 55.00             | 5.09                                   | 55.00               | 5.000                            | 5.000         | -                              | 11              | 125.8                          | 7,538                           | 274.0 *                 | 125.8                    | 7,538                   | 3,466                 | 207,966              | 3,466              | 207,966           |
|                     |               | Evening        | 19:00 | 23:00 | 4                  | 10.0                             | 840                             | 2              | 326                | 8.2                                 | 10.000  | 44.817           | 3.00                              | 50.82          | 6               | 6                 | 60.00             | 7.00                                   | 60.00               | 10.000                           | 10.000        | -                              | 6               | 24.0                           | 1,440                           | 48.0                    | 24.0                     | 1,440                   | 607                   | 36,432               | 607                | 36,432            |
| Annual Total        |               |                |       |       |                    |                                  |                                 |                |                    |                                     |   |                  |                                   |                |                 |                   |                   |  |                     |                                  |               |                                |                 |                                | 81,709                          | 189,155                 | 80,547                   | 2,303,382               | 4,073,881             | 38,432               |                    |                   |

Notes:

\* One-way trip counts for first period of day adjusted to include revenue service trips beginning prior to start of period to comply with requirements in PA Schedule 15.2, Part 1.2.4 - Hours of Operation

- Does not include Monday-Friday summer and other seasonal service reductions

- Saturday level of service also operates on Service Day

- Sunday level of service also operates on New Year's, Good Friday, Victoria Day, Civic Holiday, Labour Day, Thanksgiving Day, and Christmas Day

- Does not include extra service introduced on Canada Day

- Friday Early Morning through Early Evening train length and round trip time same as Monday-Thursday

Preliminary Service Plan / Operations Matters  
Worksheet - Service Level 5 2028-2030

|  |  |                 |
|--|--|-----------------|
| Parameters to be provided by Proponent                             |  | Results per car |
| (Also see runs per train by period, below)                         |  | 120             |
| Boarding runs per car (average method)                             |  | 24.1            |
| ES Peak terminal to terminal run time - start to stop (minutes)    |  | 22.33           |
| WTS Peak terminal to terminal run time - start to stop (minutes)   |  | 22.3997         |
| Calculated   |  |                 |
| Peak service capacity per car (limited to min. stated requirement) |  | 300             |
| Off-peak service capacity per car                                  |  | 153             |
| Two-way run time without terminal time (minutes)                   |  | 44.6867         |

| Service design by time period |               |                |       |       |                    | Capacity and service level calculations |                                  |                |                    |                                      |   |                  |                                    |                |                 |                   |                   |  |                     | Operations Matters and Service Quantities |                |                                |                 |                                |                                 |                           |                    |                        |                      |                     |                    |                   |  |
|-------------------------------|---------------|----------------|-------|-------|--------------------|---|----------------------------------|----------------|--------------------|--------------------------------------|---|------------------|------------------------------------|----------------|-----------------|-------------------|-------------------|--|---------------------|---|----------------|--------------------------------|-----------------|--------------------------------|---------------------------------|---------------------------|--------------------|------------------------|----------------------|---------------------|--------------------|-------------------|--|
| Day type                      | Days per year | Time periods   | Start | End   | Duration of period | Maximum Policy Headway (minutes)        | Minimum Service Capacity (pphrd) | Cars per train | Capacity per train | Trips per hour required for capacity | Headway (decimal) required (capacity or policy) | Two-way Run Time | Min. Terminal Time @ each terminal | Min Cycle Time | Trains required | Vehicles required | Avail. Cycle time | Adjusted Terminal Time @ each terminal | Adjusted Cycle Time | Headway (decimal) to be provided          | Headway (mins) | Stop-back needed at terminals? | Drivers on duty | Hours of drivers' work per day | Hours of drivers' work per year | Number of One-Way Trips * | Rev Train per hour | Annual Rev Train Hours | Rev Train Km per day | Annual Rev Train Km | Rev Veh Km per day | Annual Rev Veh Km |  |
| Monday-Thursday               | 01            | Early morning  | 5:00  | 8:00  | 1.5                | 8.0                                     | 1,833                            | 1              | 153                | 5.6                                  | 8.000   | 44.687           | 3.00                               | 50.69          | 7               | 14                | 56.00             | 5.66                                   | 56.00               | 3.000                                     | 3.00           | -                              | 7               | 13.8                           | 2,673                           | 28.5 *                    | 13.8               | 2,673                  | 361                  | 72,456              | 721                | 144,911           |  |
|                               | 01            | Morning peak   | 8:30  | 9:00  | 0.5                | 5.0                                     | 14,515                           | 2              | 306                | 24.2                                 | 2.880   | 44.687           | 2.48                               | 49.86          | 21              | 42                | 52.08             | 2.96                                   | 50.61               | 2.410                                     | 2.85           | Y                              | 28              | 57.5                           | 11,558                          | 124.5                     | 52.5               | 16,565                 | 1,575                | 316,538             | 3,150              | 633,067           |  |
|                               | 01            | Midday         | 9:00  | 14:45 | 5.75               | 5.0                                     | 5,654                            | 2              | 306                | 17.3                                 | 3.489   | 44.687           | 3.00                               | 50.69          | 13              | 30                | 51.89             | 3.60                                   | 51.88               | 3.488                                     | 3.28           | -                              | 18              | 36.3                           | 17,336                          | 129.5                     | 86.3               | 17,326                 | 2,520                | 507,193             | 5,040              | 1,014,315         |  |
|                               | 01            | Afternoon peak | 14:45 | 18:00 | 3.25               | 5.0                                     | 11,982                           | 2              | 306                | 20.0                                 | 3.005   | 44.687           | 3.00                               | 50.69          | 17              | 34                | 51.08             | 3.20                                   | 51.08               | 3.005                                     | 3.00           | -                              | 17              | 35.3                           | 11,105                          | 129.8                     | 55.3               | 11,105                 | 1,642                | 330,044             | 3,284              | 660,088           |  |
|                               | 01            | Early evening  | 18:00 | 21:00 | 3.0                | 5.0                                     | 2,924                            | 2              | 306                | 9.6                                  | 5.000   | 44.687           | 3.00                               | 50.69          | 11              | 22                | 55.00             | 5.16                                   | 55.00               | 5.000                                     | 5.00           | -                              | 11              | 38.5                           | 7,739                           | 84.0                      | 38.5               | 7,739                  | 1,063                | 213,533             | 2,125              | 427,165           |  |
|                               | 01            | Late evening   | 21:00 | 23:00 | 1.5                | 8.0                                     | 1,868                            | 1              | 153                | 5.7                                  | 8.000   | 44.687           | 3.00                               | 50.69          | 7               | 14                | 56.00             | 5.66                                   | 56.00               | 8.000                                     | 8.00           | -                              | 7               | 10.5                           | 2,111                           | 22.5                      | 10.5               | 2,111                  | 265                  | 57,210              | 569                | 114,419           |  |
|                               | 01            | Night          | 23:00 | 1:00  | 2                  | 15.0                                    | 407                              | 2              | 306                | 1.2                                  | 15.000  | 44.687           | 3.00                               | 50.69          | 4               | 8                 | 60.00             | 7.66                                   | 60.00               | 15.000                                    | 15.00          | -                              | 4               | 8.0                            | 1,608                           | 16.0                      | 8.0                | 1,608                  | 202                  | 40,882              | 405                | 81,365            |  |
| Friday                        | 01            | Early morning  | 5:00  | 8:00  | 1.5                | 8.0                                     | 1,833                            | 2              | 306                | 5.6                                  | 8.000   | 44.687           | 3.00                               | 50.69          | 7               | 14                | 56.00             | 5.66                                   | 56.00               | 8.000                                     | 8.00           | -                              | 7               | 13.3                           | 479                             | 38.5 *                    | 13.3               | 479                    | 361                  | 18,387              | 721                | 36,774            |  |
|                               | 01            | Morning peak   | 8:30  | 9:00  | 0.5                | 5.0                                     | 14,515                           | 2              | 306                | 24.2                                 | 2.880   | 44.687           | 2.48                               | 49.86          | 21              | 42                | 52.08             | 2.96                                   | 50.61               | 2.410                                     | 2.25           | Y                              | 23              | 57.5                           | 1,093                           | 124.5                     | 52.5               | 2,824                  | 1,575                | 80,313              | 3,150              | 180,625           |  |
|                               | 01            | Midday         | 9:00  | 14:45 | 5.75               | 5.0                                     | 5,654                            | 2              | 306                | 17.3                                 | 3.489   | 44.687           | 3.00                               | 50.69          | 13              | 30                | 51.89             | 3.60                                   | 51.88               | 3.488                                     | 3.28           | -                              | 18              | 36.3                           | 4,369                           | 129.5                     | 86.3               | 4,369                  | 2,520                | 128,692             | 5,040              | 257,394           |  |
|                               | 01            | Afternoon peak | 14:45 | 18:00 | 3.25               | 5.0                                     | 11,982                           | 2              | 306                | 20.0                                 | 3.005   | 44.687           | 3.00                               | 50.69          | 17              | 34                | 51.08             | 3.20                                   | 51.08               | 3.005                                     | 3.00           | -                              | 17              | 35.3                           | 2,818                           | 129.8                     | 55.3               | 2,818                  | 1,642                | 83,742              | 3,284              | 167,485           |  |
|                               | 01            | Early evening  | 18:00 | 21:00 | 3.0                | 5.0                                     | 2,924                            | 2              | 306                | 9.6                                  | 5.000   | 44.687           | 3.00                               | 50.69          | 11              | 22                | 55.00             | 5.16                                   | 55.00               | 5.000                                     | 5.00           | -                              | 11              | 38.5                           | 1,964                           | 84.0                      | 38.5               | 1,964                  | 1,063                | 64,199              | 2,125              | 108,385           |  |
|                               | 01            | Late evening   | 21:00 | 23:00 | 1.5                | 8.0                                     | 1,868                            | 2              | 306                | 5.7                                  | 8.000   | 44.687           | 3.00                               | 50.69          | 7               | 14                | 56.00             | 5.66                                   | 56.00               | 8.000                                     | 8.00           | -                              | 7               | 10.5                           | 536                             | 52.5                      | 10.5               | 536                    | 265                  | 14,519              | 569                | 28,032            |  |
|                               | 01            | Night          | 23:00 | 1:00  | 2                  | 15.0                                    | 968                              | 2              | 306                | 1.2                                  | 15.000  | 44.687           | 3.00                               | 50.69          | 7               | 14                | 56.00             | 5.66                                   | 56.00               | 8.000                                     | 8.00           | -                              | 7               | 21.8                           | 1,071                           | 45.0                      | 21.8               | 1,071                  | 569                  | 29,032              | 1,138              | 58,063            |  |
| Saturday (see note)           | 03            | Daytime        | 5:00  | 19:00 | 12                 | 5.0                                     | 2,180                            | 1              | 153                | 15.3                                 | 4.527   | 44.687           | 3.00                               | 50.69          | 12              | 12                | 54.32             | 4.82                                   | 54.32               | 4.527                                     | 4.32           | -                              | 12              | 169.8                          | 5,568                           | 354.8 *                   | 169.8              | 8,528                  | 4,486                | 237,740             | 4,486              | 137,740           |  |
|                               | 03            | Evening        | 19:00 | 23:00 | 4                  | 8.0                                     | 1,588                            | 1              | 153                | 5.7                                  | 8.158   | 44.687           | 3.00                               | 50.69          | 8               | 8                 | 55.43             | 5.37                                   | 55.43               | 8.158                                     | 8.10           | -                              | 5               | 35.0                           | 1,808                           | 77.9                      | 38.6               | 1,808                  | 986                  | 52,294              | 986                | 52,294            |  |
|                               | 03            | Night          | 23:00 | 2:00  | 3                  | 8.0                                     | 968                              | 1              | 153                | 3.9                                  | 8.000   | 44.687           | 3.00                               | 50.69          | 7               | 7                 | 56.00             | 5.66                                   | 56.00               | 8.000                                     | 8.00           | -                              | 7               | 21.8                           | 1,113                           | 45.0                      | 21.8               | 1,113                  | 569                  | 30,170              | 569                | 30,170            |  |
| Sunday (see note)             | 02            | Daytime        | 8:00  | 19:00 | 11                 | 5.0                                     | 1,701                            | 1              | 153                | 10.4                                 | 5.000   | 44.687           | 3.00                               | 50.69          | 11              | 11                | 55.00             | 5.16                                   | 55.00               | 5.000                                     | 5.00           | -                              | 11              | 125.8                          | 7,335                           | 274.0 *                   | 125.8              | 7,335                  | 3,466                | 207,964             | 3,466              | 207,968           |  |
|                               | 02            | Evening        | 19:00 | 23:00 | 4                  | 10.0                                    | 951                              | 1              | 153                | 5.8                                  | 10.000  | 44.687           | 3.00                               | 50.69          | 8               | 8                 | 60.00             | 7.66                                   | 60.00               | 10.000                                    | 10.00          | -                              | 8               | 24.9                           | 1,446                           | 48.0                      | 24.9               | 1,446                  | 607                  | 36,433              | 607                | 36,432            |  |
|                               |               | Annual Total   |       |       |                    |   |                                  |                |                    |                                      |   |                  |                                    |                |                 |                   |                   |  |                     |   |                |                                |                 |                                |                                 |                           |                    |                        |                      |                     |                    |                   |  |
|                               |               |                |       |       |                    |   |                                  |                |                    |                                      |   |                  |                                    |                |                 |                   |                   |  |                     |   |                |                                |                 |                                |                                 |                           |                    |                        |                      |                     |                    |                   |  |
|                               |               |                |       |       |                    |   |                                  |                |                    |                                      |   |                  |                                    |                |                 |                   |                   |  |                     |   |                |                                |                 |                                |                                 |                           |                    |                        |                      |                     |                    |                   |  |
|                               |               |                |       |       |                    |   |                                  |                |                    |                                      |   |                  |                                    |                |                 |                   |                   |  |                     |   |                |                                |                 |                                |                                 |                           |                    |                        |                      |                     |                    |                   |  |
|                               |               |                |       |       |                    |   |                                  |                |                    |                                      |   |                  |                                    |                |                 |                   |                   |  |                     |   |                |                                |                 |                                |                                 |                           |                    |                        |                      |                     |                    |                   |  |
|                               |               |                |       |       |                    |   |                                  |                |                    |                                      |   |                  |                                    |                |                 |                   |                   |  |                     |   |                |                                |                 |                                |                                 |                           |                    |                        |                      |                     |                    |                   |  |
|                               |               |                |       |       |                    |   |                                  |                |                    |                                      |   |                  |                                    |                |                 |                   |                   |  |                     |   |                |                                |                 |                                |                                 |                           |                    |                        |                      |                     |                    |                   |  |
|                               |               |                |       |       |                    |   |                                  |                |                    |                                      |   |                  |                                    |                |                 |                   |                   |  |                     |   |                |                                |                 |                                |                                 |                           |                    |                        |                      |                     |                    |                   |  |
|                               |               |                |       |       |                    |   |                                  |                |                    |                                      |   |                  |                                    |                |                 |                   |                   |  |                     |   |                |                                |                 |                                |                                 |                           |                    |                        |                      |                     |                    |                   |  |
|                               |               |                |       |       |                    |   |                                  |                |                    |                                      |   |                  |                                    |                |                 |                   |                   |  |                     |   |                |                                |                 |                                |                                 |                           |                    |                        |                      |                     |                    |                   |  |
|                               |               |                |       |       |                    |   |                                  |                |                    |                                      |   |                  |                                    |                |                 |                   |                   |  |                     |   |                |                                |                 |                                |                                 |                           |                    |                        |                      |                     |                    |                   |  |
|                               |               |                |       |       |                    |   |                                  |                |                    |                                      |   |                  |                                    |                |                 |                   |                   |  |                     |   |                |                                |                 |                                |                                 |                           |                    |                        |                      |                     |                    |                   |  |
|                               |               |                |       |       |                    |   |                                  |                |                    |                                      |   |                  |                                    |                |                 |                   |                   |  |                     |   |                |                                |                 |                                |                                 |                           |                    |                        |                      |                     |                    |                   |  |
|                               |               |                |       |       |                    |   |                                  |                |                    |                                      |   |                  |                                    |                |                 |                   |                   |  |                     |   |                |                                |                 |                                |                                 |                           |                    |                        |                      |                     |                    |                   |  |
|                               |               |                |       |       |                    |   |                                  |                |                    |                                      |   |                  |                                    |                |                 |                   |                   |  |                     |   |                |                                |                 |                                |                                 |                           |                    |                        |                      |                     |                    |                   |  |
|                               |               |                |       |       |                    |   |                                  |                |                    |                                      |   |                  |                                    |                |                 |                   |                   |  |                     |   |                |                                |                 |                                |                                 |                           |                    |                        |                      |                     |                    |                   |  |
|                               |               |                |       |       |                    |   |                                  |                |                    |                                      |   |                  |                                    |                |                 |                   |                   |  |                     |   |                |                                |                 |                                |                                 |                           |                    |                        |                      |                     |                    |                   |  |
|                               |               |                |       |       |                    |   |                                  |                |                    |                                      |   |                  |                                    |                |                 |                   |                   |  |                     |   |                |                                |                 |                                |                                 |                           |                    |                        |                      |                     |                    |                   |  |
|                               |               |                |       |       |                    |   |                                  |                |                    |                                      |   |                  |                                    |                |                 |                   |                   |  |                     |   |                |                                |                 |                                |                                 |                           |                    |                        |                      |                     |                    |                   |  |
|                               |               |                |       |       |                    |   |                                  |                |                    |                                      |   |                  |                                    |                |                 |                   |                   |  |                     |   |                |                                |                 |                                |                                 |                           |                    |                        |                      |                     |                    |                   |  |
|                               |               |                |       |       |                    |   |                                  |                |                    |                                      |   |                  |                                    |                |                 |                   |                   |  |                     |   |                |                                |                 |                                |                                 |                           |                    |                        |                      |                     |                    |                   |  |
|                               |               |                |       |       |                    |   |                                  |                |                    |                                      |   |                  |                                    |                |                 |                   |                   |  |                     |   |                |                                |                 |                                |                                 |                           |                    |                        |                      |                     |                    |                   |  |
|                               |               |                |       |       |                    |   |                                  |                |                    |                                      |   |                  |                                    |                |                 |                   |                   |  |                     |   |                |                                |                 |                                |                                 |                           |                    |                        |                      |                     |                    |                   |  |
|                               |               |                |       |       |                    |   |                                  |                |                    |                                      |   |                  |                                    |                |                 |                   |                   |  |                     |   |                |                                |                 |                                |                                 |                           |                    |                        |                      |                     |                    |                   |  |
|                               |               |                |       |       |                    |   |                                  |                |                    |                                      |   |                  |                                    |                |                 |                   |                   |  |                     |   |                |                                |                 |                                |                                 |                           |                    |                        |                      |                     |                    |                   |  |
|                               |               |                |       |       |                    |   |                                  |                |                    |                                      |   |                  |                                    |                |                 |                   |                   |  |                     |   |                |                                |                 |                                |                                 |                           |                    |                        |                      |                     |                    |                   |  |
|                               |               |                |       |       |                    |   |                                  |                |                    |                                      |   |                  |                                    |                |                 |                   |                   |  |                     |   |                |                                |                 |                                |                                 |                           |                    |                        |                      |                     |                    |                   |  |
|                               |               |                |       |       |                    |   |                                  |                |                    |                                      |   |                  |                                    |                |                 |                   |                   |  |                     |   |                |                                |                 |                                |                                 |                           |                    |                        |                      |                     |                    |                   |  |
|                               |               |                |       |       |                    |   |                                  |                |                    |                                      |   |                  |                                    |                |                 |                   |                   |  |                     |   |                |                                |                 |                                |                                 |                           |                    |                        |                      |                     |                    |                   |  |
|                               |               |                |       |       |                    |   |                                  |                |                    |                                      |   |                  |                                    |                |                 |                   |                   |  |                     |   |                |                                |                 |                                |                                 |                           |                    |                        |                      |                     |                    |                   |  |
|                               |               |                |       |       |                    |   |                                  |                |                    |                                      |   |                  |                                    |                |                 |                   |                   |  |                     |   |                |                                |                 |                                |                                 |                           |                    |                        |                      |                     |                    |                   |  |
|                               |               |                |       |       |                    |   |                                  |                |                    |                                      |   |                  |                                    |                |                 |                   |                   |  |                     |   |                |                                |                 |                                |                                 |                           |                    |                        |                      |                     |                    |                   |  |
|                               |               |                |       |       |                    |   |                                  |                |                    |                                      |   |                  |                                    |                |                 |                   |                   |  |                     |   |                |                                |                 |                                |                                 |                           |                    |                        |                      |                     |                    |                   |  |
|                               |               |                |       |       |                    |   |                                  |                |                    |                                      |   |                  |                                    |                |                 |                   |                   |  |                     |   |                |                                |                 |                                |                                 |                           |                    |                        |                      |                     |                    |                   |  |
|                               |               |                |       |       |                    |   |                                  |                |                    |                                      |   |                  |                                    |                |                 |                   |                   |  |                     |   |                |                                |                 |                                |                                 |                           |                    |                        |                      |                     |                    |                   |  |
|                               |               |                |       |       |                    |   |                                  |                |                    |                                      |   |                  |                                    |                |                 |                   |                   |  |                     |   |                |                                |                 |                                |                                 |                           |                    |                        |                      |                     |                    |                   |  |
|                               |               |                |       |       |                    |   |                                  |                |                    |                                      |   |                  |                                    |                |                 |                   |                   |  |                     |   |                |                                |                 |                                |                                 |                           |                    |                        |                      |                     |                    |                   |  |
|                               |               |                |       |       |                    |   |                                  |                |                    |                                      |   |                  |                                    |                |                 |                   |                   |  |                     |   |                |                                |                 |                                |                                 |                           |                    |                        |                      |                     |                    |                   |  |
|                               |               |                |       |       |                    |   |                                  |                |                    |                                      |   |                  |                                    |                |                 |                   |                   |  |                     |   |                |                                |                 |                                |                                 |                           |                    |                        |                      |                     |                    |                   |  |
|                               |               |                |       |       |                    |   |                                  |                |                    |                                      |   |                  |                                    |                |                 |                   |                   |  |                     |   |                |                                |                 |                                |                                 |                           |                    |                        |                      |                     |                    |                   |  |
|                               |               |                |       |       |                    |   |                                  |                |                    |                                      |   |                  |                                    |                |                 |                   |                   |  |                     |   |                |                                |                 |                                |                                 |                           |                    |                        |                      |                     |                    |                   |  |
|                               |               |                |       |       |                    |   |                                  |                |                    |                                      |   |                  |                                    |                |                 |                   |                   |  |                     |   |                |                                |                 |                                |                                 |                           |                    |                        |                      |                     |                    |                   |  |
|                               |               |                |       |       |                    |   |                                  |                |                    |                                      |   |                  |                                    |                |                 |                   |                   |  |                     |   |                |                                |                 |                                |                                 |                           |                    |                        |                      |                     |                    |                   |  |
|                               |               |                |       |       |                    |   |                                  |                |                    |                                      |   |                  |                                    |                |                 |                   |                   |  |                     |   |                |                                |                 |                                |                                 |                           |                    |                        |                      |                     |                    |                   |  |
|                               |               |                |       |       |                    |   |                                  |                |                    |                                      |   |                  |                                    |                |                 |                   |                   |  |                     |   |                |                                |                 |                                |                                 |                           |                    |                        |                      |                     |                    |                   |  |
|                               |               |                |       |       |                    |   |                                  |                |                    |                                      |   |                  |                                    |                |                 |                   |                   |  |                     |   |                |                                |                 |                                |                                 |                           |                    |                        |                      |                     |                    |                   |  |
|                               |               |                |       |       |                    |   |                                  |                |                    |                                      |   |                  |                                    |                |                 |                   |                   |  |                     |   |                |                                |                 |                                |                                 |                           |                    |                        |                      |                     |                    |                   |  |
|                               |               |                |       |       |                    |   |                                  |                |                    |                                      |   |                  |                                    |                |                 |                   |                   |  |                     |   |                |                                |                 |                                |                                 |                           |                    |                        |                      |                     |                    |                   |  |
|                               |               |                |       |       |                    |   |                                  |                |                    |                                      |   |                  |                                    |                |                 |                   |                   |  |                     |   |                |                                |                 |                                |                                 |                           |                    |                        |                      |                     |                    |                   |  |
|                               |               |                |       |       |                    |   |                                  |                |                    |                                      |   |                  |                                    |                |                 |                   |                   |  |                     |   |                |                                |                 |                                |                                 |                           |                    |                        |                      |                     |                    |                   |  |
|                               |               |                |       |       |                    |   |                                  |                |                    |                                      |   |                  |                                    |                |                 |                   |                   |  |                     |   |                |                                |                 |                                |                                 |                           |                    |                        |                      |                     |                    |                   |  |
|                               |               |                |       |       |                    |   |                                  |                |                    |                                      |   |                  |                                    |                |                 |                   |                   |  |                     |   |                |                                |                 |                                |                                 |                           |                    |                        |                      |                     |                    |                   |  |
|                               |               |                |       |       |                    |   |                                  |                |                    |                                      |   |                  |                                    |                |                 |                   |                   |  |                     |   |                |                                |                 |                                |                                 |                           |                    |                        |                      |                     |                    |                   |  |

Preliminary Service Plan / Operations Matters  
Worksheet - Service Level 6 2031-2035

|  |  |                 |
|--|--|-----------------|
| Parameters to be provided by Proponent                             |  | Results per car |
| (Also see runs per train by period, below)                         |  | 120             |
| Boarding room per car (square metres)                              |  | 26.1            |
| ES Peak terminal to terminal run time - start to stop (minutes)    |  | 21.5            |
| WTS Peak terminal to terminal run time - start to stop (minutes)   |  | 27.433          |
| Calculated   |  | 300             |
| Peak service capacity per car (limited to min. stated requirement) |  | 153             |
| Off-peak service capacity per car                                  |  | 84.3333         |
| Two-way run time without terminal time (minutes)                   |  |                 |

| Service design by time period |               |                    |       |       |                    | Capacity and service level calculations |                                  |                |                    |                                      |   |                  |                                   |                |                 |                   |                   |  |                     | Operations Matters and Service Quantities |                 |                                |                 |                                |                                 |                           |                         |                        |                      |                     |                    |                   |        |
|-------------------------------|---------------|--------------------|-------|-------|--------------------|---|----------------------------------|----------------|--------------------|--------------------------------------|---|------------------|-----------------------------------|----------------|-----------------|-------------------|-------------------|--|---------------------|---|-----------------|--------------------------------|-----------------|--------------------------------|---------------------------------|---------------------------|-------------------------|------------------------|----------------------|---------------------|--------------------|-------------------|--------|
| Day type                      | Days per year | Time periods       | Start | End   | Duration of period | Maximum Policy Headway (minutes)        | Minimum Service Capacity (pphrd) | Cars per train | Capacity per train | Trips per hour required for capacity | Headway (decimal) required (capacity or policy) | Two-way Run Time | Min Terminal Time @ each terminal | Min Cycle Time | Trains required | Vehicles required | Avail. Cycle time | Adjusted Terminal Time @ each terminal | Adjusted Cycle Time | Headway (decimal) to be provided          | Head-way (mins) | Stop-back needed at terminals? | Drivers on duty | Hours of drivers' work per day | Hours of drivers' work per year | Number of One-Way Trips * | Rev Train Hours per day | Annual Rev Train Hours | Rev Train Km per day | Annual Rev Train Km | Rev Veh Km per day | Annual Rev Veh Km |        |
| Monday-Thursday               |               | 01: Early morning  | 5:00  | 8:00  | 1.5                | 8.0                                     | 2,371                            | 2              | 306                | 7.3                                  | 8.000   | 44.333           | 3.00                              | 50.33          | 7               | 14                | 56.00             | 5.88                                   | 56.00               | 3.000                                     | 3:00            | -                              | 7               | 13.3                           | 2,673                           | 215.5 *                   | 53.3                    | 2,673                  | 361                  | 72,466              | 721                | 144,981           |        |
|                               |               | 02: Morning peak   | 8:30  | 9:00  | 0.5                | 5.0                                     | 18,772                           | 2              | 306                | 31.3                                 | 1.918   | 44.333           | 1.99                              | 46.17          | 26              | 52                | 49.96             | 1.84                                   | 48.00               | 1.866                                     | 1:51            | Y                              | 28              | 70.0                           | 14,070                          | 162.5                     | 65.6                    | 13,065                 | 2,055                | 413,164             | 4,111              | 822,287           |        |
|                               |               | 03: Midday         | 9:00  | 14:45 | 5.75               | 5.0                                     | 7,313                            | 2              | 306                | 22.4                                 | 2.675   | 44.333           | 2.87                              | 49.86          | 19              | 38                | 50.82             | 3.24                                   | 50.82               | 2.675                                     | 2:40            | -                              | 19              | 104.3                          | 21,909                          | 258.0                     | 109.3                   | 21,886                 | 3,203                | 635,898             | 6,326              | 1,311,795         |        |
|                               |               | 04: Afternoon peak | 14:45 | 18:00 | 3.25               | 5.0                                     | 15,488                           | 2              | 306                | 25.8                                 | 2.533   | 44.333           | 2.32                              | 48.06          | 22              | 44                | 51.11             | 2.05                                   | 49.03               | 2.256                                     | 2:15            | Y                              | 24              | 78.0                           | 15,876                          | 172.9                     | 71.5                    | 14,372                 | 2,187                | 439,606             | 4,374              | 878,212           |        |
|                               |               | 05: Early evening  | 18:00 | 21:00 | 3.0                | 5.0                                     | 3,782                            | 2              | 306                | 11.0                                 | 5.000   | 44.333           | 3.00                              | 50.33          | 11              | 22                | 55.00             | 5.33                                   | 55.00               | 5.000                                     | 5:00            | -                              | 11              | 36.5                           | 7,739                           | 84.0                      | 38.5                    | 7,739                  | 1,063                | 213,533             | 2,125              | 427,185           |        |
|                               |               | 06: Late evening   | 21:00 | 23:00 | 1.5                | 8.0                                     | 2,418                            | 2              | 306                | 7.4                                  | 8.000   | 44.333           | 3.00                              | 50.33          | 7               | 14                | 56.00             | 5.88                                   | 56.00               | 3.000                                     | 3:00            | -                              | 7               | 10.5                           | 2,111                           | 22.5                      | 10.5                    | 2,111                  | 265                  | 57,210              | 569                | 114,419           |        |
|                               |               | 07: Night          | 23:00 | 1:00  | 2                  | 15.0                                    | 527                              | 2              | 306                | 1.6                                  | 15.000  | 44.333           | 3.00                              | 50.33          | 4               | 8                 | 60.00             | 7.00                                   | 60.00               | 15.000                                    | 15:00           | -                              | 4               | 8.0                            | 1,608                           | 16.0                      | 8.0                     | 1,608                  | 202                  | 40,882              | 405                | 81,365            |        |
| Friday                        |               | 01: Early morning  | 5:00  | 8:00  | 1.5                | 8.0                                     | 2,371                            | 2              | 306                | 7.3                                  | 8.000   | 44.333           | 3.00                              | 50.33          | 7               | 14                | 56.00             | 5.88                                   | 56.00               | 3.000                                     | 3:00            | -                              | 7               | 13.3                           | 2,673                           | 215.5 *                   | 53.3                    | 2,673                  | 361                  | 72,466              | 721                | 144,981           |        |
|                               |               | 02: Morning peak   | 8:30  | 9:00  | 0.5                | 5.0                                     | 18,772                           | 2              | 306                | 31.3                                 | 1.918   | 44.333           | 1.99                              | 46.17          | 26              | 52                | 49.96             | 1.84                                   | 48.00               | 1.866                                     | 1:51            | Y                              | 28              | 70.0                           | 14,070                          | 162.5                     | 65.6                    | 13,065                 | 2,055                | 413,164             | 4,111              | 822,287           |        |
|                               |               | 03: Midday         | 9:00  | 14:45 | 5.75               | 5.0                                     | 7,313                            | 2              | 306                | 22.4                                 | 2.675   | 44.333           | 2.87                              | 49.86          | 19              | 38                | 50.82             | 3.24                                   | 50.82               | 2.675                                     | 2:40            | -                              | 19              | 104.3                          | 21,909                          | 258.0                     | 109.3                   | 21,886                 | 3,203                | 635,898             | 6,326              | 1,311,795         |        |
|                               |               | 04: Afternoon peak | 14:45 | 18:00 | 3.25               | 5.0                                     | 15,488                           | 2              | 306                | 25.8                                 | 2.523   | 44.333           | 2.32                              | 48.06          | 22              | 44                | 51.11             | 2.05                                   | 49.03               | 2.256                                     | 2:15            | Y                              | 24              | 78.0                           | 15,876                          | 172.9                     | 71.5                    | 14,372                 | 2,187                | 439,606             | 4,374              | 878,212           |        |
|                               |               | 05: Early evening  | 18:00 | 21:00 | 3.0                | 5.0                                     | 3,782                            | 2              | 306                | 11.0                                 | 5.000   | 44.333           | 3.00                              | 50.33          | 11              | 22                | 55.00             | 5.33                                   | 55.00               | 5.000                                     | 5:00            | -                              | 11              | 36.5                           | 7,739                           | 84.0                      | 38.5                    | 7,739                  | 1,063                | 213,533             | 2,125              | 427,185           |        |
|                               |               | 06: Late evening   | 21:00 | 23:00 | 1.5                | 8.0                                     | 2,418                            | 2              | 306                | 7.4                                  | 8.000   | 44.333           | 3.00                              | 50.33          | 7               | 14                | 56.00             | 5.88                                   | 56.00               | 3.000                                     | 3:00            | -                              | 7               | 10.5                           | 2,111                           | 22.5                      | 10.5                    | 2,111                  | 265                  | 57,210              | 569                | 114,419           |        |
|                               |               | 07: Night          | 23:00 | 1:00  | 2                  | 15.0                                    | 527                              | 2              | 306                | 1.6                                  | 15.000  | 44.333           | 3.00                              | 50.33          | 4               | 8                 | 60.00             | 7.00                                   | 60.00               | 15.000                                    | 15:00           | -                              | 4               | 8.0                            | 1,608                           | 16.0                      | 8.0                     | 1,608                  | 202                  | 40,882              | 405                | 81,365            |        |
| Saturday (see note)           | 03            | Daytime            | 5:00  | 19:00 | 14                 | 5.0                                     | 2,704                            | 2              | 306                | 17.1                                 | 3.500   | 44.333           | 3.00                              | 50.33          | 15              | 30                | 52.51             | 4.09                                   | 52.51               | 3.500                                     | 3:30            | -                              | 15              | 201.1                          | 10,060                          | 459.7 **                  | 201.1                   | 10,060                 | 5,815                | 308,190             | 5,815              | 308,190           |        |
|                               |               | Evening            | 19:00 | 23:00 | 4                  | 8.0                                     | 2,054                            | 2              | 306                | 12.8                                 | 4.750   | 44.333           | 3.00                              | 50.33          | 11              | 22                | 52.39             | 4.02                                   | 52.38               | 4.750                                     | 4:46            | -                              | 11              | 44.0                           | 8,832                           | 109.8                     | 44.0                    | 8,832                  | 1,275                | 67,579              | 1,275              | 67,579            |        |
|                               |               | Night              | 23:00 | 2:00  | 3                  | 8.0                                     | 1,252                            | 2              | 306                | 7.7                                  | 7.613   | 44.333           | 3.00                              | 50.33          | 7               | 7                 | 54.69             | 5.18                                   | 54.68               | 7.613                                     | 7:49            | -                              | 7               | 21.0                           | 1,113                           | 46.1                      | 21.0                    | 1,113                  | 583                  | 30,892              | 583                | 30,892            |        |
| Sunday (see note)             | 02            | Daytime            | 8:00  | 19:00 | 11                 | 5.0                                     | 2,200                            | 2              | 306                | 13.5                                 | 4.446   | 44.333           | 3.00                              | 50.33          | 12              | 24                | 53.38             | 4.51                                   | 53.38               | 4.446                                     | 4:27            | -                              | 12              | 138.4                          | 8,167                           | 306.9 *                   | 138.4                   | 8,167                  | 3,882                | 232,920             | 3,882              | 232,920           |        |
|                               |               | Evening            | 19:00 | 23:00 | 4                  | 10.0                                    | 1,230                            | 2              | 306                | 18.3                                 | 7.5   | 7.984            | 44.333                            | 3.00           | 50.33           | 7                 | 7                 | 55.93                                  | 5.67                | 55.69                                     | 7.984           | 7:57                           | -               | 7                              | 28.0                            | 1,686                     | 60.3                    | 28.0                   | 1,686                | 763                 | 45,834             | 763               | 45,834 |
|                               |               | Annual Total       |       |       |                    |   |                                  |                |                    |                                      |   |                  |                                   |                |                 |                   |                   |  |                     |   |                 |                                |                 |                                |                                 |                           |                         |                        |                      |                     |                    |                   |        |
|                               |               |                    |       |       |                    |   |                                  |                |                    |                                      |   |                  |                                   |                |                 |                   |                   |  |                     |   |                 |                                |                 |                                |                                 |                           |                         |                        |                      |                     |                    |                   |        |
|                               |               |                    |       |       |                    |   |                                  |                |                    |                                      |   |                  |                                   |                |                 |                   |                   |  |                     |   |                 |                                |                 |                                |                                 |                           |                         |                        |                      |                     |                    |                   |        |

Notes:

- \* One-way trip counts for first period of day adjusted to include revenue service trips beginning prior to start of period to comply with requirements in FA Schedule 15-2, Part 1, 2.4 - Hours of Operation
- Does not include Monday-Friday summer and other seasonal service reductions
- Saturday level of service also operational on Boxing Day
- Sunday level of service also operational on New Year's, Good Friday, Victoria Day, Civic Holiday, Labour Day, Thanksgiving Day, and Christmas Day
- Does not include extra service scheduled on Canada Day
- Friday Early Morning through Early Evening train lengths and round trip time same as Monday-Thursday





Preliminary Service Plan / Operations Matters  
Worksheet - Service Level 8 2041-2045

|  |  |                 |
|--|--|-----------------|
| Parameters to be provided by Proponent                             |  | Results per car |
| (Also see runs per train by period, below)                         |  | 120             |
| ES Peak service to terminal run time - start to stop (minutes)     |  | 24.1            |
| ES Peak service to terminal run time - start to stop (minutes)     |  | 21.4            |
| WTS Peak service to terminal run time - start to stop (minutes)    |  | 22.3997         |
| Calculated   |  | 300             |
| Peak service capacity per car (limited to min. stated requirement) |  | 153             |
| Off-peak service capacity per car                                  |  | 84.6987         |
| Two-way run time without terminal time (minutes)                   |  |                 |

| Service design by time period |               |                |       |       |                    |                                  | Capacity and service level calculations |                |                    |                                      |   |                  |                                    |                 |                 |                   |                   |  |                     |                                  | Operations Matters and Service Quantities |                                |                 |                                |                                 |                           |                         |                        |                      |                     |                    |                   |  |
|-------------------------------|---------------|----------------|-------|-------|--------------------|----------------------------------|---|----------------|--------------------|--------------------------------------|---|------------------|------------------------------------|-----------------|-----------------|-------------------|-------------------|--|---------------------|----------------------------------|---|--------------------------------|-----------------|--------------------------------|---------------------------------|---------------------------|-------------------------|------------------------|----------------------|---------------------|--------------------|-------------------|--|
| Day type                      | Days per year | Time periods   | Start | End   | Duration of period | Maximum Policy Headway (minutes) | Minimum Service Capacity (pphrd)        | Cars per train | Capacity per train | Trips per hour required for capacity | Headway (decimal) required (capacity or policy) | Two-way Run Time | Min. Terminal Time @ each terminal | Min. Cycle Time | Trains required | Vehicles required | Avail. Cycle time | Adjusted Terminal Time @ each terminal | Adjusted Cycle Time | Headway (decimal) to be provided | Headway (mins)                            | Stop-back needed at terminals? | Drivers on duty | Hours of drivers' work per day | Hours of drivers' work per year | Number of One-Way Trips * | Rev Train Hours per day | Annual Rev Train Hours | Rev Train Km per day | Annual Rev Train Km | Rev Veh Km per day | Annual Rev Veh Km |  |
| Monday-Thursday               | 201           | Early morning  | 5:00  | 8:00  | 1.5                | 8.0                              | 2,619                                   | 2              | 306                | 8.6                                  | 7.468   | 44.687           | 3.00                               | 50.67           | 7               | 14                | 52.28             | 3.81                                   | 52.28               | 7.466                            | 7.28                                      | -                              | 7               | 13.1                           | 2,616                           | 38.1 *                    | 53.1                    | 2,616                  | 38.1                 | 76,532              | 762                | 153,065           |  |
|                               |               | Morning peak   | 8:30  | 9:00  | 0.5                | 5.0                              | 20,717                                  | 2              | 306                | 34.8                                 | 1.786   | 44.687           | 1.74                               | 49.14           | 28              | 58                | 48.61             | 1.47                                   | 47.61               | 1.700                            | 1.43                                      | Y                              | 30              | 75.0                           | 15,075                          | 178.4                     | 70.6                    | 14,676                 | 2,232                | 648,891             | 4,484              | 897,909           |  |
|                               |               | Midday         | 9:00  | 14:45 | 5.75               | 5.0                              | 8,078                                   | 2              | 306                | 24.8                                 | 2.421   | 44.687           | 2.42                               | 49.51           | 21              | 42                | 56.85             | 2.84                                   | 50.35               | 2.398                            | 2.24                                      | Y                              | 23              | 132.3                          | 36,582                          | 287.8                     | 120.8                   | 24,271                 | 3,640                | 731,795             | 7,381              | 1,483,410         |  |
|                               |               | Afternoon peak | 14:45 | 18:00 | 3.25               | 5.0                              | 17,118                                  | 2              | 306                | 28.5                                 | 2.103   | 44.687           | 2.10                               | 48.87           | 24              | 48                | 56.87             | 2.31                                   | 49.08               | 2.045                            | 2.03                                      | Y                              | 26              | 84.5                           | 16,985                          | 190.7                     | 78.6                    | 15,676                 | 2,413                | 484,517             | 4,825              | 988,634           |  |
|                               |               | Early evening  | 18:00 | 21:00 | 3.0                | 5.0                              | 4,178                                   | 2              | 306                | 12.8                                 | 4.682   | 44.687           | 3.00                               | 50.67           | 11              | 22                | 51.30             | 3.42                                   | 51.30               | 4.682                            | 4.41                                      | -                              | 11              | 38.5                           | 7,739                           | 89.7                      | 38.5                    | 7,739                  | 1,135                | 239,078             | 2,369              | 456,157           |  |
|                               |               | Late evening   | 21:00 | 23:00 | 1.5                | 8.0                              | 2,669                                   | 2              | 306                | 8.2                                  | 7.528   | 44.687           | 3.00                               | 50.67           | 7               | 14                | 51.30             | 3.32                                   | 51.30               | 7.328                            | 7.20                                      | -                              | 7               | 10.5                           | 2,111                           | 24.6                      | 10.5                    | 2,111                  | 311                  | 62,435              | 621                | 124,910           |  |
| Friday                        | 201           | Night          | 23:00 | 1:00  | 2                  | 15.0                             | 582                                     | 2              | 306                | 1.6                                  | 15.000  | 44.687           | 3.00                               | 50.67           | 4               | 8                 | 60.00             | 7.67                                   | 60.00               | 15.999                           | 15.00                                     | -                              | 4               | 8.0                            | 1,608                           | 16.0                      | 8.0                     | 1,608                  | 202                  | 40,882              | 405                | 81,365            |  |
|                               |               | Early morning  | 5:00  | 8:00  | 1.5                | 8.0                              | 2,619                                   | 2              | 306                | 8.6                                  | 7.469   | 44.687           | 3.00                               | 50.67           | 7               | 14                | 52.28             | 3.81                                   | 52.28               | 7.469                            | 7.28                                      | -                              | 7               | 13.1                           | 2,616                           | 38.1 *                    | 53.1                    | 2,616                  | 38.1                 | 76,532              | 762                | 153,065           |  |
|                               |               | Morning peak   | 8:30  | 9:00  | 0.5                | 5.0                              | 20,717                                  | 2              | 306                | 34.8                                 | 1.786   | 44.687           | 1.74                               | 49.14           | 28              | 58                | 48.61             | 1.47                                   | 47.61               | 1.700                            | 1.42                                      | Y                              | 30              | 75.0                           | 15,075                          | 178.4                     | 70.6                    | 14,676                 | 2,232                | 648,891             | 4,484              | 897,909           |  |
|                               |               | Midday         | 9:00  | 14:45 | 5.75               | 5.0                              | 8,078                                   | 2              | 306                | 24.8                                 | 2.421   | 44.687           | 2.42                               | 49.51           | 21              | 42                | 56.85             | 2.84                                   | 50.35               | 2.398                            | 2.24                                      | Y                              | 23              | 132.3                          | 36,582                          | 287.8                     | 120.8                   | 24,271                 | 3,640                | 731,795             | 7,381              | 1,483,410         |  |
|                               |               | Afternoon peak | 14:45 | 18:00 | 3.25               | 5.0                              | 17,118                                  | 2              | 306                | 28.5                                 | 2.103   | 44.687           | 2.10                               | 48.87           | 24              | 48                | 56.87             | 2.31                                   | 49.08               | 2.045                            | 2.03                                      | Y                              | 26              | 84.5                           | 16,985                          | 190.7                     | 78.6                    | 15,676                 | 2,413                | 484,517             | 4,825              | 988,634           |  |
|                               |               | Early evening  | 18:00 | 21:00 | 3.0                | 5.0                              | 4,178                                   | 2              | 306                | 12.8                                 | 4.682   | 44.687           | 3.00                               | 50.67           | 11              | 22                | 51.30             | 3.42                                   | 51.30               | 4.682                            | 4.41                                      | -                              | 11              | 38.5                           | 7,739                           | 89.7                      | 38.5                    | 7,739                  | 1,135                | 239,078             | 2,369              | 456,157           |  |
| Saturday (see note)           | 53            | Late evening   | 21:00 | 23:00 | 1.5                | 8.0                              | 2,669                                   | 2              | 306                | 8.2                                  | 7.529   | 44.687           | 3.00                               | 50.67           | 7               | 14                | 51.30             | 3.32                                   | 51.30               | 7.529                            | 7.20                                      | -                              | 7               | 10.5                           | 2,111                           | 24.6                      | 10.5                    | 2,111                  | 311                  | 62,435              | 621                | 124,910           |  |
|                               |               | Night          | 23:00 | 2:00  | 3                  | 8.0                              | 1,383                                   | 2              | 306                | 4.2                                  | 8.000   | 44.687           | 3.00                               | 50.67           | 7               | 14                | 56.00             | 5.67                                   | 56.00               | 8.000                            | 8.00                                      | -                              | 7               | 21.0                           | 1,071                           | 45.0                      | 10.7                    | 1,071                  | 369                  | 29,032              | 1,418              | 58,063            |  |
|                               |               | Daytime        | 5:00  | 19:00 | 13                 | 5.0                              | 3,085                                   | 2              | 306                | 14.9                                 | 4.025   | 44.687           | 3.00                               | 50.67           | 11              | 22                | 56.00             | 5.17                                   | 55.00               | 5.000                            | 5.00                                      | -                              | 11              | 147.6                          | 7,822                           | 322.0 *                   | 147.6                   | 7,822                  | 4,673                | 216,586             | 8,347              | 431,770           |  |
|                               |               | Evening        | 19:00 | 23:00 | 4                  | 8.0                              | 2,289                                   | 2              | 306                | 7.0                                  | 8.000   | 44.687           | 3.00                               | 50.67           | 7               | 14                | 56.00             | 5.67                                   | 55.00               | 8.000                            | 8.00                                      | -                              | 7               | 33.0                           | 1,484                           | 60.0                      | 26.0                    | 1,484                  | 759                  | 40,227              | 1,518              | 80,454            |  |
|                               |               | Night          | 23:00 | 2:00  | 3                  | 8.0                              | 1,383                                   | 2              | 306                | 4.2                                  | 8.000   | 44.687           | 3.00                               | 50.67           | 7               | 14                | 56.00             | 5.67                                   | 55.00               | 8.000                            | 8.00                                      | -                              | 7               | 33.0                           | 1,484                           | 60.0                      | 26.0                    | 1,484                  | 759                  | 40,227              | 1,518              | 80,454            |  |
|                               |               | Daytime        | 5:00  | 19:00 | 13                 | 5.0                              | 2,430                                   | 2              | 306                | 14.9                                 | 4.025   | 44.687           | 3.00                               | 50.67           | 13              | 13                | 52.32             | 3.80                                   | 52.32               | 4.025                            | 4.01                                      | -                              | 13              | 148.2                          | 8,894                           | 340.0 *                   | 148.2                   | 8,894                  | 4,300                | 238,025             | 4,300              | 238,025           |  |
| Sunday (see note)             | 60            | Evening        | 19:00 | 23:00 | 4                  | 10.0                             | 1,358                                   | 2              | 306                | 8.3                                  | 7.200   | 44.687           | 3.00                               | 50.67           | 8               | 8                 | 57.90             | 6.47                                   | 57.90               | 7.200                            | 7.12                                      | -                              | 8               | 33.9                           | 1,826                           | 66.7                      | 32.0                    | 1,826                  | 843                  | 50,999              | 843                | 80,339            |  |
|                               |               | Night          | 23:00 | 2:00  | 3                  | 10.0                             | 1,358                                   | 2              | 306                | 4.2                                  | 8.000   | 44.687           | 3.00                               | 50.67           | 8               | 8                 | 57.90             | 6.47                                   | 57.90               | 7.200                            | 7.12                                      | -                              | 8               | 33.9                           | 1,826                           | 66.7                      | 32.0                    | 1,826                  | 843                  | 50,999              | 843                | 80,339            |  |
| Annual Total                  |               |                |       |       |                    |                                  |   |                |                    |                                      |   |                  |                                    |                 |                 |                   |                   |  |                     |                                  |   |                                |                 |                                |                                 |                           |                         |                        |                      |                     |                    |                   |  |
|                               |               |                |       |       |                    |                                  |   |                |                    |                                      |   |                  |                                    |                 |                 |                   |                   |  |                     |                                  |   |                                |                 |                                |                                 |                           |                         |                        |                      |                     |                    |                   |  |

Notes:

- \* One-way trip counts for first period of day adjusted to include revenue service trips beginning prior to start of period to comply with requirements in FA Schedule 15-2, Part 1, 2.4 - Hours of Operation
- Does not include Monday-Friday summer and other seasonal service reductions
- Saturday level of service also operational on Boxing Day
- Sunday level of service also operational on New Year's, Good Friday, Victoria Day, Civic Holiday, Labour Day, Thanksgiving Day, and Christmas Day
- Does not include extra service scheduled on Canada Day
- Friday Early Morning through Early Evening train lengths and round trip time same as Monday-Thursday

Preliminary Service Plan / Operations Matters  
Worksheet - Service Level 9 2040-2046

|   |          |
|---|----------|
| Parameters to be provided by Proponent                          |          |
| (Also see cars per trip by period below)                        |          |
| Stops per car   | 120      |
| Standing room per car (square metres)                           | 94.1     |
| E3 Peak terminal to terminal run time - start to stop (minutes) | 22:30    |
| M3 Peak terminal to terminal run time - start to stop (minutes) | 22:30:27 |

|  |          |
|--|----------|
| Calculated   |          |
| Peak service capacity per car (limited to min. seated requirement) | 300      |
| Off-peak service capacity per car                                  | 153      |
| Two-way run time without terminal time (minutes)                   | 44:31:27 |

| Service design by time period |               |                |       |       |                    | Capacity and service level calculations |                                     |                |                    |                                      |   |                  |                                   |                |                 |                   |                   |  |                     | Operations Matters and Service Quantities |                |                                |                 |                                |                                 |                           |                         |                     |                      |                    |                   |           |  |  |  |  |  |  |  |  |  |  |  |         |         |           |           |           |
|-------------------------------|---------------|----------------|-------|-------|--------------------|---|-------------------------------------|----------------|--------------------|--------------------------------------|---|------------------|-----------------------------------|----------------|-----------------|-------------------|-------------------|--|---------------------|---|----------------|--------------------------------|-----------------|--------------------------------|---------------------------------|---------------------------|-------------------------|---------------------|----------------------|--------------------|-------------------|-----------|--|--|--|--|--|--|--|--|--|--|--|---------|---------|-----------|-----------|-----------|
| Day type                      | Days per year | Time periods   | Start | End   | Duration of period | Maximum Policy Headway (minutes)        | Minimum Service Capacity (trips/hr) | Cars per train | Capacity per train | Trips per hour required for capacity | Headway (decimal) required (capacity or policy) | Two-way Run Time | Min Terminal Time @ each terminal | Min Cycle Time | Trains required | Vehicles required | Avail. Cycle time | Adjusted Terminal Time @ each terminal | Adjusted Cycle Time | Headway (decimal) to be provided          | Headway (m:ss) | Step-back needed at terminals? | Drivers on duty | Hours of drivers' work per day | Hours of drivers' work per year | Number of One-Way Trips * | Rev Train Hours per day | Annual Rev Train Km | Rev Train Km per day | Rev Veh Km per day | Annual Rev Veh Km |           |  |  |  |  |  |  |  |  |  |  |  |         |         |           |           |           |
| Monday-Thursday               | 201           | Early morning  | 5:00  | 8:00  | 1.5                | 8.0                                     | 2,686                               | 2              | 300                | 8.3                                  | 7.249   | 44:41.7          | 3:00                              | 50.82          | 7               | 14                | 56.75             | 3.06                                   | 50.75               | 7:24.6                                    | 7:15           | -                              | 7               | 13.9                           | 2,761                           | 32.6 *                    | 13.6                    | 2,791               | 415                  | 83,473             | 291               | 186,947   |  |  |  |  |  |  |  |  |  |  |  |         |         |           |           |           |
|                               |               | Morning peak   | 8:30  | 9:00  | 0.5                | 5.0                                     | 21,965                              | 2              | 490                | 35.6                                 | 1.685   | 44:41.7          | 1:38                              | 47.96          | 39              | 58                | 45.96             | 1.37                                   | 47.58               | 1:53.3                                    | 1:58           | Y                              | 31              | 77.3                           | 15,578                          | 183.7                     | 72.5                    | 14,575              | 2,524                | 687,116            | 4,648             | 934,291   |  |  |  |  |  |  |  |  |  |  |  |         |         |           |           |           |
|                               |               | Midday         | 9:00  | 14:45 | 5.75               | 5.0                                     | 8,323                               | 2              | 300                | 25.3                                 | 2.350   | 44:41.7          | 2:35                              | 45.32          | 21              | 42                | 45.35             | 2.37                                   | 49.35               | 2:58.0                                    | 2:21           | Y                              | 23              | 132.3                          | 26,582                          | 232.0                     | 128.8                   | 24,271              | 3,714                | 745,898            | 7,428             | 1,482,905 |  |  |  |  |  |  |  |  |  |  |  |         |         |           |           |           |
|                               |               | Afternoon peak | 14:45 | 16:00 | 1.15               | 5.0                                     | 17,838                              | 2              | 900                | 29.4                                 | 2.041   | 44:41.7          | 2:04                              | 46.70          | 24              | 43                | 45.99             | 2.06                                   | 48.76               | 2:03.3                                    | 2:02           | Y                              | 26              | 84.5                           | 16,985                          | 191.9                     | 78.6                    | 15,576              | 2,427                | 687,872            | 4,854             | 975,744   |  |  |  |  |  |  |  |  |  |  |  |         |         |           |           |           |
|                               |               | Early evening  | 18:00 | 21:00 | 3.0                | 5.0                                     | 4,304                               | 2              | 300                | 13.2                                 | 4.545   | 44:41.7          | 3:00                              | 50.82          | 12              | 24                | 54.54             | 4.98                                   | 54.54               | 4:54.5                                    | 4:33           | -                              | 12              | 42.0                           | 8,442                           | 32.4                      | 42.0                    | 8,442               | 1,189                | 234,535            | 2,338             | 465,971   |  |  |  |  |  |  |  |  |  |  |  |         |         |           |           |           |
|                               |               | Late evening   | 21:00 | 23:00 | 1.5                | 8.0                                     | 2,750                               | 2              | 300                | 8.4                                  | 7.115   | 44:41.7          | 3:00                              | 50.82          | 6               | 16                | 56.90             | 6.14                                   | 56.90               | 7:11.3                                    | 7:07           | -                              | 6               | 12.0                           | 2,412                           | 25.3                      | 12.0                    | 2,412               | 520                  | 64,546             | 640               | 128,693   |  |  |  |  |  |  |  |  |  |  |  |         |         |           |           |           |
| 51                            | Night         | 23:00          | 1:00  | 2     | 15.0               | 598                                     | 2                                   | 300            | 1.5                | 10.000                               | 44:41.7   | 3:00             | 50.82                             | 4              | 8               | 60.00             | 7.69              | 60.00                                  | 10:00.0             | 10:00                                     | -              | 4                              | 8.0             | 1,608                          | 16.0                            | 8.0                       | 1,608                   | 202                 | 40,892               | 406                | 81,365            |           |  |  |  |  |  |  |  |  |  |  |  |         |         |           |           |           |
| Friday                        | 51            | Early morning  | 5:00  | 6:30  | 1.5                | 6.0                                     | 2,696                               | 2              | 300                | 8.3                                  | 7.249   | 44:41.7          | 3:00                              | 50.69          | 7               | 14                | 50.75             | 3.06                                   | 50.75               | 7:24.9                                    | 7:15           | -                              | 7               | 13.9                           | 704                             | 32.6 *                    | 13.9                    | 700                 | 415                  | 21,180             | 831               | 42,360    |  |  |  |  |  |  |  |  |  |  |  |         |         |           |           |           |
|                               |               | Morning peak   | 6:30  | 9:00  | 2.5                | 5.0                                     | 21,965                              | 2              | 490                | 35.6                                 | 1.685   | 44:41.7          | 1:38                              | 47.99          | 39              | 58                | 45.96             | 1.37                                   | 47.58               | 1:53.3                                    | 1:58           | Y                              | 31              | 77.5                           | 3,353                           | 183.7                     | 72.5                    | 3,698               | 2,524                | 119,022            | 4,648             | 237,944   |  |  |  |  |  |  |  |  |  |  |  |         |         |           |           |           |
|                               |               | Midday         | 9:00  | 14:45 | 5.75               | 5.0                                     | 8,323                               | 2              | 300                | 25.3                                 | 2.350   | 44:41.7          | 2:35                              | 45.32          | 21              | 42                | 45.35             | 2.37                                   | 49.35               | 2:58.0                                    | 2:21           | Y                              | 23              | 132.3                          | 8,746                           | 232.6                     | 128.8                   | 3,714               | 189,410              | 7,428              | 378,820           |           |  |  |  |  |  |  |  |  |  |  |  |         |         |           |           |           |
|                               |               | Afternoon peak | 14:45 | 16:00 | 1.15               | 5.0                                     | 17,838                              | 2              | 900                | 29.4                                 | 2.041   | 44:41.7          | 2:04                              | 46.70          | 24              | 43                | 45.99             | 2.06                                   | 45.76               | 2:03.2                                    | 2:02           | Y                              | 26              | 84.5                           | 4,319                           | 191.9                     | 78.6                    | 3,570               | 2,427                | 123,780            | 4,854             | 247,377   |  |  |  |  |  |  |  |  |  |  |  |         |         |           |           |           |
|                               |               | Early evening  | 18:00 | 21:00 | 3.0                | 5.0                                     | 4,304                               | 2              | 300                | 13.2                                 | 4.545   | 44:41.7          | 3:00                              | 50.82          | 12              | 24                | 54.54             | 4.98                                   | 54.54               | 4:54.5                                    | 4:33           | -                              | 12              | 42.0                           | 2,142                           | 32.4                      | 42.0                    | 2,142               | 1,169                | 59,829             | 2,338             | 118,246   |  |  |  |  |  |  |  |  |  |  |  |         |         |           |           |           |
|                               |               | Late evening   | 21:00 | 23:00 | 1.5                | 8.0                                     | 2,750                               | 2              | 300                | 8.4                                  | 7.115   | 44:41.7          | 3:00                              | 50.82          | 6               | 16                | 56.90             | 6.14                                   | 56.90               | 7:11.3                                    | 7:07           | -                              | 6               | 12.0                           | 612                             | 25.3                      | 12.0                    | 612                 | 520                  | 16,527             | 640               | 32,953    |  |  |  |  |  |  |  |  |  |  |  |         |         |           |           |           |
| 51                            | Night         | 23:00          | 1:00  | 2     | 8.0                | 1,425                                   | 2                                   | 300            | 4.4                | 8.000                                | 44:41.7   | 3:00             | 50.82                             | 7              | 14              | 56.00             | 5.69              | 56.00                                  | 8:00.0              | 8:00                                      | -              | 7                              | 21.0            | 1,071                          | 48.0                            | 21.0                      | 1,071                   | 569                 | 29,032               | 1,139              | 58,063            |           |  |  |  |  |  |  |  |  |  |  |  |         |         |           |           |           |
| Saturday (see note)           | 53            | Daytime        | 5:00  | 19:00 | 13                 | 5.0                                     | 3,180                               | 2              | 300                | 6.8                                  | 5.000   | 44:41.7          | 3:00                              | 50.69          | 11              | 22                | 56.00             | 5.19                                   | 55.00               | 6:00.0                                    | 5:00           | -                              | 11              | 147.6                          | 7,822                           | 322.0 *                   | 147.6                   | 7,822               | 4,078                | 215,595            | 8,147             | 431,770   |  |  |  |  |  |  |  |  |  |  |  |         |         |           |           |           |
|                               |               | Evening        | 19:00 | 23:00 | 4                  | 8.0                                     | 2,337                               | 2              | 300                | 7.2                                  | 8.000   | 44:41.7          | 3:00                              | 50.69          | 7               | 14                | 56.00             | 5.69                                   | 56.00               | 6:00.0                                    | 6:00           | -                              | 7               | 26.0                           | 1,484                           | 60.0                      | 26.0                    | 1,484               | 739                  | 40,237             | 1,518             | 80,454    |  |  |  |  |  |  |  |  |  |  |  |         |         |           |           |           |
|                               |               | Night          | 23:00 | 2:00  | 1                  | 10.0                                    | 1,425                               | 2              | 300                | 4.4                                  | 8.000   | 44:41.7          | 3:00                              | 50.69          | 7               | 14                | 56.00             | 5.69                                   | 56.00               | 6:00.0                                    | 6:00           | -                              | 7               | 27.0                           | 1,113                           | 43.0                      | 21.0                    | 1,113               | 568                  | 30,179             | 1,149             | 60,340    |  |  |  |  |  |  |  |  |  |  |  |         |         |           |           |           |
| Sunday (see note)             | 60            | Daytime        | 5:00  | 19:00 | 13                 | 15.0                                    | 2,903                               | 2              | 300                | 7.7                                  | 5.000   | 44:41.7          | 3:00                              | 50.69          | 11              | 22                | 55.00             | 5.19                                   | 55.00               | 6:00.0                                    | 5:00           | -                              | 11              | 135.6                          | 7,585                           | 274.0 *                   | 135.6                   | 7,585               | 3,466                | 207,364            | 6,932             | 415,932   |  |  |  |  |  |  |  |  |  |  |  |         |         |           |           |           |
|                               |               | Evening        | 19:00 | 23:00 | 4                  | 10.0                                    | 1,399                               | 2              | 300                | 4.5                                  | 10.000  | 44:41.7          | 3:00                              | 50.69          | 6               | 12                | 60.00             | 7.69                                   | 60.00               | 10:00.0                                   | 10:00          | -                              | 6               | 24.0                           | 1,440                           | 48.0                      | 24.0                    | 1,440               | 607                  | 36,432             | 1,214             | 72,864    |  |  |  |  |  |  |  |  |  |  |  |         |         |           |           |           |
| Annual Total                  |               |                |       |       |                    |   |                                     |                |                    |                                      |   |                  |                                   |                |                 |                   |                   |  |                     |   |                |                                |                 |                                |                                 |                           |                         |                     |                      |                    |                   |           |  |  |  |  |  |  |  |  |  |  |  | 113,330 | 654,056 | 1,077,634 | 3,219,539 | 6,487,091 |

Notes:

\* One-way trip counts for first period of day adjusted to include revenue service trips beginning prior to start of period to comply with requirements in FA Schedule 15-2, Part 1, 2.4 - Hours of Operation

- Does not include Monday-Friday summer and other seasonal service reductions

- Saturday level of service also operated on Busing Day

- Some level of service also operated on New Year's Day, Friday, Victoria Day, Civic Holiday, Labour Day, Thanksgiving Day, and Christmas Day

- Does not include extra service scheduled on Canada Day

- Friday Early Morning through Early Evening bus length and round trip time same as Monday-Thursday

## APPENDIX A – ATTACHMENT 3

### SYSTEMS MAINTENANCE SERVICES

#### 1.0 Scope of Services

- (a) Project Co shall be responsible for the Custodial, Preventive, and Corrective Maintenance activities on all of the systems assets, including but not limited to:
  - (i) traction power system, including substations and overhead contact system;
  - (ii) train control system, including the BCC and TSCC control system components supplied by Project Co; and
  - (iii) communications systems (excluding Public Services Safety Radio system), safety and security, and public information.

#### 2.0 Service Requirements

- (a) In general, Project Co shall maintain all systems assets in accordance with the Fixed Component Availability Standard, to ensure that the service levels outlined in the Operating Service Plan can be provided at all times during Revenue Hours.
- (b) Traction Power
  - (i) Project Co shall be responsible to ensure that traction power as required in Part 4 of Schedule 15-2 is available at all times.
  - (ii) Notwithstanding Project Co's obligations to ensure that Traction Power is available, Project Co is not obliged to pay for or supply electricity to the System during the Maintenance Term.
  - (iii) Project Co shall maintain the Traction Power System in a state of good repair and working order in accordance with the approved Corrective and Preventive Maintenance Plans.
  - (iv) Project Co shall maintain the Traction Power System and its components to meet the Fixed Component Availability Standard.
  - (v) Project Co shall immediately respond to and repair any failure of any element of the Traction Power System (substation, power distribution, overhead contact system, etc.) whether or not the Fixed Component Availability Standard is violated.
  - (vi) Project Co shall have available as part of its Maintenance tools and equipment the following: grounding rods, switchgear test and calibration equipment, contact wire repair and replacement trailer and insulation test equipment.

## (c) Train Control

## (i) Train Controls/Signals

- A. Project Co shall maintain the Train Control systems in a state of good repair and working order in accordance with the approved Corrective and Preventive Maintenance Plans.
- B. Project Co shall maintain the Train Control systems and its components to meet the Fixed Component Availability Standard.
- C. Project Co shall immediately respond to and repair any failure of any element of the Train Control systems whether or not the Fixed Component Availability Standard is violated.
- D. Project Co shall use diagnostic equipment and test software to identify problems.
- E. Project Co shall have backup copies of the original operating system and application software immediately available for use.
- F. Project Co shall implement procedures for verifying the integrity of all vital signal and train control vital software when any software changes, reloads or upgrades are made.
- G. Project Co shall maintain strict version control of all software on all train control and signal systems. Version control records shall be made available for inspection by the City or by regulatory agencies upon request.
- H. Project Co shall perform all periodic and corrective maintenance required by the System Safety Plan described in Schedule 15-2, Part 4, Article 5 and in accordance with the approved safety procedures.
- I. Project Co shall maintain records of all preventive and corrective maintenance performed on the Train Control systems. These records shall be made available to the City and to regulatory agencies upon request.
- J. Project Co shall monitor the security of the Train Control network and shall take counter measures against intrusion attempts and attacks. All attacks and intrusion attempts shall be reported to the City.

## (ii) Transit Services Control Centre

- A. Project Co shall test and troubleshoot all transit monitoring, operation and control equipment, including computers, software, electronic devices and communication equipment, supplied for the TSCC by Project Co as part of the System.



- B. Project Co shall ensure that the BCC at the Maintenance and Storage Facility is operational at all times, so as to be available in the event Operations cannot be conducted from the TSCC.
- C. Project Co shall ensure the hardware and software for the System is kept up to date, in accordance with the manufacture's recommendations and latest revisions.
- D. Project Co shall maintain an adequate number of spare parts to allow for an immediate replacement of equipment.
- E. In the event of a failure of any element of the TSCC which causes the System to fail to meet the Fixed Component Availability Standard, Project Co shall immediately respond and Repair the Deficiency.
- F. In the event of a failure which does not violate the Fixed Component Availability Standard, Project Co shall respond within one (1) hour of notification, to perform Corrective Maintenance on the failure.

(d) Communications

(i) Radio Communications

- A. Project Co shall work with the Radio System Supplier to ensure that radio transmission and reception via the City wide radio network meets the expected Radio system reliability necessary to achieve operational and maintenance performance targets for the OLRT.
- B. On discovery of a radio Fault Project Co shall implement special operational procedures record and notify the Radio System Supplier of the failure condition.
- C. Project Co shall permit the Radio System Supplier to perform corrective maintenance to maintain availability of the radio system. Where necessary or as part of a supplementary agreement, Project Co shall provide training and protection to the City of Ottawa Public Services Safety Radio System or Radio Supplier employees. Project Co shall carry out regular radio protocol checks and provide evidence that these are conducted at prescribed intervals.

(ii) Safety and Security Systems

- A. Project Co shall maintain all Safety and Security systems elements in a state of good repair and working order in accordance with the approved Corrective and Preventive Maintenance Plans.
- B. Project Co shall maintain all Safety and Security systems elements and its components to meet the Fixed Component Availability Standard.

- C. Project Co shall immediately respond to and repair any failure of any element of the Safety and Security systems whether or not the Fixed Component Availability Standard is violated.
  - D. Project Co shall use diagnostic equipment and test software to identify problems.
  - E. Project Co shall have backup copies of the original operating system and application software immediately available for use.
  - F. In case of breakdowns and failures, Project Co shall have procedures and resources in place to dispatch forthwith the resources necessary to perform Corrective Maintenance.
- (iii) Passenger Information Systems
- A. Project Co shall maintain the Passenger information systems at the Stations and on the Vehicles under the Project Agreement (including Schedule 15-3) in accordance with the Passenger Information Systems Standard.
  - B. Passenger information systems refers to the Passenger information systems located at Stations that display train arrival/departure times, delay information, cancellation information, destination, general announcements, news or advertising displays.
  - C. Project Co shall be responsible for identifying the defect and performing remedial actions in accordance with the Passenger Information Systems Standard and the timeframes established in the Performance Indicators. Notwithstanding, the defect, timelines and remedial actions identified, prevailing legislation and City by-laws shall take precedence if they are more restrictive.
- (b) Project Co shall ensure compliance with Schedule 17- Environmental Obligations.
- (c) Project Co's performance with respect to vandalism and graffiti shall be in accordance with:
- (i) Appendix A, Attachment 10 – Alignment Maintenance Services, Article 2.0(f) “Vandalism and Graffiti Repair”, Article 3.0(e) “Vandalism and Graffiti Standard”, and Article 5.0 “Performance Criteria”, and for further certainty, Project Co's rectification and / or response times and the assessment of Service Failure Points; and
  - (ii) Appendix A, Attachment 16 – Vandalism and Graffiti.

### 3.0 Service Standards

- (a) Fixed Component Availability Standard
- (i) Any Fixed Component in the System (including train control, traction power, communications, etc.) is considered to not meet the Standard if any Defect or Deficiency is identified in that Fixed Component that:

- A. affects the Safety of the public, Passengers or Driver in a manner contrary to the Safety Management System;
  - B. adversely affects Operations such that the System does not meet the Operational Requirements and Specifications.
- (b) Passenger Information Systems Standard
  - (i) A component of the Passenger information system (at a station or on a Vehicle) will fail to meet the Standard in the event any of the following failures occur:
    - A. If visual system information does not display on display unit;
    - B. If the display unit is not readable (poor picture quality or fuzzy) from 3m away;
    - C. If the audio system is not audible and intelligible, in whole or in part; or
    - D. If the system is not performing according to requirements (missing or wrong information).

#### **4.0 Quality Monitoring and Reporting**

- (a) Periodically, the City will audit Project Co's Systems Maintenance documentation and reporting. Failures to maintain documentation and report on Systems Maintenance activities will result in penalties being assessed as described in the Performance Criteria.
- (b) Maintenance Plans
  - (i) Project Co shall at all times maintain complete and updated versions of the Custodial Maintenance Plan, the Corrective Maintenance Plan, and the Preventive Maintenance Plan.
  - (ii) Project Co shall follow the requirements set out in Article 1.4 of Appendix A with regard to the drafting, approval, and revisions process for these Maintenance Plans.
- (c) Maintenance Reporting
  - (i) Project Co shall report on the status and completion of various Systems Maintenance activities.
  - (ii) Project Co shall follow the maintenance reporting requirements set out in Article 1.8 of Appendix A with regard to reporting procedures and the Daily, Monthly, and Annual submittals that are required.

## Ottawa Light Rail Transit Project

Schedule 15-3 to Project Agreement  
Execution Version

## 5.0 Performance Criteria

| FE Type   | Category   | Response   | Rectification / Remedial | Recording Frequency   |
|---|--|--|--------------------------|---|
| AF = Availability Failure<br>SF = Service Failure<br>QF = Quality Failure | Major<br>Medium<br>Minor<br>Veh. Avail. = Captured by the Vehicle<br>Availability deduction regime | N/A = Not Applicable<br><br>Immediate (“Immed.”) = The total planned travel time in minutes from Blair Station to Tunney’s Pasture Station, plus the headway in minutes on the System at the time of the Response. | N/A = Not Applicable     | PR = Per Request<br>PE = Per Event<br>D = Daily<br>W = Weekly<br>M = Monthly<br>Q = Quarterly<br>B = Bi-Annually<br>A = Annually<br>R = Randomly, At Any Moment in Time |

| Ref   | Parameter   | Failure Type | Category | Resp. Time | Rect. Or Rem. Time | Recording Frequency | Notes   |
|---|---|--------------|----------|------------|--------------------|---------------------|---|
| <i>Systems Elements (Train Control, Traction Power, Communications)</i> |   |              |          |            |                    |                     |   |
| <b>KPM A(3)2.0(b)(vi)</b>   | Project Co shall have available as part of its Maintenance tools and equipment the following: grounding rods, switchgear test and calibration equipment, contact wire repair and replacement trailer and insulation test equipment. | QF           | Major    | NA         | NA                 | R                   | Project Co to be permitted reasonable Remedial Period, based on nature of non-compliance. |
| <b>KPM A(3)2.0(c)(i)(E)</b>   | Project Co shall have backup copies of the original operating system and application software immediately available for use.  | QF           | Major    | NA         | 1 week             | R                   |   |
| <b>KPM A(3)2.0(c)(ii)(A)</b>  | Project Co shall test and troubleshoot all transit monitoring, operation and control equipment, supplied for the TSCC by Project Co.  | QF           | Major    | NA         | 1 week             | R                   |   |
| <b>KPM A(3)2.0(c)(ii)(B)</b>  | Project Co shall ensure that the BCC is operational at all times.   | QF           | Major    | NA         | 1 hour             | PE                  |   |

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|   |  |    |        |         |          |    |  |
|---|--|----|--------|---------|----------|----|--|
| <b>KPM</b><br><b>A(3)2.0(c)(ii)(C)</b>  | Project Co shall ensure the hardware and software for the System is kept up to date.   | QF | Major  | NA      | NA       | R  | Project Co to be permitted reasonable Remedial Period, based on nature of non-compliance.                |
| <b>KPM</b><br><b>A(3)2.0(c)(ii)(E)</b>  | In the event of a failure of any element of the TSCC which causes the System to fail to meet the Fixed Component Availability Standard, Project Co shall immediately respond and Repair the Deficiency.      | SF | Major  | Immed.  | 2 hours  | PE |  |
| <b>KPM</b><br><b>A(3)2.0(c)(ii)(F)</b>  | In the event of a failure which does not violate the Fixed Component Availability Standard, Project Co shall respond within two (2) hours of notification, to perform Corrective Maintenance on the failure. | SF | Major  | 2 hours | 8 hours  | PE |  |
| <b>KPM</b><br><b>A(3)2.0(d)(i)(E)</b>   | Project Co shall have backup copies of the original operating system and application software immediately available for use.   | QF | Major  | NA      | 1 week   | R  |  |
| <b>KPM</b><br><b>A(3)2.0(d)(ii)(A)</b>  | Project Co shall maintain all Safety and Security systems elements in a state of good repair and working order in accordance with the approved Corrective and Preventive Maintenance Plans.                  | QF | Major  | NA      | NA       | R  | Project Co to be permitted reasonable Remedial Period, based on nature of non-compliance.                |
| <b>KPM</b><br><b>A(3)2.0(d)(ii)(C)</b>  | Project Co shall immediately respond to and repair any failure of any element of the Safety and Security systems whether or not the Fixed Component Availability Standard is violated.                       | SF | Major  | Immed.  | 4 hours  | PE |  |
| <b>KPM</b><br><b>A(3)2.0(d)(ii)(E)</b>  | Project Co shall have backup copies of the original operating system and application software immediately available for use.   | QF | Major  | NA      | 1 week   | R  |  |
| <b>KPM</b><br><b>A(3)2.0(d)(iii)(A)</b> | Failure of Passenger Information Systems to meet Passenger Information Systems Standard due to items (A), (B), or (D) of the Standard. (Display or information-related defects)                              | SF | Medium | 2 hours | 24 hours | PE | SF assessed per PIS monitor, up to a maximum exposure of 10 PIS monitors malfunctioning at any one time. |



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|   |  |    |        |         |          |    |  |
|---|--|----|--------|---------|----------|----|--|
| <b>KPM</b><br><b>A(3)2.0(d)(iii)(A)</b> | Failure of Passenger Information Systems to meet Passenger Information Systems Standard due to item (C) of the Standard. (Audio-related defects) | SF | Medium | 2 hours | 24 hours | PE | SF assessed per PIS speaker, up to a maximum exposure of 10 PIS speakers malfunctioning at any one time. |
|---|--|----|--------|---------|----------|----|--|

## APPENDIX A – ATTACHMENT 4

### TRACK MAINTENANCE SERVICES

#### 1.0 Scope of Services

- (a) Project Co shall be responsible for the Custodial, Preventive, and Corrective Maintenance activities of all Track infrastructure on the System including but not limited to:
  - (i) All mainline, yard lead, and storage yard Track;
  - (ii) All switches and crossovers; and
  - (iii) Railbed and other supporting portions of the Track infrastructure.

#### 2.0 Service Requirements

- (a) Project Co shall maintain all Track components (including track, switching gear, and rail related components) in a state of good repair and working order in accordance with the approved Maintenance and Rehabilitation Plan.
- (b) Project Co shall conduct maintenance activities to ensure that all Track meets the Fixed Component Availability Standard.
- (c) Project Co shall provide vegetation control on the Alignment and Custodial Maintenance for the Tracks in accordance with the Standards described in Attachment 10 – Alignment Maintenance Services.
- (d) In case of breakdowns and failures, Project Co shall have procedures in place to dispatch forthwith the appropriate resources necessary to Repair the problems.
- (e) Project Co shall provide and use manually operated and propelled Track quality measurement equipment.
- (f) Project Co shall have available the necessary tools, materials and equipment required to perform the Track Maintenance Services.
- (g) Project Co shall ensure compliance with Schedule 17- Environmental Obligations.
- (h) Project Co's performance with respect to vandalism and graffiti shall be in accordance with:
  - (i) Appendix A, Attachment 10 – Alignment Maintenance Services, Article 2.0(f) "Vandalism and Graffiti Repair", Article 3.0(e) "Vandalism and Graffiti Standard", and Article 5.0 "Performance Criteria", and for further certainty, Project Co's rectification and / or response times and the assessment of Service Failure Points; and
  - (ii) Appendix A, Attachment 16 – Vandalism and Graffiti.

**3.0 Service Standards****(a) Track Maintenance Standard**

- (i) All track components shall be in a state of good repair and functioning in accordance with the Design and Construction Requirements and the approved Maintenance and Rehabilitation Plan.

**(b) Fixed Component Availability Standard**

- (i) Any Fixed Component in the System (including track and related track components) is considered to not meet the Standard if any Defect or Deficiency is identified in that Fixed Component that:
  - A. affects the Safety of the public, Passengers or Driver in a manner contrary to the Safety Management System; or
  - B. adversely affects Operations such that the System does not meet the Operation Requirements and Specifications.

**(c) Quality Monitoring and Reporting**

- (i) Periodically, the City will audit Project Co's Track Maintenance documentation and reporting. Failures to maintain documentation and report on Track Maintenance activities will result in penalties being assessed as described in the Performance Criteria.

**(d) Maintenance Plans**

- (i) Project Co shall at all times maintain complete and updated versions of the Custodial Maintenance Plan, the Corrective Maintenance Plan, and the Preventive Maintenance Plan.
- (ii) Project Co shall follow the requirements set out in Article 1.4 of Appendix A with regard to the drafting, approval, and revisions process for these Maintenance Plans.

**(e) Maintenance Reporting**

- (i) Project Co shall report on the status and completion of various Track Maintenance activities.
- (ii) Project Co shall follow the maintenance reporting requirements set out in Article 1.8 of Appendix A with regard to reporting procedures and the Daily, Monthly, and Annual submittals that are required.

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## 4.0 Performance Criteria

| FE Type  | Category   | Response  | Rectification / Remedial | Recording Frequency  |
|--|--|---|--------------------------|--|
| AF<br>=Availability<br>Failure<br>SF = Service<br>Failure<br>QF = Quality<br>Failure | Major<br>Medium<br>Minor<br>Veh. Avail. = Captured<br>by the Vehicle<br>Availability deduction<br>regime | N/A = Not<br>Applicable<br><br>Immediate<br>("Immed.") = The<br>total planned travel<br>time in minutes<br>from Blair Station<br>to Tunney's Pasture<br>Station, plus the<br>headway in minutes<br>on the System at the<br>time of the<br>Response. | N/A = Not<br>Applicable  | PR = Per Request<br>PE = Per Event<br>D = Daily<br>W = Weekly<br>M = Monthly<br>Q = Quarterly<br>B = Bi-Annually<br>A = Annually<br>R = Randomly, At Any<br>Moment in Time |

| Ref                               | Parameter   | Failure<br>Type | Category | Resp.<br>Time | Rect.<br>Or<br>Rem.<br>Time | Recording<br>Frequency | Notes   |
|-----------------------------------|---|-----------------|----------|---------------|-----------------------------|------------------------|---|
| <i>Track Maintenance Services</i> |   |                 |          |               |                             |                        |   |
| <b>KPM</b><br><b>A(4)2.0(d)</b>   | Project Co shall provide<br>and use manually<br>operated and propelled<br>Track quality<br>measurement equipment. | QF              | Major    | NA            | NA                          | PE                     | Maximum exposure<br>of one QF per event<br>of non-compliance. |

## APPENDIX A – ATTACHMENT 5

### VEHICLE MAINTENANCE SERVICES

#### 1.0 Scope of Services

- (a) Project Co shall be responsible for the Custodial, Preventive, and Corrective Maintenance activities for the following Vehicle Maintenance Services activities including but not limited to:
  - (i) Vehicle Cleaning;
    - A. Daily Vehicle Inspection and Cleaning; and
    - B. Regular Heavy Vehicle Cleaning;
  - (ii) Vehicle Maintenance;
  - (iii) Provision of Vehicles to the City for Revenue Service in accordance with the Cleaning and Maintenance requirements.

#### 2.0 Service Requirements

- (a) Vehicle Cleaning
  - (i) Project Co shall maintain the Vehicles in a condition which is physically clean and suitable to be placed into Revenue Service.
  - (ii) Project Co shall inspect the Vehicles with sufficient regularity to maintain the foregoing standard, provided that the frequency of inspection of Vehicles shall never be less than daily. Such inspections may where feasible be conducted in the course of performing the Maintenance required to maintain the foregoing standard, subject to the requirement that Project Co undertake the required frequency of inspection.
  - (iii) Project Co shall develop vehicle cleaning procedures and plans that will be incorporated into the Custodial Maintenance Plan.
  - (iv) On a daily basis, Project Co shall ensure that the Vehicle and its components are clean and in a good state of operation and repair in accordance with the Vehicle Cleaning Standards.
  - (v) Within a 21 service day cycle or more often if required, Project Co shall undertake a deep cleaning and repair of Vehicle components in accordance with the Vehicle Cleaning Standards.
  - (vi) Twice a year, at the end of the winter and summer seasons, Project Co shall take the Vehicle off-line for a thorough breakdown and cleaning. Project Co shall undertake major repairs at this time and the Vehicle shall be pressure washed and sanitized.



## (b) Vehicle Maintenance

## (i) General

- A. Project Co shall perform Preventive and Corrective Maintenance in accordance with the maintenance plan requirements and the requirements of Schedule 15-3.
- B. Project Co shall ensure that all Vehicle Components affecting passenger safety and/or the safe operation of the vehicle are in accordance with the Safety Management System.
- C. Project Co shall ensure that all Vehicle Components that do not affect passenger safety and/or the safe operation of the vehicle are fully functional, materially undamaged, and in good condition, subject to normal wear and tear.
- D. Project Co shall develop a Corrective Maintenance Plan, based on industry best practices and manufacturer's recommendations for the selected Vehicle type, to ensure that damage to or failures of all Vehicles and Vehicle components are addressed and corrected in accordance with the requirements of this Article.
- E. Project Co shall develop a Preventive Maintenance Plan, based on industry best practices and manufacturer's recommendations for the selected Vehicle type, to ensure that the fleet is maintained in a state of good repair.

## (ii) Daily Activities – Inspection and Corrective Maintenance

- A. Project Co shall ensure that all Vehicles comprising a Train consist are inspected prior to entering Revenue Service and meet the Vehicle Maintenance Standard. The inspection shall include all matters on an inspection checklist which has been approved by the City. Following the inspection, Project Co shall provide a copy of the checklist to the Driver, who shall verify, prior to accepting the Vehicle, that the checklist has been completed and signed by a responsible and qualified Project Co Employee.
- B. Any structural or paint / wrap damage to a Vehicle must be reported in the Daily Report. A thorough inspection shall be conducted of the drive train and safety components when structural damage is evident or suspected. Project Co shall undertake Corrective Maintenance of the damaged components, including paint/wrap finishing.

## (iii) Regular Preventive Maintenance Activities

- A. Project Co shall conduct regular preventive maintenance activities on Vehicles in accordance with best practices and manufacturer's recommendations as laid out in the Preventive Maintenance Plan as described in [Article 1.4].

- B. Project Co shall conduct additional rehabilitation activities on the Vehicle Fleet as necessary in accordance with the asset preservation requirements, as described in Appendix B.
- (c) Vehicle Availability
- (i) Vehicles Entering Revenue Service
- A. Project Co shall ensure that, at the start of Revenue Service of each Peak Period and each Off-Peak Period, the number of Trains which are required for Revenue Service Vehicle Kilometres in that Peak Period or Off-Peak Period, as applicable, in compliance with the Operations Service Plan and the Train consist assignments as established by the City, are available to be entered into Revenue Service in accordance with the Vehicle Availability Standards.
- B. This number of Vehicles shall constitute the minimum required Vehicle fleet for the duration of that Peak Period or Off-Peak Period (the “**Scheduled Revenue Service Vehicles**”).
- C. In the event that any Train scheduled to be entered into Revenue Service is prohibited from being placed into Revenue Service pursuant to Article 3.0, Project Co shall immediately either:
- i Perform Cleaning or Corrective Maintenance on the Deficient Vehicle(s); or
  - ii Replace the Deficient Vehicle(s) in the Train consist with another available Vehicle.
- D. If a Vehicle or Train identified to enter Revenue Service cannot be replaced with a Vehicle or Train that meets the Vehicle Availability Standard, Project Co shall perform Cleaning or Corrective Maintenance or provide a replacement Vehicle or Train as soon as possible.
- (ii) Vehicles In Revenue Service
- A. Project Co shall ensure that at all times during Service Hours the number of Trains which are required for Revenue Service Vehicle Kilometres in that Peak Period or Off-Peak Period, as applicable, in compliance with the Operations Service Plan and the Train consist assignments as established by the City, meet the Vehicle Availability Standards.
- B. In the event that any Vehicle that is part of a Train in Revenue Service is found not to meet either the Vehicle Cleaning or the Vehicle Maintenance Standard and Public Safety or comfort is compromised, Project Co shall, as necessary, either:

- i Promptly perform Cleaning or Corrective Maintenance on the Deficient Vehicle(s) without removing it from Revenue Service, subject to Article 1.5 of Appendix A or;
  - ii Promptly remove the Train from Revenue Service and replace the Deficient Vehicle(s) in the Train consist with another available Vehicle(s).
- C. Project Co shall, where reasonably possible, perform Cleaning or Corrective Maintenance to correct the Defect or Deficiency on the Vehicle(s) without removing the Train from Revenue Service. For further certainty, the removal of a Train from Revenue Service pursuant to the above statements does not derogate from Project Co's obligations under these Vehicle Maintenance Services Requirements, including the provision of the Scheduled Revenue Service Vehicles.
- D. If a Vehicle or Train in Revenue Service cannot be replaced with a Vehicle or Train that meets the Vehicle Availability Standard, Project Co shall perform Cleaning or Corrective Maintenance or provide a replacement Vehicle or Train as soon as possible.
- (b) Project Co shall ensure compliance with Schedule 17 – Environmental Obligations.
- (c) Project Co's performance with respect to vandalism and graffiti shall be in accordance with:
  - (i) Appendix A, Attachment 10 – Alignment Maintenance Services, Article 2.0(f) "Vandalism and Graffiti Repair", Article 3.0(e) "Vandalism and Graffiti Standard", and Article 5.0 "Performance Criteria", and for further certainty, Project Co's rectification and / or response times and the assessment of Service Failure Points; and
  - (ii) Appendix A, Attachment 16 – Vandalism and Graffiti.

### 3.0 Service Standards

- (a) Vehicle Cleaning Standards
  - (i) Daily Inspection and Cleaning Standard
    - A. Vehicles shall meet the following standard daily before entering Revenue Service:
      - i Clean Driver's cab including floor, seat, dashboard and windshield;
      - ii Clean interior windows;
      - iii Vehicle clean of all litter, spills, bodily fluids, personal accidents, unsanitary conditions and garbage;

- iv Vehicle clean after Vehicle maintenance operations;
- v Clean seats;
- vi Seat covers are not damaged or torn;
- vii Gum has been removed from seat covers, handrails and seat backs;
- viii Graffiti marks have been removed;
- ix Any loose floor mats/fittings have been repaired;
- x Floor has been cleaned if soiled including vacuum and mopping;
- xi Working CCTV;
- xii Working Passenger information systems;
- xiii Lights are not burnt out or flickering;
- xiv Vehicle lights, lenses, windshield, windows, mirrors and wipers are clean and functional; and
- xv Vehicle exterior is clean and has been washed at least once in the last three (3) days.

(ii) Heavy Cleaning Standard

- A. Vehicles shall meet the Heavy Cleaning Standard if Project Co completes the following cleaning activities and repairs within 21 service days or more often as required:
- i Deep cleaning of the vehicle including vacuuming, mopping and washing;
  - ii Scuff and burn marks have been removed;
  - iii Gum has been removed from floors;
  - iv Graffiti damage has been repaired;
  - v Loose/rattling panels, fixtures and screws have been repaired;
  - vi Loose/rattling doors have been repaired;
  - vii Damaged seats, handrails and fixtures have been replaced;
  - viii Paint/wrap surface damage has been repaired;
  - ix Ceiling damage has been repaired; and

- x Exterior surface elements, including glass, panels, trim, paint/wrap and finishing details have been inspected and repaired as required.
- (b) Vehicle Maintenance Standards
  - (i) Train Scheduled for Revenue Service
    - A. A Train scheduled for Revenue Service shall not meet the Vehicle Maintenance Standard if any Vehicle in the Train consist meets any of the following:
      - i Any condition that affects Passenger or Driver Safety in a manner contrary to the Safety Management System;
      - ii Malfunction of Driver control elements or Driver seat;
      - iii The failure of brakes to meet the Design and Construction Performance Requirements;
      - iv Any Deficiency in Vehicle operation such that the Vehicle cannot maintain the Headway required by the Operations Service Plan;
      - v Broken or damaged Vehicle furniture;
      - vi Broken windshield, glass elements, mirrors, wipers, closed circuit television, etc.;
      - vii Malfunctioning or broken regulatory Vehicle elements, including brake lights, turn signals and headlights;
      - viii Malfunctioning doors;
      - ix Malfunction of Vehicle Passenger information systems;
      - x Malfunctioning communication equipment;
      - xi Malfunctioning interior illumination;
      - xii Malfunctioning heating, ventilating and air conditioning systems; A malfunctioning heating system shall be defined as a system that is not capable of maintaining an interior temperature of at least +15°C with the door(s) closed when the outside air temperature is colder than minus -18°C. A malfunctioning air conditioning system shall be defined as a system not capable of maintaining an interior temperature of less than +27°C with the door(s) closed when the outside air temperature is in excess of +27°C, but not greater than +35°C;
      - xiii Any failure of any Vehicle Component to perform its intended purpose; and



- xiv Damage to Vehicle or Vehicle components as a result of vandalism or graffiti.
- (ii) Vehicles In Revenue Service
  - A. A Train in Revenue Service shall not meet the Vehicle Maintenance Standard if any Vehicle in the Train consist meets any of the following:
    - i Any unsafe condition that may affect Passenger or Driver Safety, or safe Vehicle operation (including suspension failure and on board CCTV failure) in a manner contrary to the Safety Management System;
    - ii Any Deficiency in Vehicle operation such that the Train cannot maintain the scheduled Headway, including the loss of traction drive on one bogie;
    - iii Malfunction of Driver control elements and Driver seat;
    - iv Brake failure on any single axle or dragging brake and/or inconsistent and deteriorated brake operation;
    - v Broken windshield, glass elements, mirrors or wipers that pose an immediate Safety hazard in a manner contrary to the Safety Management System;
    - vi Regulatory Vehicle elements, such as brake lights and headlights, that pose an immediate Safety hazard in a manner contrary to the Safety Management System;
    - vii Malfunctioning doors (such that more than one door is locked off);
    - viii Malfunctioning heating system when outside temperature is below 0°C;
    - ix Malfunctioning air conditioning and ventilation system when outside temperature is above 25°C;
    - x Malfunctioning radio communication equipment;
    - xi Malfunctioning illumination where Safety is compromised (in a manner contrary to the Safety Management System);
    - xii Broken/damaged Vehicle furniture elements where Safety is compromised (in a manner contrary to the Safety Management System);
    - xiii Train interior fouled by bodily fluids, spills or unsanitary conditions (The conditions in Article 3(b)(ii)(B)(xi) shall not result in Failure Points, however Project Co shall promptly remedy the condition as soon as possible);

- xiv If there is graffiti on Vehicles or Vehicle components , and results in non-compliance to the vandalism and graffiti standard as described in Attachment 10; and
  - xv Vandalism on Vehicles or Vehicle components, and results in a non-compliance to the Safe operation of the Train and / or Schedule 17 – Environmental Obligations.
- (c) Vehicle Availability Standards
  - (i) Vehicles Entering Revenue Service
    - A. A Train shall not be considered available and shall not be permitted to be entered into Revenue Service if any of the Vehicles in the Train consist fails to meet:
      - i The Vehicle Cleaning Standard set out in Article 3.0 (a), or
      - ii The Vehicle Maintenance Standard for Vehicles entering Revenue Service set out in Article 3.0 (b).
    - B. The City, in its Discretion, may permit a Vehicle which fails to meet
      - i the Vehicle Cleaning Standard described in Article 3.0 (a) to be entered into Revenue Service as part of a Train consist, or
      - ii the Vehicle Maintenance Standard (i)(xiv) to the extent that temporary repairs and remedial action required for compliance with the Vandalism and Graffiti Standard included in Attachment 10 article 3(e) and Attachment 16 are performed.
    - C. Notwithstanding the foregoing, in no event shall the City permit a Vehicle to enter Revenue Service as part of a Train consist if an identified Deficiency in the Vehicle results in the Vehicle's failure to meet the requirements of the Safety Management System, affects Passenger Safety or comfort, or otherwise prevents the safe operation of the Train.
    - D. In no event shall the fact that the City permits or has permitted a Vehicle which does not comply with the Vehicle Cleaning Standard to enter in Revenue Service as part of a Train consist relieve Project Co of its obligation to comply with the Vehicle Cleaning Standard or alter such obligation, including with respect to such Vehicle.
  - (ii) Vehicles In Revenue Service
    - A. A Train already in Revenue Service shall no longer be considered available if any of the Vehicles in the Train consist fails to meet:
      - i the Design and Construction Performance Requirements;

- ii the Vehicle Cleaning Standard set out in Article 3.0(a); or
  - iii the Vehicle Maintenance Standard for Vehicles in Revenue Service set out in Article 3.0(b).
- B. The City in its Discretion may permit a Train which is engaged in Revenue Service, and which does not meet either the Vehicle Cleaning or the Vehicle Maintenance Standard, to remain in Revenue Service.
- C. In the event that the City permits any such Train to remain in Revenue Service, following the removal of the Train from Revenue Service, Project Co shall perform Cleaning or Corrective Maintenance and ensure that the Vehicle or Train is available for Revenue Service at the beginning of the next Peak Period.
- D. Notwithstanding the foregoing, in no event shall the City permit a Train to remain in Revenue Service if an identified Defect or Deficiency in any Vehicle(s) in the Train consist results in the Train's failure to comply with the Safety Management System or otherwise prevents the safe operation of the Train.
- E. In no event shall the fact that the City permits or has permitted a Train which does not meet either the Vehicle Cleaning or the Vehicle Maintenance Standard to remain in Revenue Service relieve Project Co of its obligation to meet the Vehicle Cleaning and the Vehicle Maintenance Standard, but in the event that the City permits or has permitted a Train which does not meet either the Vehicle Cleaning or the Vehicle Maintenance Standard to remain in Revenue Service, in accordance with the provisions of this Schedule 15-3 (including Schedule A) a Non Performance Adjustment Charge is applicable only to the extent that there is a Service Availability Loss, if any, in respect of such Vehicle.

#### **4.0 Quality Monitoring and Reporting**

- (a) Periodically, the City will audit the Project Co's Vehicle Cleaning and Maintenance documentation and reporting. Failures to maintain documentation and report on Vehicle Cleaning and Maintenance activities will result in penalties being assessed as described in the Performance Criteria section.
- (b) Maintenance Plans
  - (i) Project Co shall at all times maintain complete and updated versions of the Custodial Maintenance Plan, the Corrective Maintenance Plan, and the Preventive Maintenance Plan.
  - (ii) Project Co shall follow the requirements set out in Article 1.4 of Appendix A with regard to the drafting, approval, and revisions process for these Maintenance Plans.

(c) Maintenance Reporting

- (i) Project Co shall report on the status and completion of various Vehicle Cleaning and Maintenance activities, including Daily Inspection and Cleaning, Weekly and Heavy Cleaning, Corrective Maintenance, and Preventive Maintenance.
- (ii) Project Co shall follow the maintenance reporting requirements set out in Article 1.8 of Appendix A with regard to reporting procedures and the Daily, Monthly, and Annual submittals that are required.

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## 5.0 Performance Criteria

| FE Type  | Category   | Response  | Rectification / Remedial   | Recording Frequency  |
|--|--|---|--|--|
| AF<br>=Availability<br>Failure<br>SF = Service<br>Failure<br>QF = Quality<br>Failure | Major<br>Medium<br>Minor<br>Veh. Avail. = Captured<br>by the Vehicle<br>Availability deduction<br>regime | N/A = Not<br>Applicable<br><br>Immediate<br>("Immed.") = The<br>total planned travel<br>time in minutes<br>from Blair Station<br>to Tunney's Pasture<br>Station, plus the<br>headway in minutes<br>on the System at the<br>time of the<br>Response. | N/A = Not<br>Applicable<br>ND = Correct by<br>start of service<br>the following<br>day | PR = Per Request<br>PE = Per Event<br>D = Daily<br>W = Weekly<br>M = Monthly<br>Q = Quarterly<br>B = Bi-Annually<br>A = Annually<br>R = Randomly, At Any<br>Moment in Time |

| Ref                                 | Parameter   | Failure<br>Type | Category | Resp.<br>Time | Rect.<br>Or<br>Rem.<br>Time | Recording<br>Frequency | Notes  |
|-------------------------------------|---|-----------------|----------|---------------|-----------------------------|------------------------|--|
| <i>Vehicle Maintenance Services</i> |   |                 |          |               |                             |                        |  |
| <b>KPM</b><br><b>A(5)2.0(a)(v)</b>  | On a 21 service day cycle or more often if required, Project Co shall undertake a deep cleaning and repair of Vehicle components in accordance with the Vehicle Cleaning Standards. | QF              | Medium   | NA            | ND                          | PE                     | Maximum exposure of one QF per vehicle per 21 service day cycle. |
| <b>KPM</b><br><b>A(5)2.0(a)(vi)</b> | Twice a year, at the end of the winter and summer seasons, Project Co shall take the Vehicle off line for a thorough breakdown and cleaning.  | QF              | Major    | NA            | 1 month                     | B                      | Maximum exposure of one QF per vehicle per calendar month.       |



**APPENDIX A – ATTACHMENT 6**  
**FACILITIES MAINTENANCE SERVICES**

**1.0 Scope of Services**

- (a) Project Co shall be responsible for the Custodial, Preventive, and Corrective Maintenance activities in the major buildings and facilities of the System, including but not limited to:
  - (i) Maintenance and Storage Facility
    - A. Maintenance Building;
    - B. Storage Yard; and
    - C. Operations Crew Facility.
  - (ii) TSCC

**2.0 Service Requirements**

- (a) Custodial Maintenance Requirements
  - (i) Project Co shall conduct all physical removal of dirt, soot, stains, marks, liquids and materials that come in contact with floors, walls, doors, windows, furniture and other building components.
  - (ii) Project Co shall repair any broken or malfunctioning floors, walls, doors, windows, furniture and other building components.
  - (iii) Project Co shall be responsible for identifying the defect and performing remedial actions in accordance with the Custodial Maintenance Standard and the timeframes established in the Performance Criteria. Notwithstanding the defect, timelines and remedial actions identified, prevailing legislation and city by-laws shall take precedence if they are more restrictive.
  - (iv) Project Co shall place particular attention on the Cleaning and Maintenance of washroom facilities, locker rooms, cafeteria, offices and general areas frequented by people.
  - (v) Project Co shall immediately clean or repair any defect that affects the Safety of the public or the Employees of Project Co and the City in accordance with the Custodial Maintenance Standard.
  - (vi) Project Co shall conduct daily debris removal and general cleaning of frequented areas in accordance with the Daily Custodial Maintenance Standard.
  - (vii) Project Co shall conduct weekly heavy cleaning of interior and frequented areas in accordance with the Weekly Custodial Maintenance Standard.

- (viii) Project Co shall conduct seasonal cleaning and maintenance of exterior surfaces and surface treatments in accordance with the Seasonal Custodial Maintenance Standard.
- (ix) Project Co shall conduct bi-annual heavy cleaning of floor surfaces in accordance with the Bi-Annual Custodial Maintenance Standard.
- (b) Corrective and Preventive Maintenance Requirements
  - (i) Maintenance Building
    - A. Project Co shall maintain the Maintenance Building.
    - B. Project Co shall provide all necessary trade fixtures, shop tools, heavy lifts, washers, equipment, vehicles and furniture as may be necessary in the Maintenance Building to undertake the Maintenance activities.
    - C. Project Co shall provide all security for the Maintenance Building. Project Co shall ensure the security of the Maintenance Building perimeter is maintained and immediately repaired if it is breached.
    - D. Project Co shall maintain the Maintenance Building and associated Vehicle Maintenance equipment in a state of good repair and working order in accordance with the approved Maintenance and Rehabilitation Plan.
    - E. Project Co shall provide Corrective Maintenance for:
      - i all interior Maintenance Building services (including but not limited to cleaning, heating, ventilation, air conditioning, sewage, potable water, painting, lighting and electrical services); and
      - ii the exterior of the Maintenance Building including lighting.
    - F. Project Co shall Repair damage and vandalism as may be required.
  - (ii) Storage Yard
    - A. Project Co shall maintain the Storage Yard.
    - B. Project Co shall be responsible and will have the authority for operations, Security and Safety within the Storage Yard.
    - C. Project Co shall, in cooperation with the City, implement a Maintenance operations procedure to ensure the efficient transfer of Vehicles at the beginning and the end of each shift.
    - D. Project Co shall maintain the Storage Yard in a state of good repair and working order in accordance with the approved Maintenance and Rehabilitation Plan.

- E. Project Co shall provide Preventive Maintenance, Corrective Maintenance and Custodial Maintenance for the Storage Yard in accordance with the Standards established for the following other Maintenance types:
      - i Alignment Maintenance Services; and
      - ii Track Maintenance Services.
  - (iii) Operations Crew Facility
    - A. Project Co shall provide all Security for the Operations Crew Facility.
    - B. Project Co shall ensure the Security of the Operations Crew perimeter is maintained and immediately repaired if it is breached.
    - C. Project Co shall maintain the Operations Crew Facility, including the attached BCC, in a state of good repair and working order in accordance with the approved Maintenance and Rehabilitation Plan.
    - D. Project Co shall provide Corrective Maintenance for:
      - i all interior Operations Crew Facility services (including but not limited to cleaning, heating, ventilation, air conditioning, sewage, potable water, painting, lighting and electrical services); and
      - ii the exterior of the Operations Crew Facility including lighting.
    - E. Project Co shall provide Custodial Maintenance for the Operations Crew Facility, including the attached BCC, in accordance with the Custodial Maintenance Standard.
- (c) Place de Ville Entrance Connection Maintenance Responsibilities
  - (i) The structural maintenance of the new vehicular and pedestrian link shall be the responsibility of Project Co.
  - (ii) The custodial and day to day maintenance of the new vehicular and pedestrian link shall be as follows:
    - A. The developer shall be responsible for the custodial and day to day maintenance of the pedestrian link and vehicular link.
    - B. The specific custodial and day to day maintenance of the vehicular and pedestrian link shall be the responsibility of the developer and Project Co as follows:
      - i The developer shall clean/maintain the glass panels on the north face of the pedestrian link.

- ii Project Co shall be responsible for the cleaning/maintenance of the glass panels on the south face of the pedestrian link and the remainder of the station concourse/platform.
- (iii) Project Co shall be responsible for the maintenance of the entrance connection to grade up to and including the inside faces of the wall of the entrance connection.
- (iv) The developer shall be responsible for the maintenance of the exterior walls of the entrance connection within the development.
- (d) Project Co shall ensure compliance with Schedule 17 – Environmental Obligations.
- (e) Project Co’s performance with respect to vandalism and graffiti shall be in accordance with:
  - (i) Appendix A, Attachment 10 – Alignment Maintenance Services, Article 2.0(f) “Vandalism and Graffiti Repair”, Article 3.0(e) “Vandalism and Graffiti Standard”, and Article 5.0 “Performance Criteria”, and for further certainty, Project Co’s rectification and / or response times and the assessment of Service Failure Points; and
  - (ii) Appendix A, Attachment 16 – Vandalism and Graffiti.

### 3.0 Service Standards

- (a) Custodial Maintenance Standard
  - (i) The buildings and facilities within the Scope of Facilities Maintenance Services shall fail to meet the Custodial Maintenance Standard if:
    - A. Any condition exists that impacts Public Safety or the Safety of the Employees of Project Co and the City or fails to comply with the Safety Management System, including:
      - i any accidental spills or bodily fluids;
      - ii floor treatments that represent a tripping hazard;
      - iii any unsafe accumulation of ice and snow, and for clarity accumulation of ice and snow shall be deemed to be “unsafe” if not in compliance with the Snow and Ice Clearing Standard including safe access to all areas of the buildings and facilities; and
      - iv illumination and / or lighting levels are not in compliance with Schedule 15-2; or benchmarking levels as otherwise determined prior to Revenue Service.
    - B. Any damage as a result of vandalism and/or graffiti has not been repaired as required and specified elsewhere.
    - C. Any of the subsequent time-dependent standards are violated:

## (ii) Daily Custodial Maintenance Standard

A. Buildings and facilities under Project Co's responsibility shall meet the Daily Custodial Maintenance Standard if the following conditions exist after daily cleaning activities:

- i All debris has been removed and disposed of; and
- ii General cleaning of frequented areas (including offices, washrooms, locker rooms, and cafeteria) has occurred. These general cleaning activities include washing floors, cleaning toilets, cleaning urinals, restocking supplies, and cleaning counters, basins, cooking surfaces, and mirrors.

## (iii) Weekly Custodial Maintenance Standard

A. Buildings and facilities under Project Co's responsibility shall meet the Weekly Custodial Maintenance Standard if the following conditions exist after heavy cleaning activities have occurred weekly (or more frequently as required):

- i hard floors are washed;
- ii carpets are vacuumed;
- iii surfaces dusted;
- iv gum, scuff marks and other similar semi-permanent markings have been removed by use of scrapping, abrasives and/or chemical removal;
- v inside windows are clean; and
- vi non-slip carpets used during inclement weather are clean.

## (iv) Seasonal Custodial Maintenance Standard

A. Buildings and facilities under Project Co's responsibility shall meet the Seasonal Custodial Maintenance Standard if the following conditions exist after seasonal cleaning activities have occurred:

- i Windows and exterior surfaces are thoroughly cleaned; and
- ii Damaged surface treatments have been painted, repaired, or replaced as needed.

## (v) Bi-Annual Custodial Maintenance Standard

A. Buildings and facilities under Project Co's responsibility shall meet the Bi-Annual Custodial Maintenance Standard if the following conditions exist after bi-annual cleaning activities have occurred:



- i Carpets are steam cleaned; and
- ii All linoleum floors are burnished.

#### **4.0 Quality Monitoring and Reporting**

- (a) Periodically, the City will audit the Project Co's Facilities Maintenance documentation and reporting. Failures to maintain documentation and report on Facilities Maintenance activities will result in penalties being assessed as described in the Performance Criteria section.
- (b) Maintenance Plans
  - (i) Project Co shall at all times maintain complete and updated versions of the Custodial Maintenance Plan, the Corrective Maintenance Plan, and the Preventive Maintenance Plan.
  - (ii) Project Co shall follow the requirements set out in Article 1.4 of Appendix A with regard to the drafting, approval, and revisions process for these Maintenance Plans.
- (c) Maintenance Reporting
  - (i) Project Co shall report on the status and completion of various Facilities Maintenance activities.
  - (ii) Project Co shall follow the maintenance reporting requirements set out in Article 1.8 of Appendix A with regard to reporting procedures and the Daily, Monthly, and Annual submittals that are required.

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## 5.0 Performance Criteria

| FE Type  | Category   | Response  | Rectification / Remedial   | Recording Frequency  |
|--|--|---|--|--|
| AF<br>=Availability<br>Failure<br>SF = Service<br>Failure<br>QF = Quality<br>Failure | Major<br>Medium<br>Minor<br>Veh. Avail. = Captured<br>by the Vehicle<br>Availability deduction<br>regime | N/A = Not<br>Applicable<br><br>Immediate<br>("Immed.") = The<br>total planned travel<br>time in minutes<br>from Blair Station<br>to Tunney's Pasture<br>Station, plus the<br>headway in minutes<br>on the System at the<br>time of the<br>Response. | N/A = Not<br>Applicable<br>ND = Correct by<br>start of service<br>the following<br>day | PR = Per Request<br>PE = Per Event<br>D = Daily<br>W = Weekly<br>M = Monthly<br>Q = Quarterly<br>B = Bi-Annually<br>A = Annually<br>R = Randomly, At<br>Any Moment in Time |

| Ref                                    | Parameter  | Failure Type | Category | Resp. Time | Rect. Or Rem. Time | Recording Frequency | Notes   |
|--|--|--------------|----------|------------|--------------------|---------------------|---|
| <i>Facilities Maintenance Services</i> |  |              |          |            |                    |                     |   |
| <b>KPM</b><br><b>A(6)2.0(a)(v)</b>     | Project Co shall immediately clean or repair any defect that affects the Safety of the public or the Employees of Project Co and the City in accordance with the Custodial Maintenance Standard. | SF           | Major    | Immed.     | 1 hour             | PE                  | SF assessed per defect.                           |
| <b>KPM</b><br><b>A(6)2.0(a)(vi)</b>    | Project Co shall conduct daily debris removal and general cleaning of frequented areas in accordance with the Daily Custodial Maintenance Standard.  | QF           | Minor    | ND         | NA                 | D                   | Maximum exposure of one QF per day per facility.  |
| <b>KPM</b><br><b>A(6)2.0(a)(vii)</b>   | Project Co shall conduct weekly heavy cleaning of interior and frequented areas in accordance with the Weekly Custodial Maintenance Standard.  | SF           | Minor    | NA         | 24 hours           | W                   | Maximum exposure of one QF per day per facility.  |
| <b>KPM</b><br><b>A(6)2.0(a)(viii)</b>  | Project Co shall conduct seasonal cleaning and maintenance of exterior surfaces and surface treatments in accordance with the Seasonal Custodial Maintenance Standard.                           | SF           | Minor    | NA         | 7 days             | Q                   | Maximum exposure of one QF per week per facility. |

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| Ref                                 | Parameter  | Failure Type | Category | Resp. Time | Rect. Or Rem. Time | Recording Frequency | Notes   |
|-------------------------------------|--|--------------|----------|------------|--------------------|---------------------|---|
| <b>KPM</b><br><b>A(6)2.0(a)(ix)</b> | Project Co shall conduct bi-annual heavy cleaning of floor surfaces in accordance with the Bi-Annual Custodial Maintenance Standard. | QF           | Minor    | NA         | 1 week             | B                   | Maximum exposure of one QF per week per facility. |

**APPENDIX A – ATTACHMENT 7****PASSENGER STATION MAINTENANCE SERVICES****1.0 Scope of Services**

- (a) Project Co shall be responsible for the Custodial, Preventive, and Corrective Maintenance activities on all Passenger Stations including but not limited to:
  - (i) Electrical, mechanical, HVAC, and other infrastructure;
  - (ii) Elevator and escalators;
  - (iii) Green roof;
  - (iv) Building structural elements; and
  - (v) integrated architectural elements, including Artwork.

**2.0 Service Requirements**

- (a) Custodial Maintenance Requirements
  - (i) Project Co shall conduct all physical removal of dirt, soot, stains, marks, liquids and materials that come in contact with floors, walls, doors, windows, furniture and other Passenger Station components.
  - (ii) Project Co shall repair any broken or malfunctioning floors, walls, doors, windows, furniture and other Passenger Station components.
  - (iii) Project Co shall be responsible for identifying the defect and performing remedial actions in accordance with the Custodial Maintenance Standard and the timeframes established in the Performance Indicators. Notwithstanding, the defect, timelines and remedial actions identified, prevailing legislation and City by-laws shall take precedence if they are more restrictive.
  - (iv) Project Co shall immediately clean or repair any Passenger Station defect that affects the Safety of the public or the Employees of Project Co and the City in accordance with the Custodial Maintenance Standard.
  - (v) Project Co shall conduct daily trash removal and general cleaning of frequented areas in accordance with the Daily Custodial Maintenance Standard.
  - (vi) Project Co shall conduct weekly heavy cleaning of interior and frequented areas in accordance with the Custodial Maintenance Standard.

- (vii) Project Co shall conduct bi-annual heavy cleaning in accordance with the Bi-Annual Custodial Maintenance Standard.
- (b) Maintenance Requirements
  - (i) Project Co shall maintain all Passenger Stations in the System and all Passenger Station components in a good state of repair and working order in accordance with the approved Corrective and Preventive Maintenance Plans.
  - (ii) Project Co shall maintain all Passenger Stations in the System and all Passenger Station components in accordance with the Passenger Station Access Standard.
- (c) Escalator and Elevator Maintenance Requirements
  - (i) Project Co shall regularly inspect and maintain all escalators and elevators in accordance with manufacturer and governmental regulatory requirements to maintain the Station Access Standard.
  - (ii) Project Co shall perform preventive and corrective maintenance in accordance with manufacturer recommendations, and the accepted maintenance plan.
  - (iii) Escalators shall be maintained in service so as to provide at least one form of vertical transportation at all times during Revenue Service Hours, in accordance with the following conditions:
    - A. Where a station platform or entrance is serviced by more than one escalator, routine maintenance or escalator failure shall not be allowed to take out of service more than one escalator servicing such entrance or platform, concurrently during Revenue Service Hours.
    - B. Where a station platform or entrance is serviced by only one escalator, routine maintenance or escalator failure shall not be allowed to take the escalator out of service concurrently during Revenue Service Hours with any elevator servicing such entrance or platform.
  - (iv) Elevators shall be maintained to minimize disruption to vertical transportation, particularly for mobility impaired passengers. Routine elevator maintenance or elevator failure shall not be allowed to take out of service more than one elevator serving a Station entrance or platform, concurrently.
- (d) Project Co's shall ensure compliance with Schedule 17 – Environmental Obligations.
- (e) Project Co's performance with respect to vandalism and graffiti shall be in accordance with:
  - (i) Appendix A, Attachment 10 – Alignment Maintenance Services, Article 2.0(f) “Vandalism and Graffiti Repair”, Article 3.0(e) “Vandalism and Graffiti Standard”, and

Article 5.0 “Performance Criteria”, and for further certainty, Project Co’s rectification and/or response times and the assessment of Service Failure Points; and

- (ii) Appendix A, Attachment 16 – Vandalism and Graffiti.

### **3.0 Service Standards**

- (a) Custodial Maintenance Standard

- (i) Passenger Stations shall fail to meet the Custodial Maintenance Standard if:

- A. Any condition exists that impacts Public Safety or the Safety of the Employees of Project Co and the City or fails to comply with the Safety Management System, including:

- i any accidental spills or bodily fluids;
- ii floor treatments that represent a tripping hazard;
- iii free from any unsafe accumulation of ice and snow, and for clarity accumulation of ice and snow shall be deemed to be “unsafe” if not in compliance with the Snow and Ice Clearing Standard pursuant to Attachment 10 of this Schedule, including safe access to all areas of the buildings and facilities;
- iv illumination and / or lighting levels are not in compliance with Schedule 15-2; or benchmarking levels as otherwise determined prior to Revenue Service; and

- B. Any damage as a result of vandalism and/or graffiti has not been repaired as required and specified elsewhere.

- C. Any of the subsequent time-dependent standards are violated.

- (ii) Daily Custodial Maintenance Standard

- A. Passenger Stations under Project Co’s responsibility shall meet the Custodial Maintenance Standard if the following conditions exist after daily cleaning activities:

- i All trash and debris has been removed and disposed of; and
- ii General cleaning of high passenger frequented areas has occurred. These general cleaning activities include washing floors and cleaning station furniture as needed.



## (iii) Weekly Custodial Maintenance Standard

A. Passenger Stations under Project Co's responsibility shall meet the Weekly Custodial Maintenance Standard if the following conditions exist after heavy cleaning activities have occurred weekly (or more frequently as required):

- i station floors are washed;
- ii all station surfaces are dusted and cleaned; and
- iii gum, scuff marks and other similar semi-permanent markings have been removed inside windows are clean.

## (iv) Bi-Annual Custodial Maintenance Standard

A. Buildings and facilities under Project Co's responsibility shall meet the Bi-Annual Custodial Maintenance Standard if the following conditions exist after bi-annual cleaning activities have occurred:

- i Windows, floors and exterior surfaces are thoroughly cleaned; and
- ii Damaged surface treatments have been painted, repaired, or replaced as needed.

## (b) Station Access Standard and Hours of Operation

(i) Passenger Stations must be open and in compliance with the Station Access Standard at least 15 minutes before the first scheduled Revenue Service train, and closed within 15 minutes after the last scheduled Revenue Service train ("Scheduled Station Hours") or as otherwise directed from time to time by the City Representative.

(ii) A Station is considered to meet the Station Access Standard if:

- A. All entrances to the Station are open and passengers have access to the passenger waiting areas in the Station;
- B. Each Station platform is accessible from each station entrance, via: (i) elevator; or (ii) alternate means of vertical transportation within 50m of the station entrance.;
- C. The Station is free from any unsafe accumulation of ice and snow, and for clarity accumulation of ice and snow shall be deemed to be "unsafe" only if: (1) the Station is not in compliance with the Snow and Ice Clearing Standard pursuant to Attachment 10 of this Schedule, and (2) safe access to Trains for all passengers, including mobility impaired passengers, is compromised;
- D. The Station is free from any other hazard or event that results in passengers, including mobility impaired passengers, being unable to safely enter and leave

the Station for purposes of accessing Trains, for example, failures with fire life safety systems; and

- E. During any period of time when a Station does not meet the Station Access Standard due to non-compliance with one or more of the standards listed above in subsections (ii)(A) to (ii)(D), Project Co shall make best efforts to mitigate the effects of such non-compliance and to provide, where possible, safe access to Trains for as many passengers as possible.

#### 4.0 Quality Monitoring and Reporting

- (a) Periodically, the City will audit the Project Co's Passenger Station Maintenance documentation and reporting. Failures to maintain documentation and report on Passenger Station Maintenance activities will result in penalties being assessed as described in the Performance Criteria section.
- (b) Maintenance Plans
- (i) Project Co shall at all times maintain complete and updated versions of the Custodial Maintenance Plan, the Corrective Maintenance Plan, and the Preventive Maintenance Plan.
- (ii) Project Co shall follow the requirements set out in Article 1.4 of Appendix A with regard to the drafting, approval, and revisions process for these Maintenance Plans.
- (c) Maintenance Reporting
- (i) Project Co shall report on the status and completion of various Passenger Station Cleaning and Maintenance activities, including Daily Inspection and Cleaning, Weekly and Bi-Annual Custodial, Corrective Maintenance, and Preventive Maintenance.
- (ii) Project Co shall follow the maintenance reporting requirements set out in Article 1.8 of Appendix A with regard to reporting procedures and the Daily, Monthly, and Bi-Annual submittals that are required.

#### 5.0 Performance Criteria

| FE Type  | Category  | Response   | Rectification / Remedial   | Recording Frequency  |
|--|---|--|--|--|
| AF<br>=Availability<br>Failure<br>SF = Service<br>Failure<br>QF = Quality<br>Failure | Major<br>Medium<br>Minor<br>Veh. Avail. = Captured<br>by the Vehicle<br>Availability deduction<br>regime<br>St. Avail = Captured by<br>the Station Availability<br>deduction regime | N/A = Not<br>Applicable<br>Immediate<br>("Immed.") = The<br>total planned travel<br>time in minutes<br>from Blair Station<br>to Tunney's Pasture<br>Station, plus the<br>headway in minutes<br>on the System at the<br>time of the | N/A = Not<br>Applicable<br>ND = Correct by<br>start of service<br>the following<br>day | PR = Per Request<br>PE = Per Event<br>D = Daily<br>W = Weekly<br>M = Monthly<br>Q = Quarterly<br>B = Bi-Annually<br>A = Annually<br>R = Randomly, At<br>Any Moment in Time |

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|  |  | Response. |  |  |
|--|--|-----------|--|--|

| Ref                                    | Parameter  | Failure Type | Category | Resp. Time | Rect. Or Rem. Time | Recording Frequency | Notes  |
|--|--|--------------|----------|------------|--------------------|---------------------|--|
| <i>Facilities Maintenance Services</i> |  |              |          |            |                    |                     |  |
| <b>KPM</b><br><b>A(7)2.0(a)(iv)</b>    | Project Co shall immediately clean or repair any defect that affects the Safety of the public or the Employees of Project Co and the City in accordance with the Custodial Maintenance Standard. | SF           | Major    | Immed.     | 1 hour             | PE                  |  |
| <b>KPM</b><br><b>A(7)2.0(a)(v)</b>     | Project Co shall conduct daily trash removal and general cleaning of frequented areas in accordance with the Daily Custodial Maintenance Standard.   | QF           | Medium   | NA         | ND                 | D                   | Maximum exposure of one QF per day per station.  |
| <b>KPM</b><br><b>A(7)2.0(a)(vi)</b>    | Project Co shall conduct weekly heavy cleaning of interior and frequented areas in accordance with the Weekly Custodial Maintenance Standard.  | SF           | Medium   | NA         | 24 hours           | W                   | Maximum exposure of one QF per day per station.  |
| <b>KPM</b><br><b>A(7)2.0(a)(vii)</b>   | Project Co shall conduct bi-annual heavy cleaning of floor surfaces in accordance with the Bi-Annual Custodial Maintenance Standard.   | SF           | Medium   | NA         | 7 days             | B                   | Maximum exposure of one QF per week per station.   |
| <b>KPM</b><br><b>A(7)2.0(b)(i)</b>     | Project Co shall maintain all Passenger Stations in a state of good repair and working order in accordance with the approved Corrective and Preventive Maintenance Plans.                        | QF           | Major    | NA         | NA                 | R                   | Project Co to be permitted reasonable Remedial Period, based on nature of non-compliance. Maximum exposure of one QF per Remedial Period, per station. |
| <b>KPM</b><br><b>A(7)2.0(c)(iii)</b>   | Escalators shall be maintained in service in accordance with Article 2.0(c)(iii)   | SF           | Major    | 30 Minutes | 4 hours            | PE                  | SF assessed per escalator.   |
| <b>KPM</b><br><b>A(7)2.0(c)(iv)</b>    | Elevators shall be maintained in service in accordance with Article 2.0(c)(iv)   | SF           | Major    | 30 minutes | 4 hours            | PE                  | SF assessed per elevator.  |

## APPENDIX A – ATTACHMENT 8

### TUNNEL MAINTENANCE SERVICES

#### 1.0 Scope of Services

- (a) Project Co shall be responsible for the Custodial, Preventive, and Corrective Maintenance activities on all Tunnels in the System, as well as all related Tunnel components and systems.
- (b) Project Co's obligation for Maintenance of Tunnels includes but is not limited to:
  - (i) Structural maintenance;
  - (ii) Drainage;
  - (iii) Maintenance of active Fire/Life/Safety Systems; and
  - (iv) Maintenance of passive Fire/Life/Safety Systems.

#### 2.0 Service Requirements

- (a) Project Co shall maintain all Tunnel and all Tunnel components and systems within Project Co's responsibility in a state of good repair and working order in accordance with the approved Preventive and Corrective Maintenance Plans.
- (b) Project Co shall maintain all Tunnel and all Tunnel components and systems to ensure that the Fixed Availability Component Standard as provided in Article 3.0(a) is met and that service can be safely and reliably provided.
- (c) Custodial Maintenance
  - (i) Project Co shall perform all Custodial Maintenance activities in the tunnel areas in accordance with the Requirements and Standards described in Attachment 10 Alignment Maintenance Services.
  - (ii) Tunnel Drainage
    - A. Project Co shall maintain all drainage inlets and other structures in the Tunnel in accordance with the Tunnel Drainage Standard.
    - B. Project Co shall ensure that all pumps and other drainage equipment in the Tunnel are fully functional at all times.
    - C. Project Co shall place special focus on ensuring proper drainage at the tunnel portals when performing maintenance of tunnel drainage activities.

## (iii) Passive Fire/Life/Safety Systems

- A. Project Co shall maintain all emergency egress pathways and related components including, but not limited to: walkways, access doors, and emergency signage in the Tunnel.
- B. Project Co shall maintain these emergency egress elements according to the Emergency Egress Standard.

## (iv) Active Fire/Life/Safety Systems

- A. Project Co shall conduct all inspection, maintenance, and testing of all active Fire/Life/Safety protection systems. Active Fire/Life/Safety protection systems include, but are not limited to the following:
  - i Tunnel lighting, including emergency lighting;
  - ii Smoke and fire detection;
  - iii Tunnel ventilation;
  - iv Backup power systems; and
  - v Security systems and intrusion detection.

## (d) Structural Maintenance

- (i) Project Co shall maintain all structural Tunnel elements within Project Co's responsibility in a state of good repair and working order in accordance with the approved Preventive and Corrective Maintenance Plans.
- (ii) Project Co shall prepare and implement plans and procedures for Structural maintenance of Tunnel in the Preventive Maintenance Plan that includes an annual inspection program that ensures the Safety and integrity of the structures.
- (iii) Project Co shall conduct inspections of structures which shall include but not be limited to:
  - A. Detailed visual survey of all support and sub-structure structures;
  - B. Detailed tactile inspection of all support and sub-structure structures; and
  - C. Concrete coring and testing to determine the condition of the concrete.
- (iv) Project Co shall undertake the work set out in Schedule 15-2 and Schedule 15-3 to the Project Agreement on an annual basis or more frequently as may be required and in accordance with any applicable local, provincial, or national requirements.

- (e) Project Co's shall ensure compliance with Schedule 17 – Environmental Obligations.
- (f) Project Co's performance with respect to vandalism and graffiti shall be in accordance with:
  - (i) Appendix A, Attachment 10 – Alignment Maintenance Services, Article 2.0(f) “Vandalism and Graffiti Repair”, Article 3.0(e) “Vandalism and Graffiti Standard”, and Article 5.0 “Performance Criteria”, and for further certainty, Project Co's rectification and/or response times and the assessment of Service Failure Points; and
  - (ii) Appendix A, Attachment 16 – Vandalism and Graffiti.

### 3.0 Service Standards

- (a) Fixed Component Availability Standard
  - (i) Any Fixed Component in the System (including Tunnel structures, drainage features, and Fire/Life/Safety Systems) is considered to not meet the Standard if any Defect or Deficiency is identified in that Fixed Component that:
    - A. affects the Safety of the public, Passengers or Driver in a manner contrary to the Safety Management System;
    - B. adversely affects Operations such that the System does not meet the Operation Requirements and Specifications;
    - C. free from any unsafe accumulation of ice and snow, and for clarity accumulation of ice and snow shall be deemed to be “unsafe” if not in compliance with the Snow and Ice Clearing Standard including safe access to all areas of the buildings and facilities;
    - D. illumination and/or lighting levels are not in compliance with Schedule 15-2; or benchmarking levels as otherwise determined prior to Revenue Service; or
    - E. Any damage as a result of vandalism and/or graffiti has not been repaired as required and specified elsewhere.
- (b) Tunnel Drainage Standard
  - (i) Any of the following conditions shall constitute a Tunnel Drainage failure:
    - A. Any debris blocking a drainage inlet or other drainage structure; or
    - B. Any ponding and/or standing water within the Tunnel.
- (c) Passive Fire/Life/Safety Systems Standard
  - (i) At all times, all emergency egress pathways and related components in the Tunnel (including, but not limited to walkways, access doors, and emergency signage) shall be kept clear, functional, and available for use in the event of an emergency.



**Ottawa Light Rail Transit Project****Schedule 15-3 to Project Agreement  
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- (i) At all times, the various Active Fire/Life/Safety systems elements should be inspected, maintained, and tested to ensure they function according to the requirements of Schedule 15-2 and Schedule 15-3. Project Co will be responsible to test the Active Fire/Life/Safety systems no less than monthly. In addition, they will provide a written report to the City detailing the proper working condition of each element of the system. Any defects must be detailed in the report, which must include an acceptable repair schedule.

**4.0 Quality Monitoring and Reporting**

- (a) Periodically, the City will audit the Project Co's Tunnel Maintenance documentation and reporting. Failures to maintain documentation and report on Tunnel Maintenance activities will result in penalties being assessed as described in the Performance Criteria section.

**(b) Maintenance Plans**

- (i) Project Co shall at all times maintain complete and updated versions of the Custodial Maintenance Plan, the Corrective Maintenance Plan, and the Preventive Maintenance Plan.
- (ii) Project Co shall follow the requirements set out in Article 1.4 of Appendix A with regard to the drafting, approval, and revisions process for these Maintenance Plans.

**(c) Maintenance Reporting**

- (i) Project Co shall report on the status and completion of various Tunnel Maintenance activities.
- (ii) Project Co shall follow the maintenance reporting requirements set out in Article 1.8 of Appendix A with regard to reporting procedures and the Daily, Monthly, and Annual submittals that are required.

**5.0 Performance Criteria**

| FE Type  | Category   | Response  | Rectification / Remedial   | Recording Frequency  |
|--|--|---|--|--|
| AF<br>=Availability<br>Failure<br>SF = Service<br>Failure<br>QF = Quality<br>Failure | Major<br>Medium<br>Minor<br>Veh. Avail. = Captured<br>by the Vehicle<br>Availability deduction<br>regime<br>St. Avail. = Captured by<br>the Station Availability<br>deduction regime | N/A = Not<br>Applicable<br>Immediate<br>("Immed.") = The<br>total planned travel<br>time in minutes<br>from Blair Station<br>to Tunney's Pasture<br>Station, plus the<br>headway in minutes<br>on the System at the<br>time of the<br>Response. | N/A = Not<br>Applicable<br>ND = Correct by<br>start of service<br>the following<br>day | PR = Per Request<br>PE = Per Event<br>D = Daily<br>W = Weekly<br>M = Monthly<br>Q = Quarterly<br>B = Bi-Annually<br>A = Annually<br>R = Randomly, At Any<br>Moment in Time |

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| Ref                                    | Parameter  | Failure Type                          | Category | Resp. Time | Rect. Or Rem. Time | Recording Frequency | Notes   |
|--|--|---------------------------------------|----------|------------|--------------------|---------------------|---|
| <i>Tunnel Maintenance Services</i>     |  |                                       |          |            |                    |                     |   |
| <b>KPM</b><br><b>A(8)2.0(a)</b>        | Project Co shall maintain all Tunnel and all Tunnel components and systems within Project Co's responsibility in a state of good repair and working order in accordance with the approved Preventive and Corrective Maintenance Plans. | QF                                    | Major    | NA         | NA                 | R                   | Project Co to be permitted reasonable Remedial Period, based on nature of non-compliance. |
| <b>KPM</b><br><b>A(8)2.0(c)(i)</b>     | Project Co shall perform all Custodial Maintenance activities in the tunnel areas in accordance with the Requirements and Standards described in Attachment 10 Alignment Maintenance Services.   | As per relevant KPM in Attachment 10. |          |            |                    |                     |   |
| <b>KPM</b><br><b>A(8)2.0(c)(ii)(A)</b> | Project Co shall maintain all drainage inlets and other structures in the Tunnel in accordance with the Tunnel Drainage Standard.  | SF                                    | Medium   | 2 hours    | 24 hours           | PE                  | SF assessed per defect/issue.   |
| <b>KPM</b><br><b>A(8)2.0(c)(ii)(B)</b> | <b>Project</b> Co shall ensure that all pumps and other drainage equipment in the Tunnel are fully functional at all times.  | SF                                    | Medium   | 2 hours    | 24 hours           | PE                  | SF assessed per defect/issue.   |
| <b>KPM</b><br><b>A(8)2.0(d)(f)</b>     | Project Co shall perform maintenance activities on any vandalism within the Tunnel in accordance with the vandalism and graffiti control requirements in Attachment 10 Alignment Maintenance Services.                                 | As per relevant KPM in Attachment 10. |          |            |                    |                     |   |
| <b>KPM</b><br><b>A(8)2.0(c)(iii)</b>   | Project Co shall comply with the Passive Fire/Life/Safety Systems Standards  | QF                                    | Major    | NA         | 30 minutes         | PE                  | SF assessed per defect/issue.   |
| <b>KPM</b><br><b>A(8)2.0(c)(vi)</b>    | Project Co shall comply with the Active Fire/Life/Safety Systems Standards   | QF                                    | Major    | Immed.     | 48 hours           | PE                  | SF assessed per defect/issue.   |

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| Ref  | Parameter  | Failure Type | Category | Resp. Time | Rect. Or Rem. Time | Recording Frequency | Notes   |
|--|--|--------------|----------|------------|--------------------|---------------------|---|
| <b>KPM</b><br><b>A(8)2.0(d)(i)</b>           | Project Co shall maintain all structural Tunnel elements within Project Co's responsibility in a state of good repair and working order in accordance with the approved Preventive and Corrective Maintenance Plans. | QF           | Major    | NA         | NA                 | R                   | Project Co to be permitted reasonable Remedial Period, based on nature of non-compliance. |
| <b>KPM</b><br><b>A(8)2.0(d)(iii) to (iv)</b> | Project Co shall conduct inspections of structures in compliance with Articles 2.0(d) (iii) and (iv)   | QF           | Major    | NA         | 1 month            | A                   | Maximum exposure of one QF per month.   |

**APPENDIX A – ATTACHMENT 9**  
**STRUCTURE MAINTENANCE SERVICES**

**1.0 Scope of Services**

- (a) Project Co shall be responsible for maintaining structures, unless as identified otherwise in the Maintenance Responsibility Table.
- (b) Project Co's obligation for Maintenance of the Fixed Facilities includes, without limitation, all structural elements, including bridges, retaining walls, drainage outlets, culverts and other fixed structures in such a manner as to meet the minimum Bridge Condition Index as prescribed in Appendix B, and ensuring the structures integrity and durability is not compromised.

**2.0 Service Requirements**

- (a) Project Co shall maintain all bridges and structures within Project Co's responsibility in a state of good repair and working order in accordance with the approved Preventive and Corrective Maintenance Plans.
- (b) Project Co shall prepare and implement plans and procedures for Structural maintenance in the Preventive Maintenance Plan that includes an annual inspection program that ensures the Safety and integrity of the structures.
- (c) Project Co shall maintain all bridges and structures to meet the Fixed Component Availability Standard.
- (d) Project Co shall conduct inspections of structures which shall include but not be limited to:
  - (i) Detailed visual survey of all support and sub-structure structures;
  - (ii) Detailed tactile inspection of all support and sub-structure structures;
  - (iii) Underwater inspection; and
  - (iv) Destructive and / or non-destructive testing to determine the condition of the structural component.
- (e) Project Co shall undertake the work set out in Schedule 15-2 and Schedule 15-3 to the Project Agreement on an annual basis or more frequently as may be required and in accordance with the requirements provided in Appendix B.
- (f) Project Co's shall ensure compliance with Schedule 17 – Environmental Obligations.
- (g) Project Co's performance with respect to vandalism and graffiti shall be in accordance with:

- (i) Appendix A, Attachment 10 – Alignment Maintenance Services, Article 2.0(f) “Vandalism and Graffiti Repair”, Article 3.0(e) “Vandalism and Graffiti Standard”, and Article 5.0 “Performance Criteria”, and for further certainty, Project Co’s rectification and/or response times and the assessment of Service Failure Points; and
- (ii) Appendix A, Attachment 16 – Vandalism and Graffiti.

### **3.0 Service Standards**

- (a) Any Fixed Component in the System (including bridges and structures) is considered to not meet the Standard if any Defect or Deficiency is identified in that Fixed Component that:
  - (i) affects the Safety of the public, Passengers or Driver in a manner contrary to the Safety Management System;
  - (ii) adversely affects Operations such that the System does not meet the Operation Requirements and Specifications;
  - (iii) free from any unsafe accumulation of ice and snow, and for clarity accumulation of ice and snow shall be deemed to be “unsafe” if not in compliance with the Snow and Ice Clearing Standard including safe access to all areas of the buildings and facilities;
  - (iv) illumination and / or lighting levels are not in compliance with Schedule 15-2; or benchmarking levels as otherwise determined prior to Revenue Service; or
  - (v) any damage as a result of vandalism and / or graffiti has not been repaired as required and specified elsewhere.

### **4.0 Quality Monitoring and Reporting**

- (a) Periodically, the City will audit the Project Co’s Structure Maintenance documentation and reporting. Failures to maintain documentation and report on Structure Maintenance activities will result in penalties being assessed as described in the Performance Criteria section.
- (b) Maintenance Plans
  - (i) Project Co shall at all times maintain complete and updated versions of the Custodial Maintenance Plan, the Corrective Maintenance Plan, and the Preventive Maintenance Plan.
  - (ii) Project Co shall follow the requirements set out in Article 1.4 of Appendix A with regard to the drafting, approval, and revisions process for these Maintenance Plans.
- (c) Maintenance Reporting
  - (i) Project Co shall report on the status and completion of various Structure Maintenance activities.

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- (ii) Project Co shall follow the maintenance reporting requirements set out in Article 1.8 of Appendix A with regard to reporting procedures and the Daily, Monthly, and Annual submittals that are required.

## 5.0 Performance Criteria

| FE Type  | Category  | Response  | Rectification / Remedial   | Recording Frequency   |
|--|---|---|--|---|
| AF<br>=Availability<br>Failure<br>SF = Service<br>Failure<br>QF = Quality<br>Failure | Major<br>Medium<br>Minor<br>Veh. Avail. = Captured by the Vehicle<br>Availability deduction regime<br>St. Avail = Captured by the Station Availability deduction regime | N/A = Not Applicable<br>Immediate<br>("Immed.") = The total planned travel time in minutes from Blair Station to Tunney's Pasture Station, plus the headway in minutes on the System at the time of the Response. | N/A = Not Applicable<br>ND = Correct by start of service the following day | PR = Per Request<br>PE = Per Event<br>D = Daily<br>W = Weekly<br>M = Monthly<br>Q = Quarterly<br>B = Bi-Annually<br>A = Annually<br>R = Randomly, At Any Moment in Time |

| Ref                                     | Parameter  | Failure Type | Category | Resp. Time | Rect. Or Rem. Time | Recording Frequency | Notes  |
|---|--|--------------|----------|------------|--------------------|---------------------|--|
| <i>Structure Maintenance Services</i>   |  |              |          |            |                    |                     |  |
| <b>KPM</b><br><b>A(9)2.0(a)</b>         | Project Co shall maintain all bridges and structures within Project Co's responsibility in a state of good repair and working order in accordance with the approved Preventive and Corrective Maintenance Plans. | QF           | Major    | NA         | NA                 | R                   | Project Co to be permitted reasonable Remedial Period, based on nature of non-compliance. QF assessed per defect/issue.    |
| <b>KPM</b><br><b>A(9)2.0(d) and (e)</b> | Project Co shall conduct inspections of structures in compliance with Articles 2.0(d) and (e)  | QF           | Major    | NA         | 1 month            | A                   | Project Co to be permitted reasonable Remedial Period, based on nature of non-compliance. QF assessed per inspection type. |



**APPENDIX A – ATTACHMENT 10**  
**ALIGNMENT MAINTENANCE SERVICES**

**1.0 Scope of Services**

- (a) Project Co shall be responsible for the Custodial, Preventive, and Corrective Maintenance activities for the Alignment Maintenance activities including but not limited to:
  - (i) Vegetation Control, including Grass, Weed, and Tree and Shrub Control, including Green roof Station(s);
  - (ii) Debris Collection and Removal;
  - (iii) Drainage Control;
  - (iv) Vandalism and Graffiti Repair, including and as indicated in Attachments 3 to 9;
  - (v) Maintenance of Fencing; and
  - (vi) Snow and Ice Removal, including and as indicated in Attachments 3 to 9.

**2.0 Service Requirements**

- (a) Project Co shall conduct all Custodial, Corrective, and Preventive Maintenance activities along the System Alignment unless assigned to others in the Maintenance Responsibility Table.
- (b) The following sections provide details about Project Co's responsibilities for specific maintenance types.
- (c) Vegetation Control
  - (i) Project Co shall perform Grass and Weed Control in order to:
    - A. maintain the condition of the ballast;
    - B. ensure sight distances;
    - C. provide unobstructed view;
    - D. control noxious weeds (The Weed Control Act and Regulations);
    - E. reduce drainage impairment;
    - F. improve turf; and
    - G. improve landscape and overall aesthetics.

## (ii) Grass Control

- A. Project Co shall conduct mowing or trimming operations to control grass growth in accordance with the Vegetation Control Standard.
- B. Project Co shall conduct seeding, sodding, or planting to control erosion in accordance with the Vegetation Control Standard.
- C. Project Co shall be responsible for identifying the defect and performing remedial actions in accordance with the Vegetation Control Standard and the timeframes established in the Performance Indicators. Notwithstanding, the defect, timelines and remedial actions identified, prevailing legislation and City by-laws shall take precedence if they are more restrictive.
- D. Project Co shall perform inspections during growing seasons to ensure compliance included herein, Schedule 15-2, and the Project Agreement.

## (iii) Weed Control

- A. Project Co shall conduct weed control operations to eradicate or control undesirable herbaceous vegetation (including grass) using integrated management techniques.
- B. Project Co shall remove, by mechanical mowing or chemical spraying (in accordance with prevailing legislation and City by-laws), deficient weed growth in accordance with the Vegetation Control Standard.
- C. Project Co shall be responsible for identifying the defect and performing remedial actions in accordance with the Vegetation Control Standard and the timeframes established in the Performance Indicators. Notwithstanding, the defect, timelines and remedial actions identified, prevailing legislation and City by-laws shall take precedence if they are more restrictive.
- D. Project Co shall perform inspections during growing seasons to ensure compliance with the requirements included herein, Schedule 15-2, and the Project Agreement.

## (iv) Tree and Shrub Maintenance and Control

- A. Project Co shall perform Tree and Shrub Control in order to:
  - i maintain a safe environment;
  - ii maintain the condition of the ballast;
  - iii prevent fires;
  - iv ensure sight distances;

- v prevent encroachment into track clearance envelope;
    - vi maintain clearance to overhead catenary system;
    - vii provide unobstructed view; and
    - viii improve landscape and overall aesthetics.
  - B. Project Co shall conduct tree and shrub maintenance consisting of various activities including, but not limited to, trimming, fertilizing and watering, as required to keep trees and shrubs healthy and in control and in accordance with:
    - i the Vegetation Control Standard; and
    - ii accepted horticultural and arboricultural standards.
  - C. Project Co shall conduct ongoing Preventive Maintenance on trees and shrubs during the Maintenance Term.
  - D. Project Co shall be responsible for identifying the defect and performing remedial actions in accordance with the Vegetation Control Standard and the timeframes established in the Performance Indicators. Notwithstanding, the defect, timelines and remedial actions identified, prevailing legislation and City by-laws shall take precedence if they are more restrictive.
  - E. Project Co shall perform inspections which shall be carried out by a qualified professional with the knowledge of tree and shrub maintenance practices and identification and diagnosis of diseases and defects. The qualified professional must have a minimum of three year's experience in the field of tree and shrub maintenance.
- (d) Debris Collection and Disposal
- (i) Project Co shall conduct all debris collection and disposal in order to:
    - A. prevent damage to vehicles;
    - B. equipment and property;
    - C. manage environmental, commercial, residential and tourism concerns; and
    - D. maintain the image of the LRT and the landscape aesthetics.
  - (ii) Project Co shall collect and dispose of objectionable items such as rubbish (garbage, cans, bottles, paper, plastic products, etc.), dead animals, batteries, tires, metal products, containers, rocks, building materials, etc., in according with the Debris Collection and Disposal Standard Attachment 10 Article 3(b).

- (iii) Project Co shall perform all debris collection and disposal activities in accordance with local, provincial, and national Health and Safety regulations and at least on a weekly basis. In the case of a dead animal carcass, Project Co shall remove within 24 hours of becoming aware of such debris.
  - (iv) Project Co shall ensure that debris is promptly removed from the Custodial Maintenance Areas.
  - (v) Project Co shall immediately notify TSCC and the police of any suspicious items that may have been placed with the specific intent to cause public harm or property damage.
  - (vi) Project Co shall be responsible for identifying the defect and performing remedial actions in accordance with the Debris Collection and Disposal Standard and the timeframes established in the Performance Indicators. Notwithstanding, the defect, timelines and remedial actions identified, prevailing legislation and City by-laws shall take precedence if they are more restrictive.
- (e) Fences
  - (i) Project Co shall provide and maintain perimeter security fencing, rectify Safety Deficiencies and perform Custodial Maintenance with respect to the Alignment in accordance with the Fencing Standard.
  - (ii) Project Co shall maintain all of the fencing including physical barriers made of chain link fence, farm fence, wooden materials, metal panels, composite materials, concrete, brick and various types of Noise walls owned by the City within the Alignment and Maintenance and Storage Facility under the Project Agreement (including Schedule 15-3).
  - (iii) Project Co shall be responsible for identifying the defect and performing remedial actions in accordance with the Fencing Standard and the timeframes established in the Performance Indicators.
  - (iv) Project Co shall immediately take temporary and / or permanent measures if considered a Security or Safety concern. Notwithstanding, the defect, timelines and remedial actions identified, prevailing legislation and city by-laws shall take precedence if they are more restrictive.
- (f) Vandalism and graffiti repair
  - (i) Project Co shall remove all graffiti and repair all vandalism to promote the LRT image and ensure the safe operation of the LRT.
  - (ii) Project Co shall remedy graffiti and vandalism on the System in accordance with the Vandalism and Graffiti Standard.

- (iii) Project Co shall cover or remove offensive material and graffiti by painting over, cleaning, or mechanical removal in accordance with the Vandalism and Graffiti Standard.
  - (iv) Project Co shall repair any infrastructure or components damaged by vandalism in accordance with the Vandalism and Graffiti Standard. Notwithstanding the requirements provided in Attachment 16 – Vandalism and Graffiti, Project Co shall present proposals to the City for approval or repair or replacement of equipment or parts damaged by vandalism to LRT infrastructure, equipment, or landscaping before proceeding with repairs.
  - (v) Project Co shall be responsible for identifying the defect and/or upon becoming aware performing remedial actions in accordance with the Vandalism and Graffiti Standard and the timeframes established in the Performance Criteria. Notwithstanding, the defect, timelines and remedial actions identified, prevailing legislation and City by-laws shall take precedence if they are more restrictive.
- (g) Drainage Control
  - (i) Project Co will inspect and clean all drainage culverts, outlets and ditches to ensure they are not blocked and functioning as intended in accordance with the Drainage Control Standard.
  - (ii) Project Co will remove any vegetation impeding proper drainage in accordance with the Drainage Control Standard.
  - (iii) Project Co shall conduct efforts to eliminate ponding and/or standing water, in accordance with:
    - A. the City of Ottawa program to control the spread of the West Nile Virus; and
    - B. the Drainage Control Standard.
  - (iv) Project Co shall undertake formal drainage design and construction treatments in persistent problem areas to eliminate the water ponding/standing concerns, in accordance with Project Agreement including Schedules 15-2 and this Schedule 15-3.
  - (v) In response to ponding and/or standing water during the Spring and Summer months, Project Co shall notify the City, such that the City will provide remedial measures if necessary, in accordance with its West Nile Virus monitoring and treatment plans.
- (h) Snow and Ice Clearing, Sanding, De-Icing and Removal
  - (i) Project Co shall perform all ice and snow clearing and removal services for the System in accordance with the Snow and Ice Removal Standard.

- (ii) Project Co shall perform all snow and ice clearing, de-icing and removal (including the application of other ice melt products and / or use of other means and methods for meeting the Snow and Ice Removal Standard) in order to:
  - A. ensure the Safety of Driver, passengers and pedestrians throughout the System, except in the areas as otherwise identified in the Maintenance Responsibility Table;
  - B. permit the safe operation of Vehicles on the System in accordance with the Safety Management System, designated emergency evacuation routes, and the Operational Requirements and Specifications. This includes the clearing and removal of snow and ice on the Tracks, turnouts, and switches and Overhead Catenary System as may be required to ensure safe operation of the Vehicles; and
  - C. permit safe access to the System by Drivers, Passengers and pedestrians, and for further certainty to ensure compliance with the Station Access Standard.
- (iii) Project Co shall coordinate with the City when operations outside of Revenue Hours are necessary to prevent the accumulation of snow on the Tracks and ice on the Overhead Catenary System.
- (iv) Project Co shall have available equipment for plowing / clearing the Tracks when necessary.
- (v) At the daily meeting prior to an anticipated weather event, Project Co shall review with the City, Project Co's weather event policies and procedures, including but not limited to:
  - A. Forecasted severity of the weather event;
  - B. Project Co's resources allocated to address the weather event and in maintaining compliance with the Standard along with the Safe operation of the System;
  - C. Project Co's designated Employee(s) responsible for reporting the progress of performance prior to, during, and after the weather event; and
  - D. Project Co shall be responsible to coordinate with the City and other third party service providers.
- (vi) At the daily meeting following the storm event, Project Co shall review with the City, Project Co's performance in meeting the Standard.
- (i) Project Co's shall ensure compliance with Schedule 17 – Environmental Obligations.

### **3.0 Service Standards**

- (a) Custodial Maintenance Standard



- (i) The Alignment Maintenance Services shall fail to meet the Custodial Maintenance Standard if:
  - A. Any condition exists that impacts Public Safety or the Safety of the Employees of Project Co and the City or fails to comply with the Safety Management System, including:
    - i any unsafe accumulation of ice and snow, and for clarity accumulation of ice and snow shall be deemed to be “unsafe” if not in compliance with the Snow and Ice Clearing Standard including safe access to all areas of the Alignment designated for emergency evacuation routes; and
    - ii illumination and / or lighting levels are not in compliance with Schedule 15-2; or benchmarking levels as otherwise determined prior to Revenue Service.
- (b) Vegetation Control Standard
  - (i) Grass Control Standard
    - A. The following areas and heights of grass growth shall constitute a grass control deficiency to be corrected by Project Co:
      - i Any grass growing along Tracks within ballast and shoulder areas and between pavement or concrete cracks;
      - ii Any grass in urban areas, areas adjacent to residential homes or manicured lawns and at the Maintenance and Storage Facility, exceeding 100mm in height;
      - iii Any grass outside of urban areas, areas away from residential homes and manicured lawns exceeding 300mm in height; or
      - iv Locations where lack of vegetation is causing erosion.
  - (ii) Weed Control Standard
    - A. The following areas of weed growth shall constitute a weed control deficiency to be corrected by Project Co:
      - i Weeds growing along Tracks within ballast and shoulder areas and between pavement or concrete cracks;
      - ii Noxious weeds that are identified through a weed control order or by-law;
      - iii Noxious weeds that are identified to pose a negative economic impact to horticultural, agricultural and residential land uses; or

- iv Weeds impeding drainage or contributing to erosion by destroying desirable groundcovers.
- (iii) Tree and Shrub Control Standard
  - A. The following types of tree and shrub growth shall constitute a tree and shrub control deficiency to be corrected by Project Co:
    - i dead trees and shrubs;
    - ii evidence of disease or pests;
    - iii any broken and damaged trees, limbs or branches;
    - iv limbs or branches encroaching on track clearance envelope;
    - v limbs or branches encroaching on overhead catenary system; or
    - vi any uncontrolled areas of growth such as wild brush areas, or growth encroaching on public areas.
- (c) Debris Collection and Disposal Standard
  - (i) The presence of any of the following shall constitute a debris collection deficiency to be corrected by Project Co:
    - A. any debris within the Alignment that remains after one week from when Project Co becomes aware of the presence of the debris:
      - i all debris along Tracks within ballast, shoulder areas, in the Alignment and at Maintenance and Storage Facility;
      - ii any debris along Tracks within ballast and shoulder areas that may affect the Safety or operation of the LRT; or
      - iii any debris that may present a public Safety concern, environmental or property damage.
    - B. any dead animal carcasses within the System Alignment that are not removed within 24 hours of becoming aware.
- (d) Fencing Standard
  - (i) Any of the following shall constitute a fencing deficiency to be corrected by Project Co:
    - A. any damaged fence not owned by the City;
    - B. any damage to fence owned by the City; or
    - C. damaged or defective personnel access gates or locks.

## (e) Vandalism and Graffiti Standard

- (i) All vandalism and graffiti must be covered or removed by painting over, cleaning, or mechanical removal within 24 hours of Project Co identifying and / or becoming aware of the defect.
- (ii) Project Co shall report any vulgar, hate, racist, or gang related vandalism and graffiti to the Transit Law Enforcement Unit immediately. The City will provide a quick reference guide to Project Co for recognizing hateful symbols and text, of which may be revised by the City from time to time.
- (iii) If considered vulgar hateful, racist, or gang related the defect shall not be covered or removed until the City's Police or Transit Law Enforcement Unit has conducted a crime scene investigation and subsequent release of the crime scene for Project Co's remedial action.
- (iv) If permanent repairs cannot be completed with the initial response time, any infrastructure or components damaged by vandalism and graffiti must be repaired within the Remedial Period (time required to complete permanent repairs as proposed by Project Co, acting reasonably and based on the nature and extent of the damage, with the time being determined from when Project Co identified and / or became aware of the defect until such time that permanent repairs are complete), and notwithstanding the requirements of Attachment 16 – Vandalism and Graffiti, after City approval of the proposed remedy.
- (v) In all cases, if public Safety or the continued operation of the System at the prescribed service levels is a concern, temporary repairs shall be made immediately.

## (f) Drainage Control Standard

- (i) Any of the following conditions shall constitute a Drainage Control Deficiency to be corrected by Project Co:
  - A. Any vegetation growth impeding drainage;
  - B. Any debris blocking a drainage culvert, outlet, or ditch; or
  - C. Any ponding and/or standing water during the Spring and Summer months.

## (g) Snow and Ice Removal Standard

- (i) During the weather event, the following shall constitute snow and ice deficiencies on the System to be corrected by Project Co:
  - A. any accumulation in excess of trace amounts at the Station Platforms, public areas (where Project Co is responsible for surface maintenance), and for further certainty Project Co is responsible for snow and ice clearing/removal on walking surfaces within 3 meters of the entrance and / or building facade for an entrance;

- B. any snow and ice accumulation that impairs the operation of the System, including but not limited to the following:
  - i on the Tracks;
  - ii turnouts and switches;
  - iii Overhead Catenary System;
  - iv MSF;
  - v designated emergency evacuation routes; or
  - vi as may be required to ensure safe operation of the System.
- (ii) Prior to the start of the next Revenue Service day after the weather event has ended, the following shall constitute snow and ice deficiencies on the System:
  - A. any accumulation in excess of trace amounts at the Station Platforms, public areas (where Project Co is responsible for surface maintenance), and for further certainty Project Co is responsible for snow and ice clearing/removal on walking surfaces within 3 meters of the entrance and/or building facade for an entrance;
  - B. any snow and ice accumulation along the Tracks, Guideway, and MSF that impairs the operation of the System.

#### **4.0 Quality Monitoring and Reporting**

- (a) Periodically, the City will audit the Project Co's Alignment Maintenance documentation and reporting. Failures to maintain documentation and report on Alignment Maintenance activities will result in penalties being assessed as described in the Performance Criteria section.
- (b) Maintenance Plans
  - (i) Project Co shall at all times maintain complete and updated versions of the Custodial Maintenance Plan, the Corrective Maintenance Plan, and the Preventive Maintenance Plan.
  - (ii) Project Co shall follow the requirements set out in Article 1.4 of Appendix A with regard to the drafting, approval, and revisions process for these Maintenance Plans.
- (c) Maintenance Reporting
  - (i) Project Co shall report on the status and completion of various Alignment Maintenance activities.
  - (ii) Project Co shall follow the maintenance reporting requirements set out in Article 1.8 of Appendix A with regard to reporting procedures and the Daily, Monthly, and Annual submittals that are required.

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## 5.0 Performance Criteria

| FE Type  | Category   | Response  | Rectification / Remedial   | Recording Frequency   |
|--|--|---|--|---|
| AF<br>=Availability<br>Failure<br>SF = Service<br>Failure<br>QF = Quality<br>Failure | Major<br>Medium<br>Minor<br>Veh. Avail. = Captured by the Vehicle Availability deduction regime<br>St. Avail = Captured by the Station Availability deduction regime | N/A = Not Applicable<br>Immediate<br>("Immed.") = The total planned travel time in minutes from Blair Station to Tunney's Pasture Station, plus the headway in minutes on the System at the time of the Response. | N/A = Not Applicable<br>ND = Correct by start of service the following day | PR = Per Request<br>PE = Per Event<br>D = Daily<br>W = Weekly<br>M = Monthly<br>Q = Quarterly<br>B = Bi-Annually<br>A = Annually<br>R = Randomly, At Any Moment in Time |

| Ref  | Parameter  | Failure Type | Category | Resp. Time | Rect. Or Rem. Time | Recording Frequency | Notes   |
|--|--|--------------|----------|------------|--------------------|---------------------|---|
| <i>Alignment Maintenance Services</i>      |  |              |          |            |                    |                     |   |
| <b>KPM</b><br><b>A(10)3.0(a)</b>           | Project Co shall carry out Custodial Maintenance in accordance with Article 3.0(a)   | SF           | Minor    | NA         | 1 day              | PE                  | SF assessed per issue not in compliance with Standard.  |
| <b>KPM</b><br><b>A(10)2.0(c)(ii)</b>       | Project Co shall carry out Grass Control in accordance with Article 2.0(c)(ii) and the Vegetation Control Standard.  | SF           | Minor    | NA         | 7 days             | PE                  | SF assessed per segment to a maximum exposure of 10 segments in non-compliance at any one time. |
| <b>KPM</b><br><b>A(10)2.0(c)(iii)</b>      | Project Co shall carry out Weed Control in accordance with Article 2.0(c)(iii) and the Vegetation Control Standard.  | SF           | Minor    | NA         | 7 days             | PE                  | SF assessed per segment to a maximum exposure of 10 segments in non-compliance at any one time. |
| <b>KPM</b><br><b>A(10)2.0(c)(iv)(B)(i)</b> | Project Co shall carry out Tree and Shrub Maintenance and Control in accordance with the Vegetation Control Standard, Item A(i) (free from dead trees and shrubs).         | SF           | Minor    | NA         | NA                 | PE                  | SF assessed per segment to a maximum exposure of 10 segments in non-compliance at any one time. |
| <b>KPM</b><br><b>A(10)2.0(c)(iv)(B)(i)</b> | Project Co shall carry out Tree and Shrub Maintenance and Control in accordance with the Vegetation Control Standard, Item A(ii) (free from evidence of disease or pests). | SF           | Minor    | NA         | NA                 | PE                  | SF assessed per segment to a maximum exposure of 10 segments in non-compliance at any one time. |

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| Ref  | Parameter   | Failure Type | Category | Resp. Time | Rect. Or Rem. Time | Recording Frequency | Notes   |
|--|---|--------------|----------|------------|--------------------|---------------------|---|
| <b>KPM</b><br><b>A(10)2.0(c)(iv)(B)(i)</b> | Project Co shall carry out Tree and Shrub Maintenance and Control in accordance with the Vegetation Control Standard, Item A(iii) (free from broken and damaged trees, etc.).   | SF           | Minor    | NA         | 14 days            | PE                  | SF assessed per segment to a maximum exposure of 10 segments in non-compliance at any one time. |
| <b>KPM</b><br><b>A(10)2.0(c)(iv)(B)(i)</b> | Project Co shall carry out Tree and Shrub Maintenance and Control in accordance with the Vegetation Control Standard, Item A(iv) (free from uncontrolled areas of growth etc.). | SF           | Minor    | NA         | 28 days            | PE                  | SF assessed per segment to a maximum exposure of 10 segments in non-compliance at any one time. |
| <b>KPM</b><br><b>A(10)2.0(c)(iv)(C)</b>    | Project Co shall conduct ongoing Preventive Maintenance on trees and shrubs during the Maintenance Term as required by Article 2.0 (c)(iv)(C)                                   | QF           | Minor    | NA         | NA                 | R                   | SF assessed per segment to a maximum exposure of 10 segments in non-compliance at any one time. |
| <b>KPM</b><br><b>A(10)2.0(d)(ii)</b>       | Project Co shall carry out Debris Collection and Disposal in accordance with Article 2.0(d)(ii) and the Debris Collection and Disposal Standard.                                | SF           | Major    | NA         | NA                 | PE                  | SF assessed per segment to a maximum exposure of 10 segments in non-compliance at any one time. |
| <b>KPM</b><br><b>A(10)2.0(d)(iv)</b>       | Project Co shall ensure that debris is promptly removed from the Custodial Maintenance Areas.   | SF           | Major    | NA         | 4 hours            | PE                  | SF assessed per segment to a maximum exposure of 10 segments in non-compliance at any one time. |
| <b>KPM</b><br><b>A(10)2.0(d)(v)</b>        | Project Co shall immediately notify TSCC and the police of any suspicious items that may have been placed with the specific intent to cause public harm or property damage.     | QF           | Major    | NA         | NA                 | PE                  | Maximum exposure of 1 QF per incident.  |
| <b>KPM</b><br><b>A(10)2.0(e)(i)</b>        | Project Co shall carry out maintenance of fencing in accordance with Article 2.0(e)(i) and the Fencing Standard.  | SF           | Minor    | NA         | 7 days             | PE                  | SF assessed per segment to a maximum exposure of 10 segments in non-compliance at any one time. |



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| Ref                                  | Parameter   | Failure Type | Category | Resp. Time | Rect. Or Rem. Time | Recording Frequency | Notes   |
|--------------------------------------|---|--------------|----------|------------|--------------------|---------------------|---|
| <b>KPM</b><br><b>A(10)2.0(e)(iv)</b> | Project Co shall immediately take temporary and / or permanent measures if an identified defect is considered a Security or Safety concern.   | SF           | Major    | Immed.     | 4 hours            | PE                  | SF assessed per segment to a maximum exposure of 10 segments in non-compliance at any one time.   |
| <b>KPM</b><br><b>A(10)2.0(f)(ii)</b> | Project Co shall remedy all vulgar or offensive graffiti and vandalism in accordance with the Graffiti and Vandalism Standard.  | SF           | Medium   | Immed      | 24 hours           | PE                  | SF assessed per area/incident of graffiti.  |
| <b>KPM</b><br><b>A(10)2.0(f)(ii)</b> | Project Co shall repair any infrastructure or components damaged by vandalism in accordance with the Graffiti and Vandalism Standard.   | SF           | Medium   | NA         | ND                 | PE                  | SF assessed per area/incident of vandalism and graffiti. Project Co to be permitted reasonable Remedial Period, based on nature and extent of damage. |
| <b>KPM</b><br><b>A(10)2.0(f)(ii)</b> | Project Co shall repair any infrastructure or components damaged by vandalism, where public safety or continuation of Service is a concern, in accordance with the Graffiti and Vandalism Standard. | SF           | Major    | Immed      | 4 hours            | PE                  | SF assessed per area/incident of vandalism.   |
| <b>KPM</b><br><b>A(10)2.0(g)(i)</b>  | Project Co will inspect and clean all drainage culverts, outlets and ditches to ensure they are not blocked and functioning as intended in accordance with the Drainage Control Standard.           | SF           | Minor    | NA         | 7 days             | PE                  | SF assessed per defect/issue to a maximum exposure of 10 defects/issues at any one time.  |
| <b>KPM</b><br><b>A(10)2.0(g)(ii)</b> | Project Co will remove any vegetation impeding proper drainage in accordance with the Drainage Control Standard.  | SF           | Minor    | NA         | 7 days             | PE                  | SF assessed per defect/issue to a maximum exposure of 10 defects/issues at any one time.  |
| <b>KPM</b><br><b>A(10)2.0(g)(v)</b>  | In response to ponding and/or standing water during the Spring and Summer months, Project Co shall notify the City.   | QF           | Major    | NA         | NA                 | PE                  | Maximum exposure of 1 QF per incident.  |
| <b>KPM</b><br><b>A(10)2.0(h)(iv)</b> | Project Co shall have available equipment for plowing / clearing the Tracks when necessary.   | QF           | Major    | NA         | NA                 | PE                  | Maximum exposure of 1 QF per incident.  |



**APPENDIX A – ATTACHMENT 11****HELP DESK SERVICES**

- (a) Project Co shall develop, implement, maintain up to date and provide to the City upon request appropriate operational policies, procedures and practices relative to help desk services. The information and documentation shall initially be provided to the City ten (10) months prior to the Scheduled Revenue Service Date for review in accordance with the review process described in Schedule 10 of the RFP. Subsequently the plans, sample reports, policies, practices and operational procedures shall be submitted to the City throughout the Maintenance Term as required, and at a minimum, annually on the anniversary of the Revenue Service Date of each year for review using the process described in Schedule 10 – Review Procedure.
- (b) Project Co shall provide help desk service 24 hours per day and for 365(6) days per year throughout the Maintenance Term, with provisions for backup if required, which shall form the day-to-day notification interface between the City and Project Co and any of its Project Co Parties in relation to the following matters:
  - (i) all enquiries and service requests for assistance relating to the Project Co Services;
  - (ii) notification of Events, complaints or compliments from any of the Passengers relating to the Project Co Services;
  - (iii) service requests for temporary changes to the delivery and scope of the Project Co Services which shall not be a Variation;
  - (iv) monitoring of System and system alarms including duress alarms;
  - (v) notification of accidents or emergencies;
  - (vi) notification of safety issues or concerns related to the SMS;
  - (vii) notification of security issues or concerns related to the SeMS;
  - (viii) notification of trespassing or un-authorized access to the System;
  - (ix) request for information relating to the operation of the help desk service;
  - (x) update of progress regarding any Events notified to the help desk; and
  - (xi) Lost and found.
- (c) Project Co shall provide updates to the instructions for help desk services to the City from time-to-time, as required.
- (d) Following the completion of the user instructions, Project Co shall ensure that all Project Co Staff, Project Co Parties and the City representatives are trained and/or familiarized with these help desk service instructions.

- (e) Project Co shall make the initial determination and categorize each and every service request and Event using the classification (priority) protocol established pursuant to Article (a) as part of the help desk services. .
- (f) Project Co shall maintain, as part of the help desk service, a daily electronic log of all service requests and calls reporting Events, along with lost and found items recovered within the System. The help desk service shall record into the electronic log all relevant details, including but not limited to the following information:
- (i) help desk / Project Co receiving and recording the request or Event;
  - (ii) requester's name;
  - (iii) date and time;
  - (iv) location;
  - (v) nature of the request or Event;
  - (vi) service required;
  - (vii) classification (priority);
  - (viii) unique request reference identifier;
  - (ix) the Project Co Party, if applicable, and contact name to which the request was passed on to;
  - (x) date and time the request was passed on to the relevant Project Co Party;
  - (xi) action taken and by whom; and
  - (xii) Response Time and Rectification Time.
- (g) As part of the help desk service, Project Co shall maintain a daily electronic log of all lost and found items recovered from within the System. The help desk service shall record into the electronic log the following:
- (i) Project Co employee that recovered or is reporting the lost and found item;
  - (ii) date and time item was recovered / reported;
  - (iii) assigned item number;
  - (iv) description of the item; and
  - (v) location where the item was recovered, including vehicle number or station.
- (h) Project Co shall not delete or alter any details recorded by the help desk unless approved by the City or designate and the following information is recorded:

- (i) The exact nature and impact of the amendment;
  - (ii) The reason for the amendment; and
  - (iii) By whom the amendment was authorized.
- (i) Project Co shall ensure that in the event of Emergencies, at whatever time, the help desk service is alerted and to report and / or record the incident or Event to internal and external authorities, subject to the provisions resulting from LRT Rules and Standard Operating Procedures and the Emergency Response Plan included in Schedule 15-4. Project Co shall coordinate the Response Time and log the details of the Emergency.
  - (j) Project Co shall ensure that the help desk service maintains confidentiality consistent with the LRT Rules and Standard Operating Procedures as established by Schedule 15-4 and the Project Agreement.
  - (k) Project Co and all Project Co Staff shall at all times adhere to, update and maintain as current the operational policies and procedures set out and agreed with the City pursuant to Schedule 15-4 – Regulatory Standards. On a quarterly basis pursuant to Article 1.5(c), Project Co will provide the City or designate a report detailing where non-adherence has been identified.
  - (l) Project Co shall prepare and submit a monthly summary report in a format suitable to the City as part of the Monthly Activity Report as described in Appendix A, Article 1.8 – Records and Reporting.
  - (m) Project Co shall provide the capability for City Employees who have made service requests to review and monitor the status of their requests over the internet.
  - (n) Project Co shall, when receiving a call about services not provided by Project Co or about issues related to the City responsibilities, redirect the caller to the appropriate City contact as directed by the City.
  - (o) Project Co shall deliver all lost and found items recovered within the System to the City's lost and found during the next regular business day or as directed by the City.
  - (p) Quality Monitoring
    - (i) Prior to the Revenue Service Date, Project Co and the City shall develop, maintain and implement a system for recording and acting on Passenger or Driver feedback and satisfaction with respect to the help desk services in accordance with the provisions set out in this attachment.

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## 1.0 Performance Criteria

| FE Type  | Category  | Response                | Rectification / Remedial   | Recording Frequency  |
|--|---|-------------------------|--|--|
| AF<br>=Availability<br>Failure<br>SF = Service<br>Failure<br>QF = Quality<br>Failure | Major<br>Medium<br>Minor<br>Veh. Avail. = Captured<br>by the Vehicle<br>Availability deduction<br>regime<br>St. Avail = Captured by<br>the Station Availability<br>deduction regime | N/A = Not<br>Applicable | N/A = Not<br>Applicable<br>ND = Correct by<br>start of service<br>the following<br>day | PR = Per Request<br>PE = Per Event<br>D = Daily<br>W = Weekly<br>M = Monthly<br>Q = Quarterly<br>B = Bi-Annually<br>A = Annually<br>R = Randomly, At Any<br>Moment in Time |

| Ref                         | Parameter   | Failure Type | Category | Resp. Time | Rect. Or Rem. Time | Recording Frequency | Notes  |
|-----------------------------|---|--------------|----------|------------|--------------------|---------------------|--|
| <i>Help Desk Services</i>   |   |              |          |            |                    |                     |  |
| <b>KPM A(11)(b)</b>         | The help desk service is available during Revenue Service operating times for the Project Term.   | SF           | Major    | N/A        | 1 hour             | R                   |  |
| <b>KPM A(11)(c) and (d)</b> | Help Desk Service Instructions are updated and training provided to Project Co and City Employees.  | QF           | Major    | N/A        | N/A                | M                   | Maximum exposure of one QF per Contract Month  |
| <b>KPM A(11)(e) and (f)</b> | All Service Requests and Failure Events are categorized and recorded in accordance with this Attachment.  | QF           | Medium   | N/A        | N/A                | PE                  | One QF per incident of non-compliance (incident is defined as failure to record a single request or event)                   |
| <b>KPM A(11)(g) and (o)</b> | All lost and found items recovered from within the System are recorded and delivered in accordance with this Attachment.  | QF           | Medium   | N/A        | N/A                | PE                  | One QF per incident of non-compliance (incident is defined as failure to record and deliver a single item or group of items) |
| <b>KPM A(11)(i)</b>         | Report Events to internal and external authorities, subject to LRT Rules and Standard Operating Procedures, Environmental Reporting requirements, and Emergency Response Plan requirements, and log the details in the event of an emergency. | SF           | Major    | N/A        | N/A                | PE                  | Maximum exposure of SF per incident of failure to report.  |
| <b>KPM A(11)(j)</b>         | Confidentiality is maintained in accordance with the Project Agreement  | QF           | Major    | N/A        | N/A                | PE                  | Maximum exposure of one QF per Contract Month.   |



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| Ref                 | Parameter  | Failure Type | Category | Resp. Time | Rect. Or Rem. Time | Recording Frequency | Notes   |
|---------------------|--|--------------|----------|------------|--------------------|---------------------|---|
| <b>KPM A(11)(k)</b> | Project Co adheres to the operational policies and procedures provided by Schedule 15-4 – Regulatory Standards.  | QF           | Major    | N/A        | N/A                | B                   | QF assessed per identified non-adherence. Maximum exposure of 5 QF per report.                              |
| <b>KPM A(11)(k)</b> | Every quarter pursuant to Appendix A Article 1.5(c) Project Co will provide the City Representative or designate a report detailing where non-adherence has been identified. | QF           | Major    | N/A        | 1 week             | B                   |   |
| <b>KPM A(11)(m)</b> | Project Co shall provide the capability for City Employees who have made service requests to review and monitor the status of their requests over the internet               | QF           | Major    | N/A        | N/A                | M                   | One QF per Contract Month   |
| <b>TDB</b>          | All requests and Events reported to the help desk service are answered and coordinated promptly in accordance with the specifications.                                       | QF           | Major    | N/A        | N/A                | PE                  | QF assessed per request or event not dealt with in accordance with specifications. Maximum of 5 QF per day. |

**APPENDIX A – ATTACHMENT 12****MAINTENANCE RECORDS AND REPORTING****1.0 Maintenance Records and Reporting**

- (a) Pursuant to Appendix A, Article 1.8, periodically, the City will audit the Project Co's Maintenance records and reporting. Failures to maintain records and report on Maintenance activities will result in penalties being assessed as described in the Performance Criteria section.
- (b) Maintenance Plans
- (i) Project Co shall follow the requirements set out in Article 1.4(a)(ii) of Appendix A with regard to the drafting, approval, and revisions process for the Maintenance and Rehabilitation Plan.
- (ii) Project Co shall at all times maintain complete and updated versions of the Maintenance and Rehabilitation Plan, along with the sub plans described as the Custodial Maintenance Plan, the Corrective Maintenance Plan, and the Preventive Maintenance Plan. The performance requirements associated with the Asset Management Plan and the Handover Maintenance Plan are included in Appendices B and C respectively.
- (c) Maintenance Reporting
- (i) Project Co shall report on the status and completion of various Maintenance activities.
- (ii) Project Co shall follow the maintenance reporting requirements set out in Article 1.8 of Schedule 15-3 with regard to maintenance reporting procedures and the Daily, Monthly, and Annual submittals that are required.

**2.0 Performance Criteria**

| FE Type  | Category  | Response                | Rectification / Remedial   | Recording Frequency  |
|--|---|-------------------------|--|--|
| AF<br>=Availability<br>Failure<br>SF = Service<br>Failure<br>QF = Quality<br>Failure | Major<br>Medium<br>Minor<br>Veh. Avail. = Captured<br>by the Vehicle<br>Availability deduction<br>regime<br>St. Avail = Captured by<br>the Station Availability<br>deduction regime | N/A = Not<br>Applicable | N/A = Not<br>Applicable<br>ND = Correct by<br>start of service<br>the following<br>day | PR = Per Request<br>PE = Per Event<br>D = Daily<br>W = Weekly<br>M = Monthly<br>Q = Quarterly<br>B = Bi-Annually<br>A = Annually<br>R = Randomly, At<br>Any Moment in Time |

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| Ref                                      | Parameter  | Failure Type | Category | Resp. Time | Rect. Or Rem. Time | Recording Frequency | Application (Maximum Project Co exposure) |
|--|--|--------------|----------|------------|--------------------|---------------------|---|
| <i>Maintenance Records and Reporting</i> |  |              |          |            |                    |                     |   |
| <i>A(12)1.0(c)(ii)</i>                   | Project Co shall follow the maintenance reporting requirements set out in Article 1.8 of Schedule 15-3 with regard to the Daily submittals that are required. (Daily Report as per Article 1.8(iv))  | QF           | Minor    | NA         | NA                 | D                   | 1 QF per day                              |
| <i>A(12)1.0(c)(ii)</i>                   | Project Co shall follow the maintenance reporting requirements set out in Article 1.8 of Schedule 15-3 with regard to the Monthly submittals that are required. (Monthly Activity Report as per Article 1.8(ii))   | QF           | Minor    | NA         | NA                 | M                   | 1 QF per month                            |
| <i>A(12)1.0(c)(ii)</i>                   | Project Co shall follow the maintenance reporting requirements set out in Article 1.8 of Schedule 15-3 with regard to reports submitted to a third party (per Article 1.8(v))  | QF           | Major    | NA         | NA                 | PR                  | 1 QF per request                          |
| <i>A(12)1.0(b)(i)</i>                    | Project Co shall submit Annual Preventative Maintenance Plan in compliance with Article 1.4(b).  | QF           | Major    | NA         | NA                 | A                   | 1 QF per Contract Year                    |
| <i>A(12)1.0(c)(ii)</i>                   | Project Co shall comply with the record-keeping requirements of Article 1.8(a)(i).   | QF           | Major    | NA         | NA                 | R                   | 1 QF per Contract Month                   |
| <i>A(12)1.0(b)(ii)</i>                   | Project Co shall at all times maintain complete and updated versions of the Maintenance and Rehabilitation Plan, along with the sub plans described as the Custodial Maintenance Plan, the Corrective Maintenance Plan, and the Preventive Maintenance Plan. | QF           | Major    | NA         | NA                 | R                   | 1 QF per Contract Month                   |

**APPENDIX A – ATTACHMENT 13****MAINTENANCE ACTIVITIES AND COORDINATION****1.0 Maintenance Activities and Coordination**

(a) Pursuant to Appendix A, Article 1.4, when performing the Maintenance Services, Project Co shall provide all maintenance activities, as defined in whole or in part as part by the Maintenance and Rehabilitation plan, and maintenance coordination, as defined in whole or in part by Appendix A of this schedule and for further clarity including the LRT Rules and Procedures, in accordance with the performance requirements described throughout Schedule 15-3 and diligently at all times during the Maintenance Term in accordance with the Project Agreement, notwithstanding Project Co's rights and entitlements as provided elsewhere in the Project Agreement.

**(b) Performance Requirements****(i) General**

- A. Project Co shall coordinate and perform such Maintenance activities within the System only upon receiving prior approval from the City as required by Appendix A, Article 1.5.
- B. Project Co shall ensure all Employees performing Maintenance on the System are governed by the LRT Rules and the Standard Operating Procedures.
- C. Project Co shall ensure all Employees performing Maintenance on the System receive clearance from the TSCC to enter and perform Maintenance Services when so required by the LRT Rules and Standard Operation Procedures.
- D. Project Co shall ensure all employees performing Maintenance on the System are certified and trained on the LRT Rules and Standard Operating Procedures.
- E. Project Co shall ensure that all Non Revenue Vehicles and equipment are operated in accordance with the LRT Rules and Standard Operating Procedures and Good Industry Practice, and for further certainty may require prior approval for use on the System by the TSCC.

**(ii) Deficiencies**

- A. Upon receiving notification of the Deficiency in accordance with Article 2.2(b) Project Co shall promptly take steps to remedy the Deficiency as follows:
  - i in the event that the Deficiency constitutes an issue with respect to the Safety Management System;
  - ii Project Co shall remedy the Deficiency immediately if possible, but at least within 24 hours of the City's notice, notwithstanding more

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stringent response and / or rectification times as may be prescribed in the Attachments to Appendix A of Schedule 15-3; and

- iii in the event that that the Deficiency does not contravene the Safety Management System, Project Co shall take corrective action to remedy the Deficiency, and / or shall submit an acceptable remediation plan to the City in respect of the Deficiency, including a deadline for rectification of the Deficiency, at the next weekly meeting occurring pursuant to Article 1.5 of Appendix A of this Schedule.

## 2.0 Performance Criteria

| FE Type   | Category  | Response             | Rectification / Remedial   | Recording Frequency   |
|---|---|----------------------|--|---|
| AF = Availability Failure<br>SF = Service Failure<br>QF = Quality Failure | Major<br>Medium<br>Minor<br>Veh. Avail. = Captured by the Vehicle<br>Availability deduction regime<br>St. Avail = Captured by the Station Availability deduction regime | N/A = Not Applicable | N/A = Not Applicable<br>ND = Correct by start of service the following day | PR = Per Request<br>PE = Per Event<br>D = Daily<br>W = Weekly<br>M = Monthly<br>Q = Quarterly<br>B = Bi-Annually<br>A = Annually<br>R = Randomly, At Any Moment in Time |

| Ref  | Parameter  | Failure Type | Category | Resp. Time | Rect. Or Rem. Time | Recording Frequency | Application (Maximum Project Co exposure) |
|--|--|--------------|----------|------------|--------------------|---------------------|---|
| <i>MAINTENANCE ACTIVITIES AND COORDINATION</i> |  |              |          |            |                    |                     |   |
| <i>A(13)1.0(b)(i)(A)</i>                       | Project Co shall coordinate and perform such Maintenance activities within the System only upon receiving prior approval from the City as required by Appendix A, Article 1.5.                                     | QF           | Major    | NA         | NA                 | PE                  | One QF per non-compliance                 |
| <i>A(13)1.0(b)(i)(B) and (D)</i>               | Project Co to ensure all Employees working on the Maintenance of the OLRT System are governed, trained and certified with the LRT Rules and Procedures prior to performing any Maintenance work on the OLRT System | QF           | Major    | NA         | NA                 | PE                  | One QF per non-compliance                 |

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| Ref                      | Parameter   | Failure Type | Category | Resp. Time | Rect. Or Rem. Time | Recording Frequency | Application (Maximum Project Co exposure) |
|--------------------------|---|--------------|----------|------------|--------------------|---------------------|---|
| <i>A(13)1.0(b)(i)(E)</i> | Project Co shall ensure the use of all Non-Revenue Vehicles and equipment is in compliance with the LRT Rules and Standard Operating Procedures and Good Industry Practice. | QF           | Major    | NA         | NA                 | PE                  | One QF per non-compliance                 |



**APPENDIX A – ATTACHMENT 14****OPERATIONS AND MAINTENANCE INTERFACE**

- (a) Project Co, in conjunction with the City, shall develop an Integrated Management Information Reporting System that combines service delivery and maintenance performance information. The plan for developing the Integrated Management Information Reporting System shall initially be provided to the City ten (10) months prior to the Scheduled Revenue Service Date for review in accordance with the review process described in Schedule 10 – Review Procedure.
- (b) Project Co shall integrate data from SCADA, ATS, Maintenance Information Systems, Help Desk, Automatic Passenger Counters and other information systems to produce a daily operating report, accordance with the requirements set out in (c) and (d) below (“Daily Operating Report”).
- (c) Project Co and the City shall meet each morning in order to review operations and maintenance performance. The purpose of the morning business meeting shall be to coordinate operations and maintenance activities, to review the prior day(s) performance, to assign responsibility for lost service, to assess performance, to discuss current day’s plans, future plans, planning for special events, weather events, and to conduct other operational business necessary for the delivery of safe, reliable and high quality passenger service. The meetings shall be attended in person (or unless mutually agreed to otherwise) by the City Representative and the Project Co Representative, or their delegates. The City and Project Co may mutually agree to cancel or postpone any morning business meeting and use subsequent meetings to catch up as required.
- (d) Project Co shall produce a draft Daily Operating Report for each morning business meeting, including the information set out below. Project Co shall deliver the draft Daily Operating Report at least two (2) hours prior to the scheduled start time of the relevant morning meeting and shall indicate the time of delivery through a time stamp method or electronic delivery. The draft Daily Operating Report shall contain, at a minimum, the following information relevant to the previous day or days performance:
  - (i) Operations
    - A. Revenue Service Vehicle Kilometres delivered versus Scheduled Revenue Service Vehicle Kilometres;
    - B. Description of events that resulted in loss of Scheduled Revenue Service Vehicle Kilometres, indicating which are claimed by Project Co to be due to a Non-Project Co Cause supported by a description of the event and a justification for meeting the Non Project Co Cause criteria;
    - C. On-time performance and schedule adherence;
    - D. Accidents / Injuries of Passengers and Employees;
    - E. Dropped trips;

- F. Standing delays of over 6 minutes; and
- G. Vehicle Unloads.
- (ii) Ridership
  - A. Daily ridership totals from the Automatic Passenger Counters; and
  - B. Average load capacity by vehicle, by trip.
- (iii) Systems Status
  - A. Fleet Availability (identify peak vehicles utilized for service, vehicles held for maintenance, any vehicles held out of service due to defect);
  - B. Non-revenue fleet availability (identify and fleet defects);
  - C. Station Availability (including status of all elevators and escalators), including a breakdown of Scheduled Station Hours and Station Availability Failure Hours (if any) for each station, indicating the time and duration of any such Station Availability Failure Hours;
  - D. Identification of any Station Related Non Project Co Cause, supported by a description of the event and a justification for meeting the Station Related Non Project Co Cause criteria;
  - E. Tunnel (identify status of all Fire/Life/Safety elements including emergency ventilation system, emergency lighting, emergency walkways, backup power supply, passenger address system, emergency telephones, blue light stations);
  - F. Track Availability (report slow orders or tracks out of service);
  - G. Train Control and Signalling (identify any system defects);
  - H. Substations and Power Distribution (identify any system defects); and
  - I. Maintenance and Storage Facility (identify any defects).
- (iv) Help Desk
  - A. Calls received versus calls cleared;
  - B. Status/summary of open calls.
- (e) Project Co and the City shall review the draft Daily Operating Report at the morning meetings.
- (f) The City shall, within twenty-four (24) hours of the delivery of the draft Daily Operating Report (as indicated by the time stamp or other method used pursuant to Section (d), above), either:

- (i) Approve the draft Daily Operating Report, in which case the report shall be considered closed and shall be used as a basis for developing the Performance Monitoring Report and otherwise recording Project Co performance, subject to any errors or omissions subsequently discovered; or
  - (ii) Decline to approve all or part of the draft Daily Operating Report, and specify the amendments required by the City.
- (g) If the City fails to respond within the relevant twenty-four (24) hour time period, then the City shall be deemed to approve the draft Daily Operating Report in accordance with (f)(i), above.
- (h) If the City declines to approve all or part of the draft Daily Operating Report, then Project Co shall, within twenty-four (24) hours of notice by the City that it does not approve, either:
- (i) Amend the draft Daily Operating Report in accordance with the amendments required by the City, subject to final review and approval by the City; or
  - (ii) Dispute all or part of the amendments required by the City, in which case the matter shall be referred to the Maintenance Committee for resolution.
- (i) If Project Co fails to respond within the relevant twenty-four (24) hour time period, then Project Co shall be deemed to have accepted the City's amendments to the draft Daily Operating Report and the report shall be considered closed.
- (j) If Project Co disputes all or part of the amendments required by the City, as per Section (h)(ii), then:
- (i) All aspects of the Daily Operating Report which are not the subject of a dispute shall be considered closed and shall be used as a basis for developing the Performance Monitoring Report and otherwise recording Project Co performance, subject to any errors or omissions subsequently discovered; and
  - (ii) All aspects of the Daily Operating Report which are the subject of a dispute shall be assumed, for the purposes of developing the Performance Monitoring Report and otherwise recording Project Co performance, to be resolved in favour of the City, pending the outcome of resolution by the Maintenance Committee or additional dispute resolution processes selected by the Maintenance Committee, provided that:
    - A. In the case of a disputed matter which would, if resolved in favour of the City, result in Failure Points being assigned to Project Co, no Failure Points shall be assigned until resolution of the dispute; and
    - B. In the case of a disputed matter or matters which could result in cumulative Deductions in excess of \$10,000 (Adjusted for Inflation) being assigned to Project Co related to the matter(s) in dispute, no Deductions related to such matter(s) in excess of this amount shall be applied until resolution of the dispute.

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## 1.0 Performance Criteria

| FE Type  | Category  | Response                | Rectification / Remedial   | Recording Frequency  |
|--|---|-------------------------|--|--|
| AF<br>=Availability<br>Failure<br>SF = Service<br>Failure<br>QF = Quality<br>Failure | Major<br>Medium<br>Minor<br>Veh. Avail. = Captured<br>by the Vehicle<br>Availability deduction<br>regime<br>St. Avail = Captured by<br>the Station Availability<br>deduction regime | N/A = Not<br>Applicable | N/A = Not<br>Applicable<br>ND = Correct by<br>start of service<br>the following<br>day | PR = Per Request<br>PE = Per Event<br>D = Daily<br>W = Weekly<br>M = Monthly<br>Q = Quarterly<br>B = Bi-Annually<br>A = Annually<br>R = Randomly, At<br>Any Moment in Time |

| Ref   | Parameter   | Failure Type | Category | Resp. Time | Rect. Or Rem. Time | Recording Frequency | Application (Maximum Project Co exposure) |
|---|---|--------------|----------|------------|--------------------|---------------------|---|
| <i>OPERATIONS AND MAINTENANCE INTERFACE</i> |   |              |          |            |                    |                     |   |
| <i>A(14)(c) and (d)</i>                     | Project Co shall produce the Daily Operating Report in accordance with the requirements in Section (d). | QF           | Major    | NA         | NA                 | PE                  | One QF per non-compliance                 |

**APPENDIX A – ATTACHMENT 15 MAINTENANCE RESPONSIBILITY TABLE**

- (a) This Maintenance Responsibility Table sets out as a general guide, for the convenience only of the Parties to the Project Agreement, the allocation of maintenance responsibilities with respect to the OLRT System. However, this Maintenance Responsibility Table is not intended to specifically or exhaustively define the allocation of responsibilities for Maintenance on the OLRT System nor is it to be construed as a detailed or complete list of Maintenance responsibilities for the System. In the event of any conflict between the Project Agreement (including this Schedule 15-3) and Maintenance Responsibility Table the provisions of the Project Agreement including this Schedule 15-3 (excluding Attachment 15) shall prevail. For further certainty, all New System Infrastructure shall be the responsibility of Project Cos, unless expressly stated otherwise in the Project Agreement.

| <b>MAINTENANCE RESPONSIBILITY TABLE</b>       | <b>Project Co</b> | <b>City / Other</b> |
|---|-------------------|---------------------|
| <b>LRT Systems &amp; Power</b>                | ✓                 |                     |
| <b>Subsystems</b>                             | ✓                 |                     |
| <b>LRT Vehicles</b>                           | ✓                 |                     |
| Vehicles                                      | ✓                 |                     |
| Non-Revenue Vehicles                          | ✓                 |                     |
|   |                   |                     |
| <b>Traction Power</b>                         | ✓                 |                     |
| Traction Power substations                    | ✓                 |                     |
| Traction Power rectifier units                | ✓                 |                     |
| Rectifier transformer                         | ✓                 |                     |
| Substation AC switchgear & protection devices | ✓                 |                     |
| Substation DC switchgear & protection devices | ✓                 |                     |
| HVAC  | ✓                 |                     |
| Substation Grounding System                   | ✓                 |                     |
| DC feeder system                              | ✓                 |                     |
| Battery subsystem                             | ✓                 |                     |
| Auxiliary power equipment                     | ✓                 |                     |

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| <b>MAINTENANCE RESPONSIBILITY TABLE</b>   | Project Co | City / Other |
|---|------------|--------------|
| Fire/Smoke Detection  | ✓          |              |
| Intrusion alarm subsystem   | ✓          |              |
| Lightning protection  | ✓          |              |
| Negative disconnect switch  | ✓          |              |
| Positive disconnect switch  | ✓          |              |
| Telephone equipment [Footnote 1]  | ✓          |              |
| Protective devices and metering   | ✓          |              |
| Cable and raceway subsystem   | ✓          |              |
| Substation foundation   | ✓          |              |
| Negative return rail overvoltage detection  | ✓          |              |
| Tie in equipment to Hydro Ottawa Alignment Supply points / demarcation [Footnote 2] | ✓          |              |
| <b>Overhead Catenary System</b>   | ✓          |              |
| OCS, supporting systems and foundations   | ✓          |              |
| Cathodic Protection   | ✓          |              |
| Lightning protection  | ✓          |              |
| Feeder and reinforcing Cables   | ✓          |              |
| Pantograph  | ✓          |              |
| Switch heaters  | ✓          |              |
| <b>Train Control and Signaling System</b>   | ✓          |              |
| CBTC  | ✓          |              |
| Vital Microprocessor Interlocking Systems   | ✓          |              |
| Non-vital control logic   | ✓          |              |
| Vehicle location system   | ✓          |              |
| Onboard logic processor   | ✓          |              |



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| <b>MAINTENANCE RESPONSIBILITY TABLE</b>                    | <b>Project Co</b> | <b>City / Other</b> |
|--|-------------------|---------------------|
| ATP  | ✓                 |                     |
| Grounding  | ✓                 |                     |
| Fuses and electrical protection                            | ✓                 |                     |
| Local control panels                                       | ✓                 |                     |
| Event recorders  | ✓                 |                     |
| Wayside switch indicators                                  | ✓                 |                     |
| Mainline switch machines                                   | ✓                 |                     |
| Track switch heaters                                       | ✓                 |                     |
| Relays   | ✓                 |                     |
| Control circuitry and software                             | ✓                 |                     |
| Balise /Train position detection and associated signalling | ✓                 |                     |
| Instrument houses, cases and junction boxes                | ✓                 |                     |
| Wayside LRT signal equipment                               | ✓                 |                     |
| Batteries  | ✓                 |                     |
| Wheel detectors  | ✓                 |                     |
| Yard switch machines                                       | ✓                 |                     |
| <b>Communications and Control systems</b>                  | ✓                 |                     |
| Communication Transmission System (CTS) [Footnote 12]      | ✓                 | ✓                   |
| Public address (PA)  | ✓                 |                     |
| Passenger information display system (PIDS)                | ✓                 |                     |
| Closed circuit television (CCTV)                           | ✓                 |                     |
| Workstations [Footnote 3]                                  | ✓                 |                     |
| Monitors [Footnote 3]                                      | ✓                 |                     |
| Application Servers [Footnote 3]                           | ✓                 |                     |

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| <b>MAINTENANCE RESPONSIBILITY TABLE</b>                 | Project Co | City / Other |
|---|------------|--------------|
| Database Servers [Footnote 3]                           | ✓          |              |
| Network Recorders [Footnote 3]                          | ✓          |              |
| Intrusion access control system (IAC)                   | ✓          |              |
| Telephone and Intercom System [Footnote 1]              | ✓          | ✓            |
| SCADA   | ✓          |              |
| Train control   | ✓          |              |
| LRT Consoles  | ✓          |              |
| LRT Signalling Room                                     | ✓          |              |
| Backup & Yard Control Centre                            | ✓          |              |
| Radio communication systems [Footnote 13]               |            | ✓            |
| Fare collection [Footnote 4]                            | ✓          | ✓            |
| Master clock  | ✓          |              |
| <b>Cathodic Protection/Stray Current</b>                | ✓          |              |
| Structures and materials                                | ✓          |              |
| Coating systems   | ✓          |              |
| Cathodic protection                                     | ✓          |              |
| Stray current corrosion prevention systems [Footnote 5] | ✓          |              |
| Miscellaneous System Infrastructure                     |            |              |
| Uninterruptible power supplies and battery banks        | ✓          |              |
| Lighting controls                                       | ✓          |              |
| Guideway intrusion detection and monitoring system      | ✓          |              |
| Emergency equipment                                     | ✓          |              |
| Motor control centers                                   | ✓          |              |
| Emergency generators                                    | ✓          |              |

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| <b>MAINTENANCE RESPONSIBILITY TABLE</b>   | Project Co | City / Other |
|---|------------|--------------|
| DC power disconnects, transfer switches, and ground switches  | ✓          |              |
| Tunnel lighting   | ✓          |              |
| Tunnel ventilation systems  | ✓          |              |
| Tunnel pumping operation  | ✓          |              |
| Safety and monitoring system  | ✓          |              |
| Dynamic information signs   | ✓          |              |
| Passenger information signs   | ✓          |              |
| Public address system – Stations  | ✓          |              |
| Public address system – Vehicles  | ✓          |              |
| <b>Trackwork (including Tracks):</b>  |            |              |
| Track, running rails (including railhead profiling, track adjustment and levelling, and noise and vibration mitigation) | ✓          |              |
| Sleepers, ties/transition ties, electrical insulation and impedance bonds   | ✓          |              |
| Turn outs, switches, crossovers, etc.   | ✓          |              |
| Ballast (including tamping)   | ✓          |              |
| Removal of debris and contaminants from switches, turnouts, and track and rail head                                     | ✓          |              |
| Maintenance of way equipment  | ✓          |              |
| Track heaters and controls  | ✓          |              |
| Noise and vibration control measures  | ✓          |              |
| Ice and snow removal from Tracks, switches & catenaries, and drainage structures  | ✓          |              |
| <b>Alignment:</b>   | ✓          |              |
| Guideway walkways   | ✓          |              |

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| MAINTENANCE RESPONSIBILITY TABLE   | Project Co | City / Other |
|--|------------|--------------|
| Railbed  | ✓          |              |
| Service and Track access roads/driveways/walkways  | ✓          |              |
| Grading, erosion control and ditch cleaning  | ✓          |              |
| Drainage control and systems including Catch Basins, Ditch Inlets, Manholes, Sewers and Culverts (including stormwater quality and quantity management ponds) [Footnote 5] | ✓          |              |
| Fencing [Footnote 6]   | ✓          |              |
| Noise Walls  | ✓          |              |
| Illumination   | ✓          |              |
| Signing (warning, guidance, location, identification, regulatory, operational and others)  | ✓          |              |
| Removal of rock fall and debris from tunnel portal structures and Guideway below portals   | ✓          |              |
| <b>Custodial Maintenance Alignment:</b>  | ✓          |              |
| Debris collection and disposal [Footnote 7]  | ✓          |              |
| Snow and ice clearing, removal, sanding and salting  | ✓          |              |
| Landscaping  | ✓          |              |
| Vegetation control   | ✓          |              |
| Grass control  | ✓          |              |
| Weed Control/ Brush Cutting  | ✓          |              |
| Tree and shrub maintenance   | ✓          |              |
| Vandalism & graffiti   | ✓          |              |
| Pest Control   | ✓          |              |
|  |            |              |

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| MAINTENANCE RESPONSIBILITY TABLE   |                                 | Project Co | City / Other |
|--|---------------------------------|------------|--------------|
| <b>Retaining Walls:</b> [Footnote 6]   |                                 |            |              |
| <b>Name:</b>   | <b>Location</b>                 |            |              |
| New Retaining Walls for ramps in the staging of transit movements in and around this area. | W of Tunney's Pasture Station   | ✓          |              |
| W Twy N Ret Wall Btwn SN 019560-1  | E of Ross Av                    |            | ✓            |
| W Twy S Ret Wall Btwn SN 019560-2  | E of Ross Av                    |            | ✓            |
| W Transitway Tunney's Pasture Stn Ret Wall (N) SN 019650-2                                 | Holland Ave                     |            | ✓            |
| W Transitway Tunney's Pasture Stn Ret Wall (S) SN 019650-3                                 | Holland Ave                     |            | ✓            |
| W Transitway Ret Wall Btwn 0623-0624 (N) SN 019550-1                                       | Btwn Holland & Parkdale         |            | ✓            |
| W Transitway Ret Wall Btwn 0623-0624 (S) SN 019550-2                                       | Btwn Holland & Parkdale         |            | ✓            |
| W Transitway Ret Wall Btwn 0622-0623 (N) SN 019540-1                                       | Btwn Parkdale & Hinchey         |            | ✓            |
| W Transitway Ret Wall Btwn 0622-0623 (S) SN 019540-2                                       | Btwn Parkdale Av & Hinchey St   |            | ✓            |
| W Transitway Ret Wall Btwn 0621-0622 (N) SN 019530-1                                       | Btwn Hinchey St & Carruthers Av |            | ✓            |
| W Transitway Ret Wall Btwn 621-622 (S) SN 019530-2   | Btwn Hinchey St & Carruthers Av |            | ✓            |
| W Transitway Ret Wall E of   | E of Carruthers Av              |            | ✓            |

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| MAINTENANCE RESPONSIBILITY TABLE                      |                                     | Project Co | City / Other |
|---|-------------------------------------|------------|--------------|
| 0621 (N) SN 019520-1                                  |                                     |            |              |
| W Transitway Ret Wall E of 0621 (S) SN 019520-2       | E of Carruthers Av                  |            | ✓            |
| W Transitway Ret Wall W of 0620 (N) SN 019510-1       | W of Bayview Rd.                    | ✓          |              |
| W Transitway Ret Wall W of 0620 (S) SN 019510-2       | W of Bayview Rd                     | ✓          |              |
| W Transitway Ret Wall E of 0620 (N) SN 019500-1       | E of Bayview Rd                     | ✓          |              |
| W Transitway Ret Wall E of 0620 (S) SN 019500-2       | E of Bayview Rd                     | ✓          |              |
| New Retaining Wall South of Transitway @East Portal   | East Portal to Campus Station       | ✓          |              |
| New Retaining Wall North of Transitway @ East Portal  | East Portal to Campus Station       | ✓          |              |
| CA Transitway Ret Wall NW of 0604 (W) SN 019190       | N of Queensway                      |            | ✓            |
| CA Transitway Ret Wall SE of 0604 (E) SN 019180       | N of Queensway                      |            | ✓            |
| CA Transitway Ret Wall below SN 014010 SN 019260      | Below Hwy417 IC 118 Ramp 62         |            | ✓            |
| CA Transitway E Ret Wall Btwn 014010-016050 SN 019200 | Btwn Queensway & Lees Ave           |            | ✓            |
| CA Transitway Ret Wall Btwn 0401-0605 (W) SN 019210   | W side Btwn Queensway & Lees Ave    |            | ✓            |
| CA Transitway Ret Wall Btwn 0605-0301 (E) SN 019220   | E side Btwn Lees Ave & Rideau River |            | ✓            |
| CA Transitway Ret Wall Btwn 0605-0301 (W) SN 019230   | W side Btwn Lees Ave & Rideau River |            | ✓            |



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| MAINTENANCE RESPONSIBILITY TABLE                           |  | Project Co | City / Other |
|--|--|------------|--------------|
| Ret Wall Btwn 665-666 (N)<br>SN 059860                     | Btwn Riverside Dr & Train Stn                |            | ✓            |
| E Transitway Ret Wall E of<br>668 (N) SN 059490            | W of Belfast Rd                              |            | ✓            |
| MSF North Portal West<br>Retaining Wall (South Face)       | Belfast Road near Hwy 417 into Train<br>yard | ✓          |              |
| MSF North Portal East<br>Retaining Wall (South Face)       | Belfast Road near Hwy 417 into Train<br>yard | ✓          |              |
| Retaining Wall between<br>North Portal and South<br>Portal | Train yard                                   | ✓          |              |
| MSF South Portal to Grade<br>Retaining Walls               | Belfast Road into Train yard                 | ✓          |              |
| E Transitway Ret Wall W of<br>Queensway (N) SN 059880      | @W Entrance to Qway Tunnel                   |            | ✓            |
| E Transitway Ret Wall W of<br>Queensway (S) SN 059870      | W Entrance to Qway Tunnel                    |            | ✓            |
| St Laurent Station Ret Wall<br>SN 056710-4                 | St Laurent Stn                               |            | ✓            |
| E Transitway Ret Wall NW<br>of 674 (W) SN 059940           | @St Laurent & Hwy 417                        |            | ✓            |
| E Transitway Ret Wall Btwn<br>0674-2671 (S) SN 059900      | St Laurent & Hwy 417                         |            | ✓            |
| E Transitway Ret Wall Btwn<br>2672-0482 (N) SN 059920      | @ St Laurent & Hwy 417                       |            | ✓            |
| E Transitway Ret Wall Btwn<br>2671-2672 (W) SN 229910      | St Laurent & Hwy 417                         |            | ✓            |
| E Transitway Ret Wall SE of<br>2673 (S) SN 229930          | @St Laurent & Hwy 417                        |            | ✓            |
| E Transitway Ret Wall SE of<br>2673 (S) SN 229960          | Michael St                                   |            | ✓            |
| E Transitway Ret Wall NE<br>of 2673 (N) SN 229970          | W of Cyrville Rd                             |            | ✓            |

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| MAINTENANCE RESPONSIBILITY TABLE   |  | Project Co | City / Other |
|--|--|------------|--------------|
| Blair Station S Ret Wall SN 229040-2   | W of Station South Tower-adjacent to Queensway                           |            | ✓            |
| Blair BRT Station West Ret Wall SN 229040-6  | West of Station Centre Tower   |            | ✓            |
| Blair BRT Station East Ret Wall SN 229040-7  | East of Station Centre Tower   |            | ✓            |
| Blair BRT Station N Ret Wall SN 229040-8   | East of Station North Tower  |            | ✓            |
| <b>Culverts / Sewers:</b><br><br>(Culverts refers to lateral conveyance of storm water roughly perpendicular to the LRT ROW, while sewers refers to longitudinal conveyance of storm water parallel to the LRT ROW) [Footnote 5] |  |            |              |
| Merton Street Storm Regulator  |  |            | ✓            |
| 525 mm Storm Sewer East of Bayview Road  |  |            | ✓            |
| 1800 mm Storm Sewer East of Bayview Station  |  |            | ✓            |
| 750 mm Storm Sewer at Mann Ave   |  |            | ✓            |
| 1650 mm Storm Sewer at Hurdman BRT Station   |  |            | ✓            |
| 1200 mm Storm Sewer West of the Hurdman Pump Station   |  |            | ✓            |
| 1500 mm Storm Sewer East of Riverside Drive  |  |            | ✓            |
| W Transitway Twin Cell Box Storm Sewer SN 018230-2   | W Transitway over Box Storm Sewer [Footnote 5(c)(ii)]                    | ✓          | ✓            |
| E Twy Twin Culvert E of Hurdman Station SN 058840  | 0.20 km E of Hurdman Station RF Con JG Lot 12<br><br>[Footnote 5(c)(ii)] | ✓          | ✓            |

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| MAINTENANCE RESPONSIBILITY TABLE   |  | Project Co | City / Other |
|--|--|------------|--------------|
| E Twy S Culvert SN<br>T051000  | 0.44 km E of Hurdman Stn                         | ✓          |              |
| E Twy S Culvert SN<br>T051020  | 0.6 km E of Hurdman Stn                          | ✓          |              |
| E Transitway Culvert 1.40<br>Km E of St Laurent Blvd SN<br>228370            | 1.40 Km E of St Laurent Blvd OF Con<br>2 Lot 24  | ✓          |              |
| <b>Bridges:</b> [Footnote 8]   |  |            |              |
| New Ramps in the staging of<br>transit movements in and<br>around this area. | W of Tunney's Station                            | ✓          |              |
| W Transitway U/P Tunney's<br>Bus Access Ramp                                 | Tunney's Ramp over W Twy                         | ✓          |              |
| Tunney's BRT Station SN<br>018210  | Ped Bridge                                       | ✓          |              |
| W Transitway U/P Holland<br>Av SN 016240                                     | Holland Av over W Transitway                     |            | ✓            |
| W Transitway U/P Parkdale<br>Av SN 016230                                    | Parkdale Av over W Transitway                    |            | ✓            |
| W Transitway U/P Hinchey<br>Av SN 016220                                     | Hinchey Av over W Transitway                     |            | ✓            |
| W Transitway U/P<br>Carruthers Av SN 016210                                  | Carruthers Av over W Transitway                  |            | ✓            |
| W Transitway O/P Bayview<br>Rd SN 016200                                     | Bayview Rd under W Transitway                    | ✓          |              |
| W Transitway O/P O-Train<br>Line SN 015040                                   | 0.30 km E of Bayview Rd                          | ✓          |              |
| Broad St Bridge SN 017040  | Lebreton Flats W of Booth, OF Con A<br>Lot 39/40 | ✓          |              |
| Booth St Bridge O/P Open<br>Aqueduct SN 017030                               | Booth St over Open Aqueduct                      |            | ✓            |
| Booth St Bridge  | Booth St Bridge over LRT/Aqueduct                | ✓          |              |

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| MAINTENANCE RESPONSIBILITY TABLE                                   |  | Project Co | City / Other |
|--|--|------------|--------------|
| Campus BRT Station – CA<br>Twy O/P Ped Tunnel SN<br>018160         | Ped Subway at Univ of Ottawa<br>Campus Station | ✓          |              |
| CA Transitway O/P Mann<br>Av SN 016950                             | Mann Av under CA Transitway                    | ✓          |              |
| CA Transitway Hwy 417<br>Nicholas Ramp O/P<br>Transitway SN 016040 | Nicholas St off ramp over CA<br>Transitway     |            | ✓            |
| CA Transitway U/P<br>Queensway SN 014010                           | CA Transitway under Queensway                  |            | ✓            |
| CA Transitway Lees Av O/P<br>Transitway SN 016050                  | Lees Av over CA Transitway                     |            | ✓            |
| CA Transitway O/P Rideau<br>River SN 013010                        | CA Transitway over Rideau River                | ✓          |              |
| Hurdman Stn W Bridge   |  | ✓          |              |
| Hurdman Stn E Bridge   |  | ✓          |              |
| E Transitway O/P Riverside<br>Dr SN 056650                         | Riverside Dr under E Transitway                | ✓          |              |
| E Transitway U/P W Train<br>Station Access Rd SN<br>056660         | W Access Rd over E Transitway                  |            | ✓            |
| New Ering Rd Bridge  |  | ✓          |              |
| E Transitway U/P E Train<br>Station Access Rd SN<br>056670         | E Access Rd over E Transitway                  |            | ✓            |
| E Transitway U/P Tremblay<br>Rd SN 056680                          | Tremblay Rd over E Transitway                  |            | ✓            |
| E Transitway U/P Belfast Rd<br>SN 056690                           | Belfast Rd over E Transitway                   |            | ✓            |
| E Transitway U/P<br>Queensway EB & WB SN<br>056700                 | EB Queensway over E Transitway                 |            | ✓            |
| St Laurent BRT Station –   | St Laurent Stn Tunnels – connects              |            | ✓            |

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| MAINTENANCE RESPONSIBILITY TABLE                                       |  | Project Co | City / Other |
|--|--|------------|--------------|
| Tunnels SN 056710-1,-2,-3  | Centre Tunnel to 056700 E Tway                     |            |              |
| St Laurent BRT Station –<br>Ped Bridge O/P E<br>Transitway SN 056710-5 | Ped Bridge   |            | ✓            |
| E Tway U/P WB Queensway<br>On-Ramp SN 056720                           | Queensway NW Ramp over E<br>Transitway             |            | ✓            |
| E Transitway U/P St Laurent<br>Blvd SN 056730                          | St Laurent Blvd over E Transitway                  |            | ✓            |
| E Transitway U/P Trumpet<br>Ramp W SN 056740                           | Queensway Off Ramp over E<br>Transitway            |            | ✓            |
| E Transitway U/P Trumpet<br>Ramp C SN 226710                           | W/Ramp from St Laurent SB                          |            | ✓            |
| E Transitway U/P Trumpet<br>Ramp E SN 226720                           | W/Ramp from St Laurent S/B over<br>T/Way           |            | ✓            |
| E Transitway U/P WB<br>Queensway Exit Ramp SN<br>226730                | Exit Ramp over T/Way @ St Laurent                  |            | ✓            |
| E Transitway U/P Cyrville<br>Rd SN 226740                              | E Transitway under Cyrville Rd                     |            | ✓            |
| E Transitway U/P Aviation<br>Pkwy SBL [W Bridge] SN<br>226750          | E Transitway @ Aviation Pkwy SBL                   |            | ✓            |
| E Transitway U/P Aviation<br>Pkwy NBL [E Bridge] SN<br>226760          | E Transitway @ Aviation Pkwy NBL                   |            | ✓            |
| E Transitway Cyrville Drain<br>SN 226770–                              | E Transitway over Cyrville Drain                   | ✓          |              |
| Blair BRT Station Ped<br>Bridge Over Tway SN<br>229040-1               | Ped Bridge Over Tway                               | ✓          |              |
| Blair BRT Station Ped<br>Subway SN 229040-3                            | Ped Subway   | ✓          |              |
| Blair BRT Station Ped<br>Bridge Over Hwy 174 SN                        | Ped Bridge Over Hwy 174 – 0.35 Km<br>W of Blair Rd |            | ✓            |

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| MAINTENANCE RESPONSIBILITY TABLE  |                             | Project Co | City / Other |
|---|-----------------------------|------------|--------------|
| 229040-4  |                             |            |              |
| E Twy – Blair Rd O/P<br>Transitway SN 226780  | E Transitway under Blair Rd |            | ✓            |
| <b>Maintenance and Storage Facility:</b>  |                             | ✓          |              |
| Service and access roads/driveways  |                             | ✓          |              |
| Paving, parking lots and signing  |                             | ✓          |              |
| Entrances, Pedestrian walkways and sidewalks  |                             | ✓          |              |
| Stairways, elevators & escalators   |                             | ✓          |              |
| Grading and erosion control   |                             | ✓          |              |
| Drainage control  |                             | ✓          |              |
| Fencing   |                             | ✓          |              |
| Illumination  |                             | ✓          |              |
| Noise control measures and noise walls  |                             | ✓          |              |
| Signing (warning, guidance, location, identification, regulatory, operational, etc.)            |                             | ✓          |              |
| Structural- footings, floors, walls, ceilings, chimneys, beams, columns, roof, insulation, etc. |                             | ✓          |              |
| Wall components, doors, frames, windows, glazing systems, entry systems, finishes, etc.         |                             | ✓          |              |
| Washrooms, locker rooms, offices, storage space, etc.   |                             | ✓          |              |
| Interior finishes – floor & wall coverings, painting and finishes                               |                             | ✓          |              |
| Plumbing – Water & sewer services, waste water  |                             | ✓          |              |
| Electrical – wiring, service, conduits, illumination, etc.                                      |                             | ✓          |              |
| <b>MSF Mechanical systems:</b>  |                             |            |              |
| Telephone and radio communications system wiring within complex [Footnote 1]                    |                             | ✓          | ✓            |
| Utility services (Hydro, water, sewer, heating and any others) including                        |                             |            | ✓            |



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| <b>MAINTENANCE RESPONSIBILITY TABLE</b>  | Project Co | City / Other |
|--|------------|--------------|
| service invoices [Footnote 1]  |            |              |
| Heating Ventilating and Air Conditioning (HVAC) system and air filtration.                           | ✓          |              |
| Automatic door systems for vehicle entry and exit  | ✓          |              |
| Waterproofing and building drainage control  | ✓          |              |
| Security – locks, guards, CCTV, alarms, monitoring, intrusion detection, video recording and others. | ✓          |              |
| Fire Protection and safety measures (includes standpipes)  | ✓          |              |
| Office furniture and equipment   | ✓          |              |
| Emergency Generators and UPS   | ✓          |              |
| Automotive service vehicles  | ✓          |              |
| Custodial Maintenance – Maintenance and Storage Facility:  | ✓          |              |
| Debris collection and disposal [Footnote 7]  | ✓          |              |
| Snow and ice clearing, removal, sanding and de-icing   | ✓          |              |
| Oil and grit separator   | ✓          |              |
| Landscaping  | ✓          |              |
| Vegetation control   | ✓          |              |
| Grass control  | ✓          |              |
| Weed Control/ Brush Cutting  | ✓          |              |
| Tree and shrub maintenance   | ✓          |              |
| Vandalism & graffiti   | ✓          |              |
| Pest Control   | ✓          |              |
| Daily Washroom cleaning and supplies   | ✓          |              |
| Cleaning of offices, furniture, walls, floors, windows, maintenance and general purpose areas        | ✓          |              |
| <b>Maintenance Building:</b>   | ✓          |              |

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| <b>MAINTENANCE RESPONSIBILITY TABLE</b>   | Project Co | City / Other |
|---|------------|--------------|
| Monthly telephone service charges [Footnote 1]  |            | ✓            |
| Vehicle and System maintenance equipment including hydraulic lifts, forklifts and other specialized equipment | ✓          |              |
| Workshop equipment including lubrication systems, compressors, air dryers, vacuum systems, sumps, etc.        | ✓          |              |
| Hi rail and recovery vehicles   | ✓          |              |
| Vehicle wash systems  | ✓          |              |
| Vehicle paint booth   | ✓          |              |
| <b>Storage Yard and Shed:</b>   | ✓          |              |
| System: Track, catenaries, switches, etc.   | ✓          |              |
| Waste removal and recycling, such as wheel swarf, coolant disposal, oil recycling                             | ✓          |              |
| Service and access roads/driveways  | ✓          |              |
| Snow and ice clearing of Track, catenaries, switches, etc.  | ✓          |              |
| <b>Transit Services Control Centre:</b>   |            |              |
| Telephone and communication system [Footnote 1]   | ✓          | ✓            |
| Monthly telephone service charges   | ✓          | ✓            |
| Furniture and layout  | ✓          |              |
| Hardware and software [Footnote 3]  | ✓          | ✓            |
| Cooling or heating for Project Co installed equipment   | ✓          |              |
| Communications between equipment and backbone communications modem  | ✓          |              |
| Custodial building responsibilities   |            | ✓            |
| HVAC and utility services   |            | ✓            |
| <b>Stations:</b>  |            |              |
| Structural  | ✓          |              |

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| <b>MAINTENANCE RESPONSIBILITY TABLE</b>  | Project Co | City / Other |
|--|------------|--------------|
| Plumbing [Footnote 1]  | ✓          |              |
| Electrical [Footnote 1]  | ✓          |              |
| HVAC   | ✓          |              |
| Shelter  | ✓          |              |
| Station furnishings, including passenger benches, refuse containers, cabinets, sign boards, bike racks and others. | ✓          |              |
| Entry systems: doors & windows[Footnote 11]  | ✓          |              |
| Roof and water protection  | ✓          |              |
| Platform: Stairs, floors, walls, furniture and finishes  | ✓          |              |
| Passenger information systems  | ✓          |              |
| Signing (warning, guidance, location, identification, regulatory, operational, and others)                         | ✓          |              |
| Utilities [Footnote 1]   | ✓          | ✓            |
| Advertising [Footnote 9]   |            | ✓            |
| Advertising frames, hardware and fixed assets<br>[Footnote 9]  | ✓          |              |
| Illumination – poles and fixtures  | ✓          |              |
| Storm water drainage [Footnote 5]  | ✓          |              |
| Elevators  | ✓          |              |
| Escalators   | ✓          |              |
| Roof, including Green Roof   | ✓          |              |
| Existing Leachate Collection and Treatment System [Footnote 5]   |            | ✓            |
| Existing Storm Water Pumping Station [Footnote 5]  |            | ✓            |
| <b>Custodial maintenance of Station:</b>   |            |              |
| Debris collection and disposal [Footnote 7]  | ✓          |              |

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| <b>MAINTENANCE RESPONSIBILITY TABLE</b>                           | Project Co | City / Other |
|---|------------|--------------|
| Snow and ice clearing, removal, sanding and de-icing [Footnote 8] | ✓          |              |
| Cleaning – floors, walls, windows, vandalism & graffiti, etc.     | ✓          |              |
| Elevators   | ✓          |              |
| Escalators  | ✓          |              |
| Washroom cleaning and supplies                                    | ✓          |              |
| Illumination – cleaning & bulb replacement                        | ✓          |              |
| Landscaping including planters                                    |            | ✓            |
| Vegetation control  |            | ✓            |
| Grass control   |            | ✓            |
| Weed Control/ Brush Cutting                                       |            | ✓            |
| Tree and shrub maintenance  |            | ✓            |
| Graffiti and vandalism  | ✓          |              |
| Pest Control  | ✓          |              |
| <b>Bus Rapid Transit System:</b>                                  |            | ✓            |
| Tunney's Pasture  |            | ✓            |
| Hurdman, including bus staging area [Footnote 10]                 |            | ✓            |
| St. Laurent   |            | ✓            |
| Blair, including bus staging area [Footnote 10]                   |            | ✓            |
| Passenger Pickup and Drop Off                                     |            | ✓            |
| Bus Terminals   |            | ✓            |
| <b>Miscellaneous:</b>   |            |              |
| Public Telephones   |            | ✓            |
| Salt Storage Boxes  | ✓          |              |
| Artwork   | ✓          | ✓            |

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| <b>MAINTENANCE RESPONSIBILITY TABLE</b>              | <b>Project Co</b> | <b>City / Other</b> |
|--|-------------------|---------------------|
| Advertising (Hard surface / integrated) [Footnote 9] | ✓                 |                     |
| Station Identification Signage                       | ✓                 |                     |
| Security Enclosures / Gates at Station Entry Points  | ✓                 |                     |
| Retail Facilities [Footnote 9]                       | ✓                 | ✓                   |
| Entrance connections to the System [Footnote 11]     | ✓                 |                     |

**[Footnotes:]**

- 1) City shall be responsible for the service / usage charges related to all utilities during the Maintenance Term. Project Co shall be responsible for all infrastructure required up to the demarcation point established pursuant to Schedule 15-2 and / or as may be agreed to with the utility service provider.
- 2) Regarding City of Ottawa Corporate Radio System, Project Co shall enter into maintenance and licensing agreements with the Radio Supplier and install radio equipment into the OLRT System. The Radio Supplier shall be responsible for the communication of the radio signal under all operating scenarios. For further certainty, the Radio Supplier shall be responsible for all City of Ottawa Corporate Radio System Infrastructure located within the Lands, Any additional maintenance access, licensing or joint agreements shall be formalized in a separate contract outside of the OLRT contract. "Hydro Ottawa Limited (HOL) will operate up to the customer's ownership demarcation point and may operate the customer's first protective device in from Hydro Ottawa's distribution system. HOL clarifies the customer's interface responsibilities with each connection agreement. HOL defines three areas of responsibility between itself and the customer's interface: ownership demarcation ('O'), electrical control authority ('C'), and maintenance authority ('M'). All electrical devices and support structures on HOL's distribution system receive unique identifying nomenclature with the required 'OCM' suffix" indicating the defined roles. For example, an OCM suffix of "HHH" indicates Hydro Ottawa owned, controlled, and maintained device. Where the nomenclature suffix is 'CHZ', Project Co customer owns the device, Hydro Ottawa controls the device, and Project Co's qualified contractor maintains the device.
- 3) Software and Hardware Upgrades, Project Co shall coordinate with OC Transpo for the upgrade of software and hardware with respect to non-essential systems within the equipment room at 875 Belfast. OC Transpo may retain non-essential software and / or hardware exclusive for their use. 24/7 maintenance of the equipment room will be supplied by OC Transpo. Project Co shall provide suitable expertise to diagnose and replace equipment to maintain operational efficiency.
- 4) Project Co shall be responsible for the Custodial Maintenance of the Fare Collection Equipment. The City shall be responsible for all Preventive and Corrective Maintenance along with all Life Cycle Preservation and Rehabilitation of all of the Fare Collection Equipment.
- 5) City / Municipal Services

- a) Sanitary – All existing and new works to be maintained by the City, with the exception of the infrastructure integral within the facilities up to the demarcation in which the sanitary becomes New or Existing Municipal Infrastructure.
- b) Watermain – All works to be maintained by the City, with the exception of the infrastructure integral within the facilities up to the demarcation in which the watermain becomes New or Existing Municipal Infrastructure.
- c) Storm sewers – Pursuant to Schedule 15-2, Project CO shall review and determine if the existing storm sewers and / or culverts are suitable and sufficient for the requirements of the OLRT System. If Project Co elects to reuse an existing storm sewer that remains within the lands, then Project Co shall be responsible for the requirements set out in Schedule 15-3, including Appendix A, B, and C, notwithstanding the following exemptions.
  - i) At the 3 BRT-LRT transfer stations, all storm sewers installed in the BRT defined area will be maintained by the City.
  - ii) The west Transitway storm sewer (Twin Box) will be maintain hydraulically by the City but structurally by Project Co, and for further clarity the requirements of Schedule 15-3, Appendix A, B, and C shall apply.
- d) Existing Leachate Collection and Treatment System at Lees Avenue Station – The City is currently maintaining and this system will continue to be maintained by the City in the future, notwithstanding the provisions of Appendix A Article 4.0(b). For further certainty, Project Co shall demonstrate to the City any impacts that may result from the construction and operation of the OLRT system. Any additional flows anticipated to be directed to the leachate collection and treatment system as part of the OLRT Works or Maintenance Term will be indicated by Project Co during the design phase. Any necessary capital cost upgrades to the system during the ‘Works’ based on these additional flows would be the responsibility of Project Co.
- e) Existing Storm Water Pumping Station at Lees Avenue Station - The City is currently maintaining and this station will continue to be maintained by the City in the future, notwithstanding the provisions of Appendix A Article 4.0(b). For further certainty, Project Co shall demonstrate to the City any impacts that may result from the construction and operation of the OLRT system. Any additional flows anticipated to be directed to the existing storm water pumping station as part of the OLRT Works or Maintenance Term will be indicated by Project Co during the design phase. Any necessary capital cost upgrades to the system during the ‘Works’ based on these additional flows would be the responsibility of Project Co.
- 6) Project Co shall be responsible for maintenance of the fencing installed throughout the Lands, with the exception of the fencing that falls beyond the maintenance demarcation of the existing retaining walls of which the City remains responsible for maintenance.
- 7) Debris / Rubbish / Garbage Cleanup, Project Co shall not use the tunnel as a means of storing and / or transporting any debris / rubbish / garbage. Project Co shall be responsible for performing Custodial Maintenance responsibilities such as removing debris / rubbish / garbage from within the Tunnel pursuant to Appendix A, Attachment 8.
- 8) Surface Maintenance,
  - a) “Surface” means the part of the municipal road, street, or pathway required for the passage of vehicles / pedestrians within the Municipal ROW intended for Public use and includes: the travelled lanes and shoulders whether they are paved or not, a boulevard, sidewalk or median and



- any appurtenances necessary for the illumination and drainage of the municipal road, street or pathway surface and the conveyance and safety of the motorists / pedestrians.
- b) The Maintenance and Repair of the Surface, in addition to the requirements provide in Schedule 15-3 Appendix A, B, and C, includes all summer operations, such as pothole repairs / patching, crack sealing, depression / settlement repairs, sidewalk patching, catch basin and storm sewer cleanout, and all winter operations such as plowing, snow removal, sanding, spring cleanup, and bridge deck washing.
  - c) See Schedule 1, Appendix 2 which includes Property Request Plans illustrating the Lands and New Municipal Infrastructure.
  - d) Generally, Project Co shall be responsible for the Maintenance and Repair of the Surface in the Lands, with exception:
    - i) of surfaces that are clearly demarcated as the City's Maintenance responsibilities;
    - ii) New Municipal Infrastructure upon the completion of the design, construction, and maintenance term as provided in Schedule 15-2, Part 1, Article 23;
    - iii) of bridge overpasses which are a continuation of the existing or new Municipal Infrastructure which the City is responsible for the Maintenance, and for further certainty, surface maintenance activities as provided in bullet b) above.
- 9) City shall be responsible for the sale of the advertising and / or retail space. Project Co shall be responsible for the infrastructure that supports the advertising and / or retail space as defined in the Schedule 15-2.
- 10) City shall be responsible for Custodial Maintenance of areas designated exclusively for OC Transpo staff use such as washrooms and lunch rooms pursuant to Schedule 15-2 and for further clarity not including OC Transpo designated areas at the MSF.
- 11) Maintenance of Entrance Connections,
- a) Within Private Developments, Project Co shall be responsible for maintaining entrance connections to grade that are constructed as part of the project. The maintenance of entrance connections shall include the following entrance connection components:
    - i) Doors into private developments;
    - ii) Any vestibules (finishes, walls, floors, ceilings);
    - iii) Joints/waterproofing;
    - iv) Utilities;
    - v) Light fixtures/emergency lighting;
    - vi) Fire control systems to exterior doors;
    - vii) Cleaning to inside face of exterior doors/developer to clean exterior face of exterior doors
 Project Co shall be responsible for locking and unlocking of any doors into private developments.
- 12) CTS Connections
- a) The CTS will be collocated with other City optical fibre services. Project Co shall not be responsible for the maintenance of these additional optical fibre services. If any maintenance responsibility is requested this will be negotiated with Project Co under a variation to order.
- 13) Radio – Project Co shall provide access and training to the Radio System Supplier's maintainers or enter into a supplementary agreement outside of the OLRT contract for the responsibility of maintenance. The Radio System Supplier shall maintain the radio system to provide radio coverage and enable safe operations of the OLRT.

## APPENDIX A – ATTACHMENT 16 VANDALISM AND GRAFFITI

### 1.0 General

- (a) This Attachment 16 sets out the Parties' respective roles and responsibilities in respect of Response to and Rectification of incidents of Vandalism.

### 2.0 Definitions

- (a) The following capitalized terms shall have the meanings ascribed to them below:
- (i) **"Event of Vandalism"** means any incident of Vandalism occurring on the System.
  - (ii) **"Graffiti"** means the visual or physical defacement of any component of the System by drawing, painting, spraying, scratching or inscribing.
  - (iii) **"Physical Damage"** means damage deliberately caused to the structure or physical integrity of any component of the System that requires repair or replacement, and includes breakage and cracking, indentations, impacts to a structure which disable the functionality of a component, dislocation of a component, or other similar forms of harm which would commonly be understood as physical damage.
  - (iv) **"Vandalism"** means the deliberate destruction, defacement, or damage of any component of the System, and includes Graffiti, Physical Damage, and any other form of deliberate destruction, defacement, or damage.
  - (v) **"Vandalism Matrix"** means the responsibility matrix defining specific categories of Vandalism, set out in Section 6.0 of this Attachment.
  - (vi) **"Vandalism Repair Costs"** are determined in accordance with Section 4.0 of this Attachment.

### 3.0 Response and Rectification of Vandalism

- (a) Project Co shall be solely responsible for all Response and Rectification in respect of all Events of Vandalism occurring on the System at all times and in accordance with the requirements of Schedule 15-3.

### 4.0 Determination of Vandalism Repair Costs

- (a) Project Co.'s Vandalism Repair Costs shall be limited to the following items:
- (i) Project Co.'s Direct Costs (as such term is defined in Appendix A of Schedule 22 to the Project Agreement) for Response and Rectification of any Event of Vandalism; and
  - (ii) Project Co.'s Applicable Margins, determined in accordance with Appendix B of Schedule 22 to the Project Agreement.

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- (b) Project Co.'s Vandalism Repair Costs shall be exclusive of any insurance proceeds due to Project Co, or to which Project Co would have been entitled had insurance been maintained in accordance with the requirements of the Project Agreement, which are payable in respect of the relevant Event of Vandalism. For clarity, any such insurance proceeds shall be subtracted from the amount calculated in Section 4.0(a), above, to determine the total Vandalism Repair Costs.
- (c) Project Co's Vandalism Repair Costs shall not include any Deductions applied under the Payment Mechanism in relation to an Event of Vandalism.

**5.0 Responsibility for Vandalism Repair Costs**

- (a) Project Co shall be wholly responsible for all Vandalism Repair Costs, as well as any other associated costs, which result from an Event of Vandalism that is denoted as "Project Co Cost" under the column titled "Cost Risk" in the Vandalism Matrix.

- 6.0** Project Co shall be reimbursed by the City for 100% of the Vandalism Repair Costs which result from an Event of Vandalism that is denoted as "City Cost" under the column titled "Cost Risk" in the Vandalism Matrix. **Vandalism Matrix**

| Project Period                                | Description of Vandalism Event  | Responsibility for Response/ Rectification | Relief from deductions under the Payment Mechanism (Non Project Co Cause or Station-Related Non Project Co Cause)? | Cost Risk       | Application Guidance |
|---|---|--|--|-----------------|----------------------|
| <b>Pre-Revenue Service Availability Date</b>  | Vandalism in respect of any part of the Works (subject to the other provisions of the Project Agreement, including Section 30, 41, 43 and 44) | Project Co                                 | N/A  | Project Co Cost | N/A                  |
|   |   |  |  |                 |                      |
| <b>Post-Revenue Service Availability Date</b> | Graffiti – interior or exterior of Vehicles   | Project Co                                 | No   | City Cost       | N/A                  |
| <b>Post-Revenue Service Availability Date</b> | Graffiti – Stations and Alignment   | Project Co                                 | No   | City Cost       | N/A                  |

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| Project Period                         | Description of Vandalism Event   | Responsibility for Response/ Rectification | Relief from deductions under the Payment Mechanism (Non Project Co Cause or Station-Related Non Project Co Cause)?   | Cost Risk       | Application Guidance  |
|--|--|--|--|-----------------|---|
| Post-Revenue Service Availability Date | Graffiti – interior or exterior of MSF   | Project Co                                 | No   | Project Co Cost | N/A   |
| Post-Revenue Service Availability Date | Physical Damage to Vehicle, or Graffiti on Vehicles that necessitates structural repairs. Applies to vehicles vandalized while in Revenue Service.   | Project Co                                 | A Non-Project Co Cause is applicable under the Payment Mechanism where Vandalism is severe enough that Vehicle is taken out of Revenue Service as a result. The Non-Project Co Cause shall be limited to losses of service caused by the requirement to remove the affected Vehicle from service and enter spare Vehicle into service. | City Cost       | Vandalism must occur while Vehicle is in Revenue Service. Project Co maintenance records (pre-service and end-of-service inspection) may be relied upon to demonstrate timing of Vandalism. Example: Project Co pre-departure inspection records show no vandalism, following return from Revenue Service Project Co maintenance records show that vandalism is noted/reported. |
| Post-Revenue Service Availability Date | Physical Damage to Vehicles, or Graffiti that necessitates structural repairs. Applies to vehicles vandalized while out of Revenue Service, i.e. stored at the Maintenance and Storage Facility. | Project Co                                 | Only where Vandalism is caused by an Excusing Cause or Force Majeure event. In this case, as per provisions of Project Agreement governing Excusing Causes and Force Majeure.  | Project Co Cost | N/A   |
| Post-Revenue Service Availability Date | Physical Damage to Stations and Alignment  | Project Co                                 | Only where Vandalism is severe enough that it disables E&M, blocks the   | City Cost       | N/A   |



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| Project Period                                | Description of Vandalism Event   | Responsibility for Response/ Rectification | Relief from deductions under the Payment Mechanism (Non Project Co Cause or Station-Related Non Project Co Cause)?  | Cost Risk       | Application Guidance                                |
|---|--|--|---|-----------------|---|
|   |  |  | Guideway, or causes Station(s) to fail to meet the Station Access Standard.   |                 |   |
| <b>Post-Revenue Service Availability Date</b> | All Physical Damage to the MSF facility                                | Project Co                                 | No  | Project Co Cost | N/A   |
| <b>Post-Revenue Service Availability Date</b> | Any Vandalism committed by City employee while in course of employment | Project Co                                 | Only where Vandalism is severe enough that: (a) Vehicle is taken out of Revenue Service as a result. Relief shall be limited to losses of service caused by requirement to remove affected Vehicle from service and enter spare Vehicle into service; (b) it disables E&M; (c) blocks the Guideway; or (d) causes Station(s) to fail to meet the Station Access Standard. | City Cost       | This category overrides all others specified above. |

**7.0 Process for Reimbursement**

- (a) Upon Project Co becoming aware of the occurrence of an Event of Vandalism, Project Co shall promptly notify the City of the Event of Vandalism and document what remedial action will be taken to restore or repair the System.
- (b) No longer than 60 days following completion of the required restoration or repair by Project Co in respect of the Event of Vandalism, Project Co shall submit to the City a request for reimbursement for associated Vandalism Repair Costs, calculated in accordance with Section 4.0 of this Appendix A. The request for reimbursement shall provide a comprehensive breakdown of the nature of work completed to restore the System, the hours worked and any insurance proceeds that have been paid or are payable in relation to the Event of Vandalism.

- (c) The City will notify Project Co of any issues or disputes in respect of Project Co's calculation of the Vandalism Repair Costs within 10 Business Days of receipt of the request for reimbursement. If the City does not dispute Project Co's claimed Vandalism Repair Costs, then the City shall confirm its approval. The City's failure to respond within 10 Business Days shall constitute approval.
- (d) If the City and Project Co are unable to resolve such issues or disputes within a further 10 Business Days, then either Party may refer the issue or dispute for resolution pursuant to the Dispute Resolution Procedure. Where the dispute involves only a portion of the claimed Vandalism Repair Costs, then the undisputed portion shall be deemed to be approved and eligible for payment in accordance with 8.0(e), below.
- (e) Upon receipt by Project Co of the City's approval in accordance with 7.0(c) or (d), above, of the content and amount set out in Project Co's request for reimbursement, Project Co shall include as part of the next invoice issued to the City and prepared in accordance with Section 34.6 of the Project Agreement the approved Vandalism Repair Cost and shall also append the final approved request for reimbursement in respect of the Vandalism Repair Cost. The City shall make payment in accordance with Section 34 of the Project Agreement.



## **APPENDIX B ASSET PRESERVATION**

### **1.0 Introduction**

- (a) This Appendix outlines the requirements for the System assets preservation activities required pursuant to this Project Agreement. Project Co is responsible for meeting the performance outcomes and objectives outlined in this Appendix which include:
  - (i) Achieving defined service levels;
  - (ii) Limiting System consumption;
  - (iii) Ensuring safety of System is a continual and ongoing focus;
  - (iv) Achieving Design Life expectations; and
  - (v) Providing a sound Asset Management Plan to maintain long-term serviceability and structural integrity of the System.

### **2.0 Scope**

- (a) Project Co is solely responsible for the provision of products and services associated with the planning, management and delivery of System asset preservation activities to meet the Project Agreement requirements and in accordance with Good Industry Practice. The System asset preservation process is described as follows:
  - (i) Project Co develops an Asset Management Plan that meets the Project Agreement requirements and delivers the required Asset Preservation Performance Measures;
  - (ii) Project Co implements the Asset Management Plan;
  - (iii) Project Co continually monitors System condition and reports achievements; and
  - (iv) Project Co adjusts the Asset Management Plan as required to achieve the desired outcomes.

### **3.0 References**

- (a) Reference Documents are noted elsewhere in this Project Agreement. Accordingly, the following is a partial listing of Reference Documents:
  - (i) City of Ottawa's Asset Management Plan provides an Overall Condition of City Assets.

**4.0 Performance Outcomes****(a) General**

- (i) Project Co shall develop and implement an Asset Management Plan that limits the extent of consumption of individual asset categories comprising the System by maintaining and preserving the performance and operational integrity and safety on an ongoing basis throughout the Maintenance Term.
- (ii) Details of routine maintenance requirements applicable to the System and their relevant Outcome Target indicators and consequences of Non-Conformance are noted in Appendix A – Maintenance Performance Requirements) to this Schedule, and the Expiry Date Requirements are noted in Appendix C to this Schedule and are not repeated here. Project Co's Asset Management Plan shall address those requirements and the key outcome objectives described in these Appendices. The subsequent sections provide the key outcome objectives for the asset categories.

**(b) Guideway Elements**

| <b>TABLE 4.2</b><br><b>Guideway Elements</b> |  |
|--|--|
| <b>Item</b>                                  | <b>Outcome Objectives</b>  |
| a. Civil / Drainage / Utilities              | <ul style="list-style-type: none"> <li>• Ensure that track subbase, grading, and drainage provide a high quality track foundation</li> <li>• Convey surface and groundwater within and across the ROW in compliance with environmental requirements</li> <li>• Ensure that OLRT patrons and infrastructure are not at risk from flood, groundwater, scour and/or drainage system failures</li> <li>• Ensure that all surfaces remain free draining without ponding</li> <li>• Ensure utilities crossing or occupying the ROW are properly protected/isolated to provide their intended public service and do not pose a safety hazard to the System and its occupants</li> </ul> |
| b. Track / Trackwork                         | <ul style="list-style-type: none"> <li>• Provide high quality track and special trackwork within specified tolerances to the design geometry</li> <li>• Provide a high ride comfort to OLRT passengers</li> <li>• Minimize track-generated noise and vibration to within acceptable levels</li> <li>• Minimize wear and tear to vehicles, rail and other track components through active management of rail-wheel interface</li> <li>• Minimize the probability and consequence of train derailments</li> </ul>  |

| <b>TABLE 4.2</b><br><b>Guideway Elements</b> |  |
|--|--|
| <b>Item</b>                                  | <b>Outcome Objectives</b>  |
| c. LRT Bridges                               | <ul style="list-style-type: none"> <li>• Ensure that all LRT Bridges remain safe and functional at all times for OLRT operation</li> <li>• Ensure that track/guardrail fastening systems, OCS foundations/attachments, walkways, platform/canopies and other elements attached to, or supported by LRT bridges remain in good condition providing their intended function</li> <li>• Ensure there are no load limitations or speed reductions to OLRT operation</li> <li>• Ensure that there are no hazards to undergrade roadways, walkways, trails, or other facilities</li> </ul>   |
| d. Non LRT Bridges                           | <ul style="list-style-type: none"> <li>• Ensure that there are no load limitations to Roadway Bridges so that passage of legal vehicles is maintained in accordance with local and provincial requirements</li> <li>• Ensure all Bridges including for Roadways, Trails, and Pedestrian facilities remain safe and functional at all times</li> <li>• Ensure that barriers and other protective elements minimizing contact to the OCS system by overhead users are appropriately positioned and maintained</li> <li>• Ensure that OCS attachments and electrical isolation elements are well maintained and provide the intended protection to structures and the public</li> </ul> |
| e. Retaining Walls                           | <ul style="list-style-type: none"> <li>• Ensure Retaining walls remain safe and functional at all times</li> <li>• Ensure that there are no impediments to the passage of OLRT vehicles adjacent to retaining walls</li> <li>• Ensure that there are no impediments to the passage of roadway vehicles or other users adjacent to retaining walls on facilities crossing or paralleling the OLRT ROW</li> <li>• Ensure that retaining wall drainage systems are functional and well maintained</li> </ul>  |
| f. Management                                | <ul style="list-style-type: none"> <li>• Meet the design requirements noted in this Project Agreement</li> <li>• Manage the probability and consequence of system failures throughout the OLRT, and develop recovery and reactivation plans</li> <li>• Ensure inspections, condition surveys and documentation are carried out according to Asset Management Plan requirements</li> <li>• Ensure programming of the Maintenance Services is complete, performed with sufficient lead time, and based upon a long-term focus</li> <li>• Ensure Good Industry Practice and continual improvements are applied to Maintenance Services</li> </ul>                                       |

## (c) Tunnels

| <b>TABLE 4.3<br/>Tunnels</b>    |   |
|---------------------------------|---|
| <b>Item</b>                     | <b>Outcome Objectives</b>   |
| a. Tunnel Structures            | <ul style="list-style-type: none"> <li>• Ensure that the Tunnels and the structures and all associated elements are safe and functional for passage of OLRT vehicles at all times</li> <li>• Ensure that the tunnel structure is sound and serves its intended function in providing structural support and/or protection to all adjacent and overhead facilities such as buildings, utilities, roadways, etc.</li> <li>• Ensure that the tunnel walls/ceilings and/or tunnel liner are well maintained and in good condition minimizing water infiltration, spalling or other cosmetic defects</li> <li>• Ensure that catwalks and cross passages are well maintained, functional and available for the use in case of an emergency</li> <li>• Ensure that the tunnel drainage system including pumps are well maintained and functional at all times</li> <li>• Ensure that tunnel portal structures are well maintained and provide for safe passage of OLRT vehicles</li> </ul>   |
| b. Tunnel Equipment and Systems | <ul style="list-style-type: none"> <li>• Ensure safe, efficient and fully functional tunnel lighting in accordance with applicable standards as identified in the design and construction requirements</li> <li>• Maintain and update tunnel lighting system and fixtures to minimize energy consumption in keeping with ongoing technological advancement and compliance with federal and provincial requirements</li> <li>• Ensure that emergency communication / blue light systems , exit signage, escape routes are well maintained and provide their intended function</li> <li>• Ensure drainage pumping systems are fully functional, in good repair, have advance warning and backup systems</li> <li>• Ensure that the tunnel emergency ventilation systems including fans, power/control systems and ventilation shafts are fully functional, in good repair and in compliance with applicable codes and standards</li> <li>• Ensure that tunnel power backup systems are fully functional and in good repair</li> </ul> |
| c. Management                   | <ul style="list-style-type: none"> <li>• Meet the design requirements noted in this Project Agreement</li> <li>• Manage the probability and consequence of system failures, and develop recovery and reactivation plans</li> <li>• Ensure inspections, condition surveys and documentation are carried out according to Asset Management Plan requirements</li> <li>• Ensure programming of the Maintenance Services is complete, performed with sufficient lead time, and based upon a long-term focus</li> <li>• Ensure Good Industry Practice and continual improvements are applied to Maintenance Services</li> </ul>  |

## (d) Systems Elements

| <b>TABLE 4.4</b><br><b>Systems Elements</b> |   |
|---|---|
| <b>Item</b>                                 | <b>Outcome Objectives</b>   |
| a. Traction Power System                    | <ul style="list-style-type: none"> <li>• Ensure a safe, efficient and reliable traction power system</li> <li>• Ensure that traction power substations, substation feeders, and traction power distribution systems are well maintained, updated as necessary to support the required OLRT operation without reduction in train performance</li> </ul>  |
| b. Overhead Catenary System                 | <ul style="list-style-type: none"> <li>• Ensure that the OCS, including poles, foundations, messenger and contact wires and all associated hardware are properly maintained and in good condition</li> <li>• Ensure safe and reliable OLRT operations by maintaining optimal OCS alignment under varied temperature conditions</li> <li>• Ensure that contact wire wear is properly monitored and that replacement, as necessary, is programmed and staged well in advance to support ongoing operations during replacement and minimize the potential for reaching OCS conditions that impede or slow OLRT operations</li> </ul>   |
| c. Corrosion Control                        | <ul style="list-style-type: none"> <li>• Ensure a safe and fully functional corrosion control system.</li> <li>• Ensure that the system and all associated infrastructure including electrical isolation of track and other components are maintained to minimize stray current and corrosion in accordance with the design and construction requirements of Schedule 15.</li> </ul>  |
| d. Train Control / Signal System            | <ul style="list-style-type: none"> <li>• Ensure a safe, efficient, and reliable train control system</li> <li>• Ensure that the system provides for fail safe operations and complies with applicable regulatory requirements and the approved System Safety Management System</li> <li>• Ensure that the system is fully functional at all times and supports the required OLRT operations and system capacity/throughput requirements</li> <li>• Ensure that the train control system is refined and updated as may be necessary in keeping with life cycle considerations, wear and tear, technological advancements, component obsolescence, equipment suppliers and industry requirements</li> </ul> |
| e. Communications                           | <ul style="list-style-type: none"> <li>• Ensure safe, efficient and fully functional communication system</li> <li>• Ensure that communication system reliably supports all intended functions including provision of passenger information, as well as all control and monitoring interfaces among train control, power, security, and other systems, and for management and communication among operating and maintenance staff.</li> <li>• Ensure that communication system components are updated, or replaced, as may be necessary in keeping with life cycle considerations, technological advancements, equipment suppliers and industry requirements</li> </ul>                                   |



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| <b>TABLE 4.4</b><br>Systems Elements |   |
|--------------------------------------|---|
| <b>Item</b>                          | <b>Outcome Objectives</b>   |
| f. Management                        | <ul style="list-style-type: none"> <li>• Meet the design requirements noted in this Project Agreement</li> <li>• Manage the probability and consequence of system failures throughout the OLRT, and develop a recovery and reactivation plans</li> <li>• Ensure inspections, testing, condition surveys, certifications and documentation are carried out according to Asset Management Plan requirements</li> <li>• Ensure programming of the Maintenance Services is complete and based upon long-term focus</li> <li>• Ensure Good Industry Practice and continual improvements are applied to Maintenance Services</li> </ul> |

## (e) Stations

| <b>TABLE 4.5</b><br>Stations  |   |
|---|---|
| <b>Item</b>   | <b>Performance Outcomes</b>   |
| a. Fixed Facilities including Platforms, Ramps, Stairs, Walkways, Bridges, Canopies | <ul style="list-style-type: none"> <li>• Ensure that all fixed facilities remain structurally sound, safe and available for patrons</li> <li>• Ensure that the condition of the fixed facilities including all surfaces and finishes are well maintained, facilitate effective custodial maintenance and provide a high quality and comfortable passenger environment</li> <li>• Ensure that all fixed facilities comply with applicable codes and regulations for safety and accessibility</li> </ul>  |
| b. Escalators / Elevators   | <ul style="list-style-type: none"> <li>• Ensure that all escalators and elevators are well maintained, functional and serviceable</li> <li>• Ensure compliance with all federal, provincial and municipal safety requirements</li> <li>• Ensure that escalators and elevators support future operations and capacity requirements as provided by Schedule 10 - Preliminary Service Plan's Service Level 9.</li> <li>• Ensure that escalators and elevators maintain a high degree of reliability in accordance with industry standards</li> </ul> |
| c. Passenger Amenities / Station Furniture / Signs & Graphics                       | <ul style="list-style-type: none"> <li>• Provide a high quality, comfortable, and safe passenger environment</li> <li>• Ensure all components are well maintained, functional, and updated,</li> <li>• Ensure all signage and other graphics are clear, provide their intended function, and are updated, as may be necessary due to physical or operational modifications of the system</li> </ul>   |
| d. Lighting, Electrical & Mechanical Equipment, and Janitorial Facilities           | <ul style="list-style-type: none"> <li>• Provide a high quality, comfortable and safe passenger environment</li> <li>• Ensure all lighting and equipment is well maintained and functional</li> <li>• Ensure facilities support serviceability of each station</li> <li>• Ensure compliance with all applicable codes and regulations</li> </ul>  |



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Stations

| Item          | Performance Outcomes   |
|---------------|--|
| e. Management | <ul style="list-style-type: none"> <li>• Meet the design requirements noted in this Project Agreement</li> <li>• Manage the probability and consequence of system failures throughout the OLRT, and develop a recovery and reactivation plans</li> <li>• Ensure inspections, condition surveys and documentation are carried out according to Asset Management Plan requirements</li> <li>• Ensure programming of the Maintenance Services is complete and based upon long-term focus</li> <li>• Ensure Good Industry Practice and continual improvements are applied to Maintenance Services</li> </ul> |

## (f) Maintenance and Storage Facilities

**TABLE 4.6**  
Maintenance and Storage Facilities

| Item                              | Outcome Objectives   |
|-----------------------------------|--|
| a. LRV Maintenance Shop           | <ul style="list-style-type: none"> <li>• Ensure that all fixed facilities and systems (HVAC, etc.) are safe, well maintained and fully functional</li> <li>• Ensure the maintenance shop complies with all applicable regulatory requirements</li> <li>• Ensure that the facility continues to support ongoing vehicle maintenance requirements</li> <li>• Provide for updates to employee facilities, as may be warranted to maintain an effective and serviceable environment</li> </ul> |
| b. MOW Facility/Area              | <ul style="list-style-type: none"> <li>• Ensure the facility and systems are safe, well maintained and fully functional</li> <li>• Ensure facility supports ongoing MOW activities</li> <li>• Adequately provides for storage of MOW materials and equipment</li> </ul>  |
| c. Shop and MOW Equipment         | <ul style="list-style-type: none"> <li>• Ensure that LRV Shop and MOW equipment is well maintained, fully functional and safe for use</li> <li>• Supports all necessary maintenance and rehabilitation functions</li> <li>• Ensure that upgrades are made as may be necessary or appropriate due to wear out or obsolescence.</li> </ul>   |
| d. LRV Storage Area / Yard Tracks | <ul style="list-style-type: none"> <li>• Ensure that the LRV Storage area/building and other yard tracks and facilities are safe, well maintained and fully functional</li> <li>• Ensure that there is no degradation in train speeds or flexibility of train movements</li> <li>• Ensure adequate storage capacity is maintained for ongoing fleet requirements</li> </ul>  |

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| <b>TABLE 4.6</b><br>Maintenance and Storage Facilities |  |
|--|--|
| <b>Item</b>  | <b>Outcome Objectives</b>  |
| e. Operations Crew Facility                            | <ul style="list-style-type: none"> <li>• Ensure facility and systems are safe for use and well maintained</li> <li>• Ensure that facility supports the various City activities and functions</li> <li>• Provide for updates, as may be warranted to maintain an effective and serviceable staff environment</li> </ul>   |
| f. Management  | <ul style="list-style-type: none"> <li>• Meet the design requirements noted in this Project Agreement</li> <li>• Manage the probability and consequence of system failures throughout the OLRT, and develop a recovery and reactivation plans</li> <li>• Ensure inspections, condition surveys and documentation are carried out according to Asset Management Plan requirements</li> <li>• Ensure programming of the Maintenance Services is complete and based upon long-term focus</li> <li>• Ensure Good Industry Practice and continual improvements are applied to Maintenance Services</li> </ul> |

## (g) Other Infrastructure

| <b>TABLE 4.7</b><br>Other Infrastructure |  |
|--|--|
| <b>Item</b>                              | <b>Outcome Objectives</b>  |
| a. General                               | <ul style="list-style-type: none"> <li>• Ensure that all infrastructure and components are well maintained and in a state of good repair</li> <li>• Attain full compliance with municipal, provincial, and federal safety standards</li> <li>• Ensure safe, efficient, and fully functional systems and Infrastructure</li> <li>• Ensure ongoing maintenance can be effectively and efficiently performed</li> <li>• Minimize the potential for chronic reliability issues</li> </ul>  |
| b. Management                            | <ul style="list-style-type: none"> <li>• Meet the design requirements noted in this Project Agreement</li> <li>• Manage the probability and consequence of system failures throughout the OLRT, and develop a recovery and reactivation plans</li> <li>• Ensure inspections, condition surveys and documentation are carried out according to Asset Management Plan requirements</li> <li>• Ensure programming of the Maintenance Services is complete and based upon long-term focus</li> <li>• Ensure Good Industry Practice and continual improvements are applied to Maintenance Services</li> </ul> |

## (h) Revenue Service Vehicles

| <b>TABLE 4.8</b><br>Revenue Service Vehicles |  |
|--|--|
| <b>Item</b>                                  | <b>Outcome Objectives</b>  |
| a. General                                   | <ul style="list-style-type: none"> <li>• Ensure that Revenue Service Vehicles are safe, fully functional, and serviceable throughout Maintenance Term</li> <li>• Sustain high levels of in-service reliability</li> <li>• Ensure compliance with all applicable standards and regulations</li> </ul>   |
| b. Interior                                  | <ul style="list-style-type: none"> <li>• Ensure interior components are safe, comfortable, and of high quality for passenger use</li> <li>• Ensure that interior remains serviceable and can be maintained effectively and efficiently</li> <li>• Ensure HVAC systems continue to meet the design requirements for a comfortable passenger environment</li> <li>• Provide for updates, to interior components (such as seats, flooring, finishes, etc.) and systems (HVAC, passenger information, etc.), as may be necessary due to wear out and obsolescence</li> </ul> |
| c. Exterior                                  | <ul style="list-style-type: none"> <li>• Ensure vehicle exterior remains appealing, structurally sound, free of rust/corrosion and other defects/deformities</li> <li>• Ensure vehicle exterior remains serviceable and can be cleaned and maintained in a cost effective and efficient manner</li> </ul>  |
| d. Doors                                     | <ul style="list-style-type: none"> <li>• Ensure safe, fully functional and serviceable doors that can be effectively maintained</li> <li>• Provide for a high level of reliability and support short headways as required to meet the operational service requirements</li> </ul>  |
| e. Onboard Control Systems / ATO             | <ul style="list-style-type: none"> <li>• Ensure onboard train control systems are fully functional, support the required operational service requirements and ensure safe operations</li> <li>• Ensure that onboard train control systems are refined and updated as may be necessary in keeping with life cycle considerations, technological advancements, equipment suppliers and industry requirements</li> </ul>  |
| f. Propulsion                                | <ul style="list-style-type: none"> <li>• Ensure propulsion system is highly reliable and can be maintained effectively and efficiently</li> <li>• Minimize degradation in vehicle performance and ensure full compliance with operational service requirements</li> </ul>  |
| g. Suspension/Bogies/ Articulation           | <ul style="list-style-type: none"> <li>• Ensure that these elements are safe, highly reliable and serviceable</li> <li>• Provide for a high level of passenger comfort and minimize wear and tear on LRV and track</li> </ul>  |
| h. Braking                                   | <ul style="list-style-type: none"> <li>• Ensure that braking system including all associated components are safe, highly reliable, and can be effectively and efficiently maintained</li> <li>• Ensure that vehicle performance requirements continue to be met</li> </ul>   |

| <b>TABLE 4.8</b><br>Revenue Service Vehicles |  |
|--|--|
| <b>Item</b>                                  | <b>Outcome Objectives</b>  |
| i. Management                                | <ul style="list-style-type: none"> <li>• Meet the design requirements noted in this Project Agreement</li> <li>• Manage the probability and consequence of system failures throughout the OLRT, and develop a recovery and reactivation plans</li> <li>• Ensure inspections, condition surveys and documentation are carried out according to Asset Management Plan requirements</li> <li>• Ensure programming of the Maintenance Services is complete and based upon long-term focus</li> <li>• Ensure Good Industry Practice and continual improvements are applied to Maintenance Services</li> </ul> |

## Non-Revenue Service Vehicles

| <b>TABLE 4.9</b><br>Non-Revenue Service Vehicles |  |
|--|--|
| <b>Item</b>                                      | <b>Outcome Objectives</b>  |
| a. General                                       | <ul style="list-style-type: none"> <li>• Ensure that Non-Revenue Service Vehicles are safe, fully functional, and serviceable throughout Maintenance Term</li> <li>• Sustain high levels of in-service reliability</li> <li>• Ensure compliance with all applicable standards and regulations</li> </ul> |

**5.0 Documentation and Reporting**

## (a) General Requirements

- (i) This Article describes the plans and reports that Project Co is required to submit to the City. The general purpose of the plans and the reports are for Project Co to provide documentation that demonstrates to the City:
- A. An understanding of the Asset Management requirements;
  - B. An Asset Management strategy that is based upon rationalized knowledge of System asset inventory, condition, and performance;
  - C. Logical and up-to-date reporting on the condition of System assets and meeting Operational Performance Requirements;
  - D. Asset preservation and rehabilitation work undertaken during the previous 12 months and work planned for the upcoming 12 months;
  - E. Long-term asset preservation strategy and plans;
  - F. A robust and up-to-date Quality Management System and reporting;

- G. Compliance with environmental requirements and permitting;
  - H. Reporting of results of meeting the Asset Preservation Performance Measures, which would include compliance and non-compliance reporting; and
  - I. Compliance with this Project Agreement.
- (ii) The system developed by Project Co shall be dynamic, easily auditable by the City, and kept up-to-date so that Project Co can regularly and readily provide information to the City, and be compatible with MTO's corporate Asset Management information systems.
- (b) Plans and Reports
- (i) Table 5.2 provides a summarized schedule of the plans and reports required for submission by Project Co to the City for review and input.
  - (ii) Project Co shall be assigned a Medium Quality Failure for each instance of failing to provide the City with any plan or report listed below in Table 5.2, in compliance with the requirements for such plan or report as set out in this Appendix B, by the relevant Due Date. Additionally, if Project Co does not provide the required, compliant plan or report within one Contract Month following the required Due Date, Project Co shall be assigned a further Major Quality Failure. Project Co shall be assigned a Major Quality Failure for each subsequent Contract Month it fails to provide the required, compliant documentation.

**TABLE 5.2**  
Schedule of Deliverable Reports and Records – Response Time Measures

| Performance Measure | Deliverable Name   | Specification Reference | Due Date   | Submitted under the Schedule 10 – Review Procedure |
|---------------------|--|-------------------------|--|--|
| PREP1               | Initial Asset Management Plan (including initial five (5)-year asset preservation schedule)                        | 5.0(d)                  | 60 days prior to the Revenue Service Availability Date   | Yes  |
| PREP2               | Asset Management Plan Updates (including updated five (5)-year asset preservation schedule, and As-Built Drawings) | 5.0(d)                  | December 31 annually (updated annually)  | Yes  |
| PREP3               | Annual APPM Achievement Report   | 5.0(e), 6.0             | November 30 annually (updated annually)  | Yes  |
| PREP4               | Structures Condition Data  | 5.0(f), 6.0(c)          | September 30 annually (updated annual data delivered not more than 60 days following inspection) | Yes  |

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Schedule of Deliverable Reports and Records – Response Time Measures

| <b>Performance Measure</b> | <b>Deliverable Name</b>            | <b>Specification Reference</b> | <b>Due Date</b>  | <b>Submitted under the Schedule 10 – Review Procedure</b> |
|----------------------------|------------------------------------|--------------------------------|--|---|
| PREP5                      | Tunnel Condition Data              | 5.0(g), 6.0(d)                 | September 30 annually (updated annually)   | Yes   |
| PREP6                      | Track Condition Data               | 5.0(h), 6.0(e)                 | September 30 annually (updated annually)   | Yes   |
| PREP7                      | Vehicles and Systems Data          | 5.0(i), 6.0(f)                 | September 30 annually (updated annually)   | Yes   |
| PREP8                      | Facilities Condition Data          | 5.0(j), 6.0(g)                 | September 30 annually (updated annually)   | Yes   |
| PREP9                      | Other Asset Classes Condition Data | 5.0(k), 6.0(h)                 | September 30 annually (updated annually)   | Yes   |
| PREP10                     | System Asset Inventory             | 5.0(l)                         | September 30 annually (updated annual data delivered not more than 60 days following survey) | Yes   |
| PREP11                     | As Built Drawings                  | 5.0(m)                         | September 30 annually (updated annual data delivered not more than 60 days following survey) | Yes   |

- (iii) The documents noted above shall include the submission of relevant reports in Appendix A – Operation and Maintenance Performance Requirements, which shall be submitted in accordance with the Schedule 10 – Review Procedure.

(c) File Formats

- (i) Unless specified otherwise, electronic files shall be compatible with the most recent version of Microsoft Office and be editable. All supplied electronic files shall be on CD or DVD and be clearly labelled as to the content. Storage media shall be scanned for viruses (using an industry recognized product with appropriate updates) prior to submission to the City. In addition, all electronic files shall be made available on a secured web based website managed by Project Co.

(d) Asset Management Plan

(i) Purpose

- A. Project Co shall provide to the City a written plan (the “Asset Management Plan”), which describes the procedures for achieving the specified Performance



Measures (see Article 5.5 of this Appendix) to be attained during the Maintenance Term.

(ii) Details

- A. The initial Asset Management Plan and all subsequent annual updates to the plan must, as a minimum:
- i Address all System;
  - ii Include a description of and the manner in which the overall performance management reporting will be achieved;
  - iii Be aligned with the scope of obligations under Appendices A, B, and C of the Maintenance Specifications (Maintenance and Rehabilitation Requirement, Asset Preservation, and the Expiry Date Requirements);
  - iv Meet the quality management and environmental management requirements in this Project Agreement;
  - v Be consistent with other obligations in this Project Agreement;
  - vi Identify the intervention criteria for each APPM as well as achieve the requirements set out in Appendix C, the Expiry Date Requirements to this Schedule;
  - vii Describe the approach for Infrastructure condition inspection;
  - viii Describe the approach for assessing the manner in which the APPMs will be achieved;
  - ix Identify the deterioration rate and factors affecting the APPMs;
  - x Describe the process for asset preservation work identification, programming and prioritization in terms of developing the Asset Management Plan and the five-year asset preservation schedule, and addressing any APPM non-compliance;
  - xi Identify and describe the Asset Management approach with respect to integrating and aligning routine maintenance activities (as described in Appendix A to this Schedule) and asset preservation work;
  - xii Identify any areas of risk and describe mitigation measures;
  - xiii Describe the approach for completing the annual Maintenance Services schedule including the resources employed, plant, materials, and facilities associated therewith;

- xiv Describe any processes and innovations to improve performance and performance reporting process;
- xv Provide an indication of the expected condition performance of the asset over the remainder of the Maintenance Term and how Project Co is ensuring full contractual compliance will be achieved, including providing details of the method used to establish the predicted condition (it is anticipated that some form of asset performance modelling will be required) and in graphical format, the current, worst case, the Expiry Date hand back and target condition of the Infrastructure; and
- xvi Include a five-year asset preservation schedule consisting of a rolling, forward Maintenance Services program that describes the planned preventative maintenance and asset preservation works (excluding minor routine maintenance) that Project Co is planning to undertake over the following five (5)-year period, and provide specific details regarding planned asset preservation works including but not limited to:
  - 1. planned asset preservation works for both the year and each quarter within the first two years, and only for the year thereafter;
  - 2. advanced technical evaluations completed;
  - 3. field investigations completed;
  - 4. updated asset preservation treatment; and
  - 5. design documentation:
    - In respect of preparation of the five-year asset preservation schedule:
      - It is recognized that the timing of rehabilitation and other projects and activities in the future is less certain than those in the current year; and
      - Project Co has the right to perform activities that deviate from the schedule, so long as performance the System meets Project Agreement requirements.
    - The five-year asset preservation schedule shall be in the following format:
      - For linear Infrastructure (track, special trackwork, OCS, tunnel etc.):

- The plan should be produced to clearly identify the start and end locations and cross-sectional position of all Maintenance Services. Where Maintenance Services is to be undertaken on only part of the cross section then the plan should be formatted to clearly indicate this;
  - Indicate the timing and nature of the Maintenance Services to be undertaken; and
  - Have some indication (code or otherwise) of the level of the priority of the Maintenance Services.
- For point Infrastructure (such as Bridges, Stations, Facilities, Sewers, etc.):
- Infrastructure should be grouped firstly by type, then by location along the OLRT;
  - Indicate the timing and nature of the Maintenance Services to be undertaken; and
  - Have some indication (code or otherwise) of the level of priority and certainty of the Maintenance Services occurring.
- For Vehicles and Equipment (such as LRVs, Non-Revenue vehicles, etc.):
- Vehicles and equipment should be grouped firstly by type, then by the identification number of each particular vehicle/asset
  - Indicate the timing and nature of the Maintenance Services to be undertaken; and
  - Have some indication (code or otherwise) of the level of priority and

certainty of the Maintenance Services occurring.

- B. All plans shall address the operational impact and mitigation measures;
  - C. Include Project Co's, Maintenance and Rehabilitation Quality Management Plan and provide a description of the process for reporting of audits and Nonconformity Reports in accordance with Schedule 11 – Quality Management;
  - D. Include Project Co's reporting for its environmental management activities;
  - E. Provide an update on the status of Project permitting.
- (e) Annual Asset Preservation and Performance Measures (APPM) Achievement Report
- (i) Purpose
    - A. The Annual APPM Achievement Report documents the routine maintenance, preventative maintenance, rehabilitation, and asset preservation work completed in the previous year; reports the results from Infrastructure condition and inventory surveys and provides a summary of achievement compared to the APPM requirements; and outlines activities anticipated in the coming year.
  - (ii) Details
    - A. The Annual APPM Achievement Report must include the following as a minimum:
      - i An annual summary of the Maintenance Services (including routine, preventive, and corrective maintenance, rehabilitation and asset preservation activities) performed in the preceding year;
      - ii Methodologies for calculating the Asset Preservation Performance Measures;
      - iii Analysis and presentation of the results from the annual data collection program for the Asset Preservation Performance Measures for all System assets as defined in the Asset Management Plan;
      - iv Reporting of the results of surveys; and
      - v Reports of the compliance and non-compliances with the APPM, and corrective actions.
- (f) Structure Condition Data
- (i) Project Co is responsible for collecting, maintaining, reporting, and updating Structures Condition data for the purposes of Asset Management and for evaluating the APPM achievements. The requirements for such data are detailed in Table 5.6.

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TABLE 5.6

| Asset Class Condition Group   | Condition Data Delivery Requirements   |
|---|--|
| <b>Structures</b> – Bridges, Recreational Trail Bridges, Retaining Walls, and Structural Culverts | <ul style="list-style-type: none"> <li>• All condition data collection and reporting on an annual basis in accordance with Table 5.2</li> <li>• Project Co is to provide to the City a condition data information system (to be agreed between the City and Project Co) for delivering condition information for Structures</li> <li>• Project Co is to provide to the City all asset condition inspection reports in a digital “pdf” format.</li> </ul> |
|   | <ul style="list-style-type: none"> <li>• Project Co is to provide to the City all asset condition assessments and BCI in a digital “pdf” and Microsoft Excel format.</li> <li>• Project Co is to provide to the City all drawings in a digital “pdf” and “Microstation” format as well as printed / plotted hardcopy.</li> </ul>   |

## (g) Tunnel Structures Condition Data

- (i) Project Co is responsible for collecting, maintaining, reporting, and updating Tunnel Structures Condition data for the purposes of Asset Management and for evaluating the APPM achievements. The requirements for such data in respect of each Phase are detailed in Table 5.7.

TABLE 5.7

| Asset Class Condition Group | Condition Data Delivery Requirements   |
|-----------------------------|--|
| <b>Tunnel Structures</b>    | <ul style="list-style-type: none"> <li>• All condition data collection and reporting on an annual basis in accordance with Table 5.2</li> <li>• Project Co is to provide to the City a condition data information system (to be agreed between the City and Project Co) for delivering condition information for Structures</li> </ul> |

## (h) Track Condition Data

- (i) Project Co is responsible for collecting, maintaining, reporting, and updating Track Condition data for the purposes of Asset Management and for evaluating the APPM achievements. The requirements for such data in respect of each Phase are detailed in Table 5.8.

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TABLE 5.8

| Asset Class Condition Group   | Condition Data Delivery Requirements   |
|---|--|
| <b>Mainline Track</b> , Special Trackwork, Turnouts, Crossovers, Yard Leads, Yard Track | <ul style="list-style-type: none"> <li>All condition data collection and reporting on an annual basis in accordance with Table 5.2</li> <li>Project Co is to provide to the City a condition data information system (to be agreed between the City and Project Co) for delivering condition information for Structures</li> </ul> |

## (i) Vehicles and Systems Condition Data

- (i) Project Co is responsible for collecting, maintaining, reporting, and updating Vehicles and Systems Condition data for the purposes of Asset Management and for evaluating the APPM achievements. The requirements for such data in respect of each Phase are detailed in Table 5.9.

TABLE 5.9

| Asset Class Condition Group  | Condition Data Delivery Requirements   |
|--|--|
| <b>Vehicles</b> , includes vehicles and maintenance of way equipment   | <ul style="list-style-type: none"> <li>All condition data collection and reporting on an annual basis in accordance with Table 5.2</li> <li>Project Co is to provide to the City a condition data information system (to be agreed between the City and Project Co) for delivering condition information for Vehicles</li> </ul> |
| <b>Systems Components</b> , includes, Communication Systems, Traction Power, Signals and Train Controls, TSCC/BCC, Corrosion Control | <ul style="list-style-type: none"> <li>All condition data collection and reporting on an annual basis in accordance with Table 5.2</li> <li>Project Co is to provide to the City a condition data information system (to be agreed between the City and Project Co) for delivering condition information for Systems</li> </ul>  |

## (j) Facility Condition Data

- (i) Project Co is responsible for collecting, maintaining, reporting, and updating Facilities Condition data for the purposes of Asset Management and for evaluating the APPM achievements. The requirements for such data in respect of each Phase are detailed in Table 5.10.

TABLE 5.10

| Asset Class Condition Group  | Condition Data Delivery Requirements   |
|--|--|
| <b>Facilities</b> , includes Maintenance and Storage Facility and Stations | <ul style="list-style-type: none"> <li>All condition data collection and reporting on an annual basis in accordance with Table 5.2</li> <li>Project Co is to provide to the City a condition data information system (to be agreed between the City and Project Co) for delivering condition information for Facilities</li> </ul> |



## (k) Other Asset Classes Condition Data

- (i) Project Co is responsible for collecting, maintaining, reporting and updating condition data for the purposes of proper asset management and for ensuring adequate serviceability. The requirements for such data are detailed in Table 5.11.

| TABLE 5.11  |  |
|---|--|
| Asset Class Condition Group   | Condition Data Delivery Requirements   |
| <b>Other Structures</b> —Retaining walls, Culverts (Span less than 3.0 m) and Noise Barriers  | <ul style="list-style-type: none"> <li>All condition data collection and reporting on an annual basis in accordance with Table 5.2</li> <li>Maintenance inspection reports as outlined in Asset Management Plan, to this Schedule</li> </ul> |
| <b>Drainage and Sedimentation Control Structures</b> —including curb and gutters, catch basins, ditch inlets, gutter outlets, grates, storm sewers with utility holes and outlet structures, and pump stations. | <ul style="list-style-type: none"> <li>All condition data collection and reporting on an annual basis in accordance with Table 5.2</li> <li>Maintenance inspection reports as outlined in Asset Management Plan, to this Schedule</li> </ul> |
| <b>Signs</b> —including all regulatory, warning, guide, informational, advisory, construction and maintenance and route markers   | <ul style="list-style-type: none"> <li>All condition data collection and reporting on an annual basis in accordance with Table 5.2</li> <li>Maintenance inspection reports as outlined in Asset Management Plan, to this Schedule</li> </ul> |
| <b>Electrical Components</b> —including lighting, signals and control boxes, and electrical components associated with fire, life, and safety equipment.  | <ul style="list-style-type: none"> <li>All condition data collection and reporting on an annual basis in accordance with Table 5.2</li> <li>Maintenance inspection reports as outlined in Asset Management Plan, to this Schedule</li> </ul> |
| <b>Mechanical Components</b> —including systems for drainage, pumps, fire, life and safety  | <ul style="list-style-type: none"> <li>All condition data collection and reporting on an annual basis in accordance with Table 5.2</li> <li>Maintenance inspection reports as outlined in Asset Management Plan, to this Schedule</li> </ul> |
| Recreational Trails and Sidewalks (excluding Recreational Trail Bridges)  | <ul style="list-style-type: none"> <li>All condition data collection and reporting on an annual basis in accordance with Table 5.2</li> <li>Maintenance inspection reports as outlined in Asset Management Plan, to this Schedule</li> </ul> |

## (l) System Inventory Data

- (i) The electronic Infrastructure inventory records of Project Co shall be accurate and up-to-date. Project Co is responsible for collecting and maintaining the data.

- (ii) Project Co shall assign each asset a unique number, and name the asset consistent with the terminology used in Schedule 15-2, or reference documents, or Good Industry Practice or as agreed to by the City.
- (m) As Built Drawings (Record Drawings)
  - (i) Project Co is responsible for the production of As Built Drawings including all shop fabrication drawings. The production of the drawings shall generally take the form of the design drawings with addendums showing changes and signed by a Professional Engineer, where applicable. These are to be submitted, as applicable, with the annual Asset Management Plans noted in Table 5.2 of this Appendix.

## **6.0 Asset Preservation Performance Measures (APPMs)**

- (a) General
  - (i) APPMs reflect the condition in which Project Co shall maintain the System. Project Co must comply with these measures at all times throughout the Maintenance Term. Appendix A of this Schedule outlines routine maintenance requirements of which are not repeated here. An integral part of the Asset Preservation is gathering and maintaining reliable inventory and condition assessment data, which are Project Co's responsibility.
  - (ii) The Asset Preservation Performance Measures (APPMs) are based on the levels of service established by the City, as determined from System condition assessments, performance monitoring, delivery methodologies, and management functions within Infrastructure management systems.
  - (iii) APPMs have been developed for each Asset Category based on the specific requirements associated with each asset type. A standardized format for the measures has been adopted for consistency and presentation purposes. Elements of the measures include:
    - A. Feature;
    - B. Performance measures;
    - C. minimum condition;
    - D. Maximum Response Time; and
    - E. The basis of measure and any associated response parameters required to be met.
  - (iv) Project Co is responsible for the asset preservation of all System and ensuring that it is managed in a safe and operable condition and are preserved in accordance with the requirements of this Project Agreement and Good Industry Practice.

## (b) Performance Measures

- (i) Asset Preservation Performance Measures (APPM) provide the ability to monitor and maintain the desired System asset condition over the Maintenance Term. Project Co is required to report actual APPM achievement as part of the Annual Asset Preservation Performance Measure (APPM) Achievement Report. The achievements are measured in terms of meeting the requirements of the Asset Preservation Performance Measures and reporting requirements detailed in Article 5. Achieving the APPM noted in this Appendix includes meeting the operations and maintenance requirements noted in Appendix A of this Schedule.
- (ii) Project Co must demonstrate through its Quality Management System the processes to achieve the APPM specified in this Appendix.
- (iii) A summary of the Asset Preservation Performance Measure and the consequences of Non-conformity – with the requirements are noted in the following Table 6.2. The composition of the APPMs is subject to review by the City during the Maintenance Term.

**TABLE 6.2**

Asset Preservation Performance Measures

| Article Reference | Performance Requirement                | APPM Measure Reference |
|-------------------|--|------------------------|
| 5.0(d)            | Initial Asset Management Plan          | PREP1                  |
| 5.0(d)            | Asset Management Plan Updates          | PREP2                  |
| 5.0(e)            | Annual APPM Achievement Report         | PREP3                  |
| 5.0(f)            | Structures Condition Data              | PREP4                  |
| 5.0(g)            | Tunnel Structures Condition Data       | PREP5                  |
| 5.0(h)            | Track Condition Data                   | PREP6                  |
| 5.0(i)            | Vehicles and Systems Condition Data    | PREP7                  |
| 5.0(j)            | Facilities Condition Data              | PREP8                  |
| 5.0(k)            | Other Asset Classes and Condition Data | PREP9                  |
| 5.0(l)            | System Inventory                       | PREP10                 |
| 5.0(m)            | As Built Drawings                      | PREP11                 |

## (c) Structures

## (i) General

A. The APPM for Structures are targeted to ensure:

- i OLRT User and structure safety;

- ii Structure functionality is at an acceptable level; and
  - iii Structure asset consumption is limited.
- B. Using these factors as the basis, standards and performance measures are set to ensure sound Asset Management practices are applied for Structures.
- C. The APPMs developed specifically for Structures are based upon the City's bridge condition rating procedures, which has adopted the MTO's method of determining a Bridge Condition Index, based on bridge inspection methods and criteria provided in OSIM, and which provides the input to these APPMs.
- D. Elements of the Structures asset management cycle include:
  - i Inspection at the specified interval;
  - ii Rating the condition of the Structure Components;
  - iii Inventory updating;
  - iv Programming correction of deficiencies;
  - v Undertaking maintenance and asset preservation works; and
  - vi Reporting achievements.
- E. The delivery of services is based upon:
  - i Emphasis on OLRT Operations and Structure safety for the Project;
  - ii Outcome-based specification with Project Co given the latitude for treatment selection to control/correct defective conditions as per the Project Agreement requirements;
  - iii A life-cycle approach to maintenance and asset preservation in conformance with the performance measures;
  - iv A preventative rather than reactive maintenance/repair strategy is encouraged to limit asset consumption with inspections recommended to facilitate this strategy;
  - v Emphasis on meeting the prescribed standards and APPMs on an ongoing basis;
  - vi There being a Bridge Structural Engineer and Qualified Inspector as defined in Article 6.0(c)(ii) of this Appendix nominated to take ownership for the Structures and the Structure management cycle;
  - vii A mechanism for the City to correct default if Project Co fails to meet the condition criteria on an ongoing basis;

- viii An effective Quality Management System; and
  - ix Compliance with the Project Agreement requirements.
- F. Project Co has full responsibility for all the asset preservation activities, including Structure replacement, should that be required.
- G. Operational standards are detailed in Appendix A to this Schedule.
- (ii) Structural Inspections
  - A. Structure inspection management involves field inspections that identify and monitor Structure condition. Any observed defects are to be addressed in relevant asset preservation strategies and subsequently programmed for asset preservation (including preventative maintenance and replacement). Project Co shall respond to and rectify any urgent items identified during inspections. The asset preservation of all Structures includes performing Structural Inspections in accordance with OSIM and City of Ottawa practices, condition assessments, inventory updates, and reporting of structure condition achievements, as well as the identification of appropriate condition preservation and restoration strategies in accordance with the requirements set out in this Project Agreement. Project Co shall use Qualified Inspectors, defined as individuals with at least five (5) years of experience in structure inspections who maintain their knowledge of inspection through participation in biennial inspection courses offered by Ministry of Transportation of Ontario.
  - B. The program of Structure inspections must be managed by a suitably qualified Bridge Structural Engineer, who:
    - i Is a Professional Engineer with a background in inspection, design, and construction of bridges;
    - ii Has extensive experience in supervising Structure design, evaluation, construction, inspection, maintenance, rehabilitation and asset preservation;
    - iii Maintains overall management and technical supervision of the Structure inspection and Maintenance/asset preservation program;
    - iv Accepts responsibility for the technical competence of all personnel involved in Structures inspection and reporting;
    - v Accepts responsibility for the structural safety of all Structures;
    - vi Consults with other specialist professionals when necessary; and



- vii Has the overall responsibility for assessing the structure functionality/safety, Structure risks, and potential risks to OLRT Users, and to determine an appropriate asset preservation strategy.
- C. While the Qualified Inspector is tasked with identifying defects, it is the Bridge Structural Engineer who is required to interpret the observations and implement appropriate structure asset preservation strategies to meet the Project Agreement performance requirements.
- D. There are three types of Structure inspections required as indicated in Table 6.4.2.

| <b>TABLE 6.3.2</b><br>Inspection Types |  |  |
|--|--|--|
| <b>Type</b>                            | <b>Description</b>   | <b>Maximum Inspection Frequencies</b>                        |
| Superficial (maintenance)              | Focus on OLRT Passenger safety and Structure functionality; refer to Appendix A [Operation and Maintenance Performance Requirements] to this Schedule  | These are as part of routine OLRT management and operations. |
| Detailed                               | Focus on a general assessment of condition and developing an annual, five (5)-year and ten-year asset preservation programs (including Preventative Maintenance and replacement)   | Once every two (2) years                                     |
| Condition Surveys                      | Focus on producing a comprehensive assessment of condition, including undertaking physical testing, in order to develop an appropriate asset preservation program (including preventative maintenance, rehabilitation and replacement) | As required or if BCI is below 70                            |

- E. Structures exhibiting significant displacement, deterioration, defects or damage are required to be inspected and assessed more frequently with the intervals determined by the Bridge Structural Engineer to meet the performance requirements of this Project Agreement and Good Industry Practice.
- F. Structure condition inspection is required to be undertaken using format and detail consistent with that specified in the Ontario Structure Inspection Manual (OSIM), the Structure Rehabilitation Manual, the Retaining Wall Inspection Guidelines (RWIG) and the Sign Support Inspection Guidelines (SSIG). The work shall also be conducted with reference to the practice and approach of the City of Ottawa inspection and recording system. It is the responsibility of the Inspector and Bridge Engineer of the Project Co to continuously liaise with engineers of the City of Ottawa to ensure the inspection and evaluation information can be readily assimilated into the Ottawa system.
- G. Project Co is required to retain files of Structure inspection records and asset preservation plans so that a continuous history of each Structure is available throughout the Maintenance Term.



- H. Inspections of Structures shall commence following Revenue Service Commencement Date and continue throughout the Maintenance Term.

(iii) Key Performance Measures

- A. Project Co shall perform Structure inspections and calculate the BCI for all Structures at least once every two years, in accordance with the requirements of this Schedule. Project Co shall report on all BCI, BCI-C, BCI-RW and BCI-SS as indicated in this Schedule.
- B. In addition, all inspections must identify undue movements, damages or deteriorations of key structural members, if any, which, in the opinion of the Bridge Structural Engineer, may cause instability of distress of individual structures and pose immediate danger to the public and the LRT system.

(iv) Submissions to the City

A. Structure Condition Data

- i Project Co shall submit to the City as noted in Table 5.2 of this Appendix, by September 30 of each year in which measurements are taken in accordance with Article 5.2 of this Appendix, an updated copy of the following:
1. All Inspections in electronic format;
  2. All the Inspection Reports in hard copy format; and
  3. All BCI, BCI-C, BCI-RW, and BCI-SS calculations and values.
- ii This information shall be submitted to the City, in the format prescribed and/or referenced in this schedule.

B. System Inventory (for Structures)

- i Project Co shall submit to the City, before September 30 of each year, an updated copy of the following:
1. Structure inventory list; and
  2. List of Structures that may be structurally unstable, or deficient for load carrying capacity.

C. Asset Management Plan (Initial and Updates)

- i Project Co shall submit to the City its Asset Management Plan in accordance with Article 5.2 of this Appendix which at a minimum shall include: a copy of Project Co's list of structure asset preservation and repair accomplishments over the previous 12 months; Structure condition

preservation and restoration strategies; annual plan for upcoming 12 months; achievements report based on previous plans; a copy of Project Co's structure asset preservation list and program for the next five (5) years.

- D. As Built Drawings—Structural drawings and As Built Drawings for the original construction, asset preservation, and repair work.

(v) Additional Structure Inspections

- A. Project Co is required to undertake additional Structure inspection by a Qualified Inspector under the supervision of a Bridge Structural Engineer under the following circumstances which include, but not limited to:

- i Accident or vehicle collision with a structure;
- ii Unusual/severe weather conditions or natural disasters;
- iii Where a perceived problem exists;
- iv Flooding/ice jams; and
- v Vandalism or terrorism.

- B. Project Co shall report the inspections and findings within seven days of a significant event potentially impacting structures' integrity and safety, which includes events noted above. Meeting the APPMs is in addition to the submission of complete and satisfactory inspection reports and findings following a significant event as described earlier.

- C. At each occurrence of Project Co failing to undertake a Structure inspection within the required time period, Project Co shall be assigned a Major Quality Failure. Project Co shall be assigned an additional Major Quality Failure for each subsequent day of non-compliance until the failure is rectified.

(vi) Asset Preservation Performance Measures

- A. Project Co is required to comply with APPMs as set forth in Table 6.3.6.
- B. The APPMs presented are in addition to the operational condition requirements as set by Appendix A (Operation and Maintenance Performance Requirements) to this Schedule.
- C. Project Co must demonstrate through its Quality Management System the process to achieve the specified outcomes.
- D. The method for assessing the performance measure achievement is based on the definitions given in the Ontario Structure Inspection Manual.

- E. The intervention criteria to be undertaken by Project Co to meet the APPMs also reinforce the ‘whole of life’ approach, encourage proactive preventative maintenance and asset preservation strategies and require Project Co to monitor the management of the Structures.

| <b>TABLE 6.3.6</b><br>Structures              |  |  |   |                              |                         |
|---|--|--|---|------------------------------|-------------------------|
| <b>Asset Preservation Performance Measure</b> | <b>Structure Type</b>                              | <b>Intervention Criteria</b>   | <b>Action</b>   | <b>Maximum Response Time</b> | <b>Quality Failure*</b> |
| PSTR1   | Bridges, Recreational Trail Bridges                | <ul style="list-style-type: none"> <li>• When BCI &lt;70</li> <li>• When 10% of any Key Structural Members is in Poor condition</li> </ul> | Undertake Structure Rehabilitation or repair works to address deterioration and defects | 12 months                    | Major                   |
| PSTR2   | Structural Culverts (including submerged Culverts) | <ul style="list-style-type: none"> <li>• Structural Culverts with a BCI-C &lt;70</li> </ul>  | Undertake Structure Rehabilitation or repair works to address deterioration and defects | 12 months                    | Major                   |
| PSTR3   | Retaining Walls                                    | <ul style="list-style-type: none"> <li>• Retaining Walls with a BCI-RW &lt;70</li> </ul>   | Undertake Structure Rehabilitation or repair works to address deterioration and defects | 12 months                    | Major                   |

\* At each occurrence of Project Co failing to meet the Asset Preservation Performance Measure by the expiry of the Maximum Response Time, Project Co shall be assigned a relevant Quality Failure (Major, Medium, or Minor) each week beyond the Maximum Response Time until the failure has been either rectified or a disposition has been accepted by the City in accordance with Schedule 11 – Quality Management.

“Key Structural Members” means elements that are considered critical and should not be allowed to drop below a certain condition. This includes Deck top, Deck soffit, Expansion Joint, Bearings, Barriers, Substructure and Embankment, Girder and Coating.

Notwithstanding the above, if in the opinion of the Bridge Structural Engineer upon discovery of undue movements, damages or deterioration of key structural members that may cause structural instability or distress, the Project Co shall provide action plan within seven days to rectify the situation. This may include immediate temporary supports and longer term rehabilitation and repair works.

(d) Tunnel Structures

(i) General

- A. The APPM for Tunnels are targeted to ensure:
  - i OLRT Passenger and Tunnel safety;
  - ii Tunnels functionality is at an acceptable level; and
  - iii Tunnels asset consumption is limited.
- B. Using these factors as the basis, standards and performance measures are set to ensure sound Asset Management practices are applied for Structures.
- C. The APPMs developed specifically for Tunnels are based upon FHA's Highway and Rail Transit Inspection Manual-2005 (HRTTIM) for various Tunnels, which provides the input to these APPMs.
- D. The delivery of services is based upon:
  - i Emphasis on OLRT Operations and Tunnels safety for the Project;
  - ii Outcome-based specification with Project Co given the latitude for treatment selection to control/correct defective conditions as per the Project Agreement requirements;
  - iii A life-cycle approach to maintenance and asset preservation in conformance with the performance measures;
  - iv A preventative rather than reactive maintenance/repair strategy is encouraged to limit asset consumption with inspections recommended to facilitate this strategy;
  - v Emphasis on meeting the prescribed standards and APPMs on an ongoing basis;
  - vi There being a Tunnel / Structural Engineer and Qualified Inspector as defined in Article 6(d)(ii) of this Appendix nominated to take ownership for the Structures and the Structure management cycle;
  - vii A mechanism for the City to correct default if Project Co fails to meet the condition criteria on an ongoing basis;
  - viii An effective Quality Management System; and
  - ix Compliance with the Project Agreement requirements.
- E. Project Co has full responsibility for all the asset preservation activities, that should that be required.
- F. Operational standards are detailed in Appendix A to this Schedule.

## (ii) Tunnel Inspections

- A. Tunnel inspection management involves field inspections that identify and monitor Tunnel condition. Any observed defects are to be addressed in relevant asset preservation strategies and subsequently programmed for asset preservation (including preventative maintenance and replacement). Project Co shall respond to and rectify any urgent items identified during inspections. The asset preservation of all Tunnels includes performing Tunnel Inspections (as defined in and in accordance with HRTTIM), condition assessments, inventory updates, and reporting of structure condition achievements, as well as the identification of appropriate condition preservation and restoration strategies in accordance with the requirements set out in this Project Agreement. Project Co shall use Qualified Inspectors, defined as individuals with at least five (5) years of experience in Tunnel inspections.
- B. The program of Tunnel inspections must be managed by a suitably qualified Tunnel Engineer, who:
  - i Is a Professional Engineer with a background in inspection, design, and construction of Tunnels;
  - ii Has extensive experience in supervising Tunnel design, construction, inspection, maintenance, and asset preservation;
  - iii Maintains overall management and technical supervision of the Tunnel inspection and Maintenance/asset preservation program;
  - iv Accepts responsibility for the technical competence of all personnel involved in Tunnels inspection and reporting;
  - v Accepts responsibility for the structural safety of all Tunnels;
  - vi Consults with other specialist professionals when necessary; and
  - vii Has the overall responsibility for assessing the Tunnel functionality/safety, Tunnel risks, and potential risks to OLRT Passengers, and to determine an appropriate asset preservation strategy.
- C. While the Qualified Inspector is tasked with identifying defects, it is the Tunnel Engineer who is required to interpret the observations and implement appropriate structure asset preservation strategies to meet the Project Agreement performance requirements.
- D. There are three types of Tunnel inspections required as indicated in Table 6.4.2.



| <b>TABLE 6.4.2</b><br>Inspection Types |  |  |
|--|--|--|
| <b>Type</b>                            | <b>Description</b>   | <b>Maximum Inspection Frequencies</b>                        |
| Superficial (maintenance)              | Focus on OLRT Passenger safety and Tunnel functionality; refer to Appendix A [Operation and Maintenance Performance Requirements] to this Schedule   | These are as part of routine OLRT management and operations. |
| Detailed                               | Focus on a general assessment of condition and developing an annual, five (5)-year and ten-year asset preservation programs (including Preventative Maintenance and replacement)   | Once every two (2) years                                     |
| Condition Surveys                      | Focus on producing a comprehensive assessment of condition, including undertaking physical testing, in order to develop an appropriate asset preservation program (including preventative maintenance, rehabilitation and replacement) | As required by Tunnel Engineer                               |

- E. Tunnels exhibiting significant displacement, deterioration, defects or damage are required to be inspected and assessed more frequently with the intervals determined by the Tunnel Engineer to meet the performance requirements of this Project Agreement and Good Industry Practice.
- F. Tunnel condition inspection is required to be undertaken using format and detail consistent with that specified in the HRTTIM. The inspection data is to be provided to the City in a format acceptable and pursuant to Table 5.2.
- G. Project Co is required to retain files of Tunnel inspection records and asset preservation plans so that a continuous history of each Tunnel is available throughout the Project Term.
- H. Inspections of Structures shall commence following Revenue Service.

(iii) Key Performance Measures

- A. Project Co shall perform Tunnel inspections and calculate the Tunnel condition rating for all Tunnels at least once every two years, in accordance with the procedures shown in the HRTTIM.
- B. Project Co shall maintain the Tunnel at a condition rating of at least 6 or higher. Project Co shall implement a rehabilitation program when the condition rating falls below 6, which shall be implemented within 12 months of when condition rating falls below a 6.
- C. Project Co shall identify any safety critical repairs deemed necessary to address any severe defects that may pose danger to the Passenger and Tunnel safety. Project Co shall categorize the “Critical Repair” in accordance with the HRTTIM, and coordinate the action to be taken with the TSCC.



- (iv) Submissions to the City
  - A. Tunnel Condition Rating Data
    - i Project Co shall submit to the City as noted in Table 5.2 of this Appendix, by September 30 of each year in which measurements are taken in accordance with Article 5.2 of this Appendix, an updated copy of the following:
      - 1. All Inspections in electronic format;
      - 2. All the Inspection Reports in hard copy format; and
      - 3. All Tunnel condition ratings, calculations and values.
  - B. OLRT System Inventory (for Tunnels)
    - i Project Co shall submit to the City, before September 30 of each year, an updated copy of the following:
      - 1. Tunnel inventory list; and
      - 2. List of Tunnels that may be structurally deficient for load carrying capacity.
  - C. Asset Management Plan (Initial and Updates)
    - i Project Co shall submit to the City its Asset Management Plan in accordance with Article 5.2 of this Appendix which at a minimum shall include: a copy of Project Co's list of tunnel asset preservation and repair accomplishments over the previous 12 months; Tunnel condition preservation and restoration strategies; annual plan for upcoming 12 months; achievements report based on previous plans; a copy of Project Co's tunnel asset preservation list and program for the next five (5) years.
  - D. As Built Drawings—Tunnel drawings and As Built Drawings for the original construction, asset preservation, and repair work.
- (v) Additional Tunnel Inspections
  - A. Project Co is required to undertake additional Tunnel inspection by a Qualified Inspector under the supervision of a Tunnel Engineer under the following circumstances which include, but are not limited to:
    - i Accident or vehicle collision with a Tunnel;
    - ii Unusual/severe weather conditions or natural disasters;

- iii Where a perceived problem exists;
  - iv Flooding; and
  - v Vandalism or terrorism.
- B. Project Co shall report the inspections and findings within seven days of a significant event potentially impacting Tunnels' integrity and safety, which includes events noted above. Meeting the APPMs is in addition to the submission of complete and satisfactory inspection reports and findings following a significant event as described earlier.
- C. At each occurrence of Project Co failing to undertake a Tunnel inspection within the required time period, Project Co shall be assigned five (5) QF Points each day until the failure is rectified.
- (vi) Asset Preservation Performance Measures
- A. Project Co is required to comply with APPMs as set forth in Table 6.4.6.
  - B. The APPMs presented are in addition to the operational condition requirements as set by Appendix A (Operation and Maintenance Performance Requirements) to this Schedule.
  - C. Project Co must demonstrate through its Quality Management System the process to achieve the specified outcomes.
  - D. The method for assessing the performance measure achievement is based on the definitions given in the HRTTIM.
  - E. The intervention criteria to be undertaken by Project Co to meet the APPMs also reinforce the 'whole of life' approach, encourage proactive preventative maintenance and asset preservation strategies and require Project Co to monitor the management of the Tunnels.

| <b>TABLE 6.4.6</b><br>Tunnels                 |                 |   |  |                              |                 |
|---|-----------------|---|--|------------------------------|-----------------|
| <b>Asset Preservation Performance Measure</b> | <b>Tunnel</b>   | <b>Intervention Criteria</b>  | <b>Action</b>  | <b>Maximum Response Time</b> | <b>Penalty*</b> |
| PTUN1   | Tunnel          | <ul style="list-style-type: none"> <li>When Tunnel condition rating is less than 6</li> </ul> | Undertake Tunnel Maintenance and Rehabilitation to correct defects | 12 months                    | Major           |
| PTUN2   | Safety Critical | <ul style="list-style-type: none"> <li>Coordinate access and</li> </ul>                       | Undertake  | Immediate,                   | Major           |

## Ottawa Light Rail Transit Project

Schedule 15-3 to Project Agreement  
Execution Version

TABLE 6.4.6

## Tunnels

| Asset Preservation Performance Measure | Tunnel  | Intervention Criteria   | Action  | Maximum Response Time    | Penalty* |
|--|---------|---|---|--------------------------|----------|
|  | Repairs | mitigation measures to maintain Passenger and Tunnel Safety with TSCC | repair works to address safety critical deterioration and defects | as coordinated with TSCC |          |

At each occurrence of Project Co failing to meet the Asset Preservation Performance Measure by the expiry of the Maximum Response Time, Project Co shall be assigned a relevant Quality Failure (Major, Medium, or Minor) each week beyond the Maximum Response Time until the failure has been either rectified or a disposition has been accepted by the City in accordance with Schedule 11 – Quality Management. “Safety – Critical Repairs” means repairs to tunnel elements that are considered critical for the safety of the Passengers and / or Tunnel which may pose a danger if not repaired.

## (e) Track

## (i) General

- A. The APPM are set to ensure the application of sound asset preservation practices. Asset Preservation Performance Measures are targeted to ensure:
  - i Track Access and functionality;
  - ii Structurally sound and safe track condition; and
  - iii Limited consumption, over time, of the Track.
- B. The APPMs specified herein for track provide the outcome emphasis required and focus on four (4) key measures:
  - i Track Alignment (Geometry);
  - ii Rail Condition including Rail wear and Rail defects;
  - iii Rail Structure; and
  - iv Special Track work.
- C. Project Co is responsible for monitoring, maintaining, and reporting Infrastructure performance. The measures are consistent with regulatory requirements and industry standards. Asset condition and inventory data obtained from the required track inspections provides the basis for the APPM criteria.
- D. The APPMs are applied to the following Track Sections, which include;

- i Mainline track and special trackwork (crossovers) used for regularly scheduled revenue service;
  - ii All special trackwork, pocket tracks and emergency crossovers used occasionally for revenue service;
  - iii Tail tracks beyond terminal stations; and
  - iv Yard lead tracks from the MSF up to, and including the mainline yard lead connections and associated crossovers
- E. The Track Asset Management cycle includes:
  - i Inspection at the specified interval;
  - ii Rating the condition of track and special trackwork;
  - iii Programming treatments/rehabilitation;
  - iv Undertaking physical remedial works;
  - v Inventory and condition updating; and
  - vi Reporting achievements.
- F. These phases are fundamental to maintaining the Infrastructure and are consistent with industry practice and regulatory track safety requirements.
- G. Project Co's delivery of services must be based upon:
  - i Emphasis on the availability of track and special trackwork across a range of relevant conditions;
  - ii Outcome-based specifications, with Project Co given the latitude for treatment selection to control/correct defective conditions as per the material requirements defined in this Project Agreement;
  - iii A life-cycle approach to maintenance and asset preservation that is in conformance with sound industry practices and with the APPMs;
  - iv Emphasis on meeting the prescribed standards and APPMs on an ongoing basis;
  - v A mechanism for the City to correct non-compliance if Project Co fails to meet the APPMs; and
  - vi Quality management and environmental management processes underpinning the delivery of services.

(ii) Infrastructure Condition Data Collection

- A. Project Co is responsible for collecting Track Condition data for the purposes of Asset Management and measuring performance achievement based on the requirements of this Appendix, and Appendices A and C of this Schedule, as required under Article 5.6 of this Appendix. The collection of Track condition data shall occur as part of Project Co's ongoing track inspection and monitoring activities as required by regulation, industry guidance, and as necessary for Project Co to execute its maintenance obligations as specified in Project Co's Maintenance Plans. Inspections to be used for data collection include weekly track inspections by qualified track inspectors, ultrasonic rail flaw detection to be performed at least once per year, geometry inspections using an automated track inspection and measurement vehicle to be performed at least once per year, and special inspections including CWR inspections during extreme temperatures and temperature fluctuations; and other inspections precipitated due to events potentially resulting in damage to track.
- (iii) Asset Preservation Performance Measures
- A. Project Co is required to comply with the APPMs noted in Tables 6.5.3 A, B, C, and D of this Appendix and the following criteria:
    - i The combination of multiple single conditions requiring remedial actions occurring at the same point or over the same section as identified in the APPMs shall require a more immediate response; and
    - ii All other regulatory or safety requirements applicable to track for the safe operation of Trains on the System.
  - B. Project Co must demonstrate through its Quality Management the process to achieve the specified outcome.

**Table 6.5.3A**

## Track Geometry

| <b>Asset Preservation Performance Measure</b> | <b>Intervention Criteria</b>  | <b>Action</b>  | <b>Maximum Response Time</b> | <b>Basis of Measure</b>   | <b>Penalty*</b> |
|---|---|--|------------------------------|---|-----------------|
| Geometry                                      | Where any Track Geometry condition including gauge, horizontal alignment (line), track surface (vertical alignment, cross level, and superelevation): |  |                              | Track Geometry measurements by automated geometry vehicle and manual field measurements |                 |
|   | violates the APTA or Transport Canada standards (whichever is more stringent) for Class 5 track   | Undertake asset preservation works to address non-compliance . | 6 months                     |   | Medium          |
|   | violates the APTA or Transport Canada standards (whichever is more stringent) for Class 4 track   | Undertake asset preservation works to address non-compliance   | 3 months                     |   | Medium          |
|   | violates the APTA or Transport Canada standards (whichever is more stringent) for Class 3 track   | Undertake asset preservation works to address non-compliance   | Immediately                  |   | Major           |

\* At each occurrence of Project Co failing to meet the Asset Preservation Performance Measure by the expiry of the Maximum Response Time, Project Co shall be assigned a relevant Quality Failure (Major, Medium, or Minor). Project Co shall be assigned a further relevant Quality Failure for each subsequent week of non-conformance until the failure has been either rectified or a disposition has been accepted by the City in accordance with of Schedule 11 – Quality Management.



## Ottawa Light Rail Transit Project

Schedule 15-3 to Project Agreement  
Execution Version

| <b>Table 6.5.3B</b>                           |   |   |   |  |                 |
|---|---|---|---|--|-----------------|
| Rail Condition                                |   |   |   |  |                 |
| <b>Asset Preservation Performance Measure</b> | <b>Intervention Criteria</b>  | <b>Action</b>   | <b>Maximum Response Time</b>  | <b>Basis of Measure</b>  | <b>Penalty*</b> |
| Rail General                                  | Where any Rail condition violates APTA or Transport Canada standards (whichever is more stringent) for Class 4 track  | Undertake asset preservation works to address non-compliance.   | Within 1 month  | Rail inspection measurements from Geometry Vehicle, field measurements, or from ultrasonic rail inspection | Major           |
| Rail Wear                                     | Where <ul style="list-style-type: none"> <li>vertical running rail wear is greater than or equal to <math>\frac{1}{2}</math> inch, or</li> <li>horizontal running rail (side) wear is greater than or equal to <math>\frac{3}{8}</math> inch, or</li> <li>Guard rail side wear is greater than or equal to <math>\frac{1}{4}</math> inch</li> </ul> | Monitor rail wear and program asset preservation works for rail replacement based on observed rail wear rates | Asset preservation activity plan within 1 month; implementation according to plan | Field measurements or automated measurements from appropriate inspection vehicle/equipment                 | Major           |

## Ottawa Light Rail Transit Project

Schedule 15-3 to Project Agreement  
Execution Version

| Table 6.5.3B                           |   |  |   |   |          |
|--|---|--|---|---|----------|
| Rail Condition                         |   |  |   |   |          |
| Asset Preservation Performance Measure | Intervention Criteria   | Action   | Maximum Response Time   | Basis of Measure  | Penalty* |
|  | Where <ul style="list-style-type: none"> <li>vertical running rail wear is greater than or equal to 5/8 inch, or</li> <li>horizontal running rail (side) wear is greater than or equal to 5/8 inch, or</li> <li>Guard rail side wear is greater than or equal to 7/16 inch</li> </ul> | Undertake asset preservation works to address non-compliance   | Immediately   |   | Major    |
| Rail Defects                           | Where track defects are identified in accordance with APTA Standards and/or Transport Canada Track Safety requirements  | Perform immediate remedial actions as specified in the referenced standard. Perform asset preservation activities to fully remedy any temporary remedial actions | Immediate actions per standard. Full repair within 3 months or per the safety standard, whichever is less | Defect identification and measurement from field inspection or ultrasonic rail inspection | Major    |

## Ottawa Light Rail Transit Project

Schedule 15-3 to Project Agreement  
Execution Version

| <b>Table 6.5.3B</b>                           |   |  |                              |  |                 |
|---|---|--|------------------------------|--|-----------------|
| Rail Condition                                |   |  |                              |  |                 |
| <b>Asset Preservation Performance Measure</b> | <b>Intervention Criteria</b>  | <b>Action</b>  | <b>Maximum Response Time</b> | <b>Basis of Measure</b>  | <b>Penalty*</b> |
| Rail Corrugation                              | Where short wave rail corrugation exceeds 1/8 inch depth and/or rail corrugation results in track-based noise and / or vibration exceeding the limits imposed by City Bylaws or Schedule 17 of this Agreement | Perform asset preservation works to address non-compliance | 1 month                      | Field measurements, Automatic rail inspection vehicle measurements, and noise and vibration measurements | Medium          |

\* At each occurrence of Project Co failing to meet the Asset Preservation Performance Measure by the expiry of the Maximum Response Time, Project Co shall be assigned a relevant Quality Failure (Major, Medium, or Minor). Project Co shall be assigned a further relevant Quality Failure for each subsequent week of non-conformance until the failure has been either rectified or a disposition has been accepted by the City in accordance with Schedule 11 – Quality Management.

| <b>Table 6.5.3C</b>                           |  |   |                              |  |                 |
|---|--|---|------------------------------|--|-----------------|
| Track Structure                               |  |   |                              |  |                 |
| <b>Asset Preservation Performance Measure</b> | <b>Intervention Criteria</b>   | <b>Action</b>   | <b>Maximum Response Time</b> | <b>Basis of Measure</b>  | <b>Penalty*</b> |
| General                                       | Where any Track structure condition including ballast, ties, rail violate the APTA or Transport Canada Standards (whichever is more stringent) for Class 5 | Undertake asset preservation works to address non-compliance. | 6 month                      | Observations from field inspection or other automated vehicle-mounted inspection equipment | Medium          |

**Table 6.5.3C**

## Track Structure

|  |  |   |             |  |       |
|--|--|---|-------------|--|-------|
|  | track  |   |             |  |       |
|  | Where any Track structure condition including ballast, ties, rail violate the APTA or Transport Canada Standards (whichever is more stringent) for Class 4 track | Undertake asset preservation works to address non-compliance. | Immediately | Observations from field inspection or other automated vehicle-mounted inspection equipment | Major |

\* At each occurrence of Project Co failing to meet the Asset Preservation Performance Measure by the expiry of the Maximum Response Time, Project Co shall be assigned a relevant Quality Failure (Major, Medium, or Minor). Project Co shall be assigned a further relevant Quality Failure for each subsequent week of non-conformance until the failure has been either rectified or a disposition has been accepted by the City in accordance with Schedule 11 – Quality Management.

| <b>Table 6.5.3D</b>                           |  |   |                              |  |                 |
|---|--|---|------------------------------|--|-----------------|
| Special Trackwork                             |  |   |                              |  |                 |
| <b>Asset Preservation Performance Measure</b> | <b>Intervention Criteria</b>   | <b>Action</b>   | <b>Maximum Response Time</b> | <b>Basis of Measure</b>  | <b>Penalty*</b> |
| General                                       | Where any Special Trackwork condition including switches, frogs, restraining rail violate the APTA or Transport Canada Standards (whichever is more stringent) for Class 5 track | Undertake asset preservation works to address non-compliance. | 6 month                      | Observations from field inspection or other automated vehicle-mounted inspection equipment | Medium          |
|   | Where any Special Trackwork condition including switches, frogs, restraining rail violate the APTA or Transport Canada Standards (whichever is more stringent) for Class 4 track | Undertake asset preservation works to address non-compliance. | Immediately                  | Observations from field inspection or other automated vehicle-mounted inspection equipment | Major           |

\* At each occurrence of Project Co failing to meet the Asset Preservation Performance Measure by the expiry of the Maximum Response Time, Project Co shall be assigned a relevant Quality Failure (Major, Medium, or Minor). Project Co shall be assigned a further relevant Quality Failure for each subsequent week of non-conformance until the failure has been either rectified or a disposition has been accepted by the City in accordance with Schedule 11 – Quality Management.

## (iv) References and Clarifications

- A. APTA standards as referenced in this Article refer to the “Standard for Rail Transit Track Inspection and Maintenance” (APTA ART-S-FS-002) as updated from time to time.
- B. Transport Canada Standards as referenced in this Article refer to “Rules Respecting Track Safety” (Transport Canada TC E-31) as updated from time to time.
- C. Appendix A (Operation and Maintenance Performance Requirements) to this Schedule and the provisions of the Design and Construction Specifications related to Track apply in full to the requirements of this Appendix.

## (f) Vehicles and Systems

## (i) General

- A. Vehicles and Systems elements shall meet the provisions of the Design and Construction Specifications related to Vehicles and Systems, and meet the requirements of Appendix A and Appendix C to this Schedule. Systems elements as discussed in this Article include all systems related to the operation, control, and monitoring of the System including but not limited to traction power, OCS, Corrosion Control, Train Control/Signals, SCADA and communication systems.
- B. Project Co is fully responsible for keeping all Vehicles and Systems assets safe, functional, reliable, maintainable and to develop an asset preservation strategy (including preventative and corrective maintenance and replacement) based on continual monitoring and assessment of the condition, functionality and reliability of Vehicles and Systems Elements.
- C. Project Co is responsible for monitoring, maintaining, and reporting the performance of Vehicle and Systems Elements.
- D. The Asset Management cycle for Vehicles and Systems includes:
  - i Inspection at appropriate intervals for each system and subsystem components according to regulatory requirements, industry standard or recommended practices, and as defined in Project Co’s Maintenance and Rehabilitation Plan;
  - ii Rating the condition of each Vehicle and System asset;
  - iii Annual inspection, certification, and reporting of Systems related to EMI, EMC, and Corrosion Control are performing as designed;
  - iv Programming treatments/rehabilitation;



- v Undertaking remedial works;
  - vi Inventory and condition updating; and
  - vii Reporting achievements.
- E. Project Co's delivery of services must be based upon:
- i Emphasis on the availability of Vehicles and Systems across a range of physical and operating conditions to comply with the Operational Performance Requirements and in accordance with the requirements of Appendix A;
  - ii Outcome-based specification, with Project Co given the latitude for treatment selection to control/correct defective conditions as per the material requirements defined in this Project Agreement;
  - iii A life-cycle approach to maintenance and asset preservation that is in conformance with sound industry practices;
  - iv A preventative rather than a reactive maintenance/repair strategy to limit asset consumption with inspection and monitoring actions to facilitate this strategy; and
  - v Compliance with regulatory and safety requirements as applicable to Vehicles and Systems.
- (ii) Vehicles and Systems Condition Data Collection and Reporting
- A. Project Co is responsible for collecting Vehicle and Systems condition data for the purposes of Asset Management and measuring performance achievement based on the requirements of Appendices A and C of this Schedule. The collection of Vehicle and Systems condition data shall occur as part of Project Co's ongoing inspection, testing, and monitoring activities as required and specified for vehicle and systems assets and their subcomponents by regulation, industry standards and practices, and/or as necessary for Project Co to execute its maintenance obligations as specified in Project Co's maintenance plans.
  - B. Project Co shall utilize inspection, testing and monitoring data including, but not limited to, the information required for reporting per Appendix A, Article 1.8 to assess the condition of vehicle and systems assets and their subcomponents, to monitor trends, and proactively program asset management actions. Such data, trends, and programmed asset management activities shall be included in the annual reports as required in accordance with Article 5 of this Appendix.

## (iii) Performance Measures

- A. Project Co is required to comply with Design and Construction Specifications and Appendices A and C to this Schedule as relevant to Vehicles and Systems and meet the reporting requirements of this Appendix.

## (g) Facilities (Stations / MSFs)

## (i) General

- A. Systems elements as discussed in this Article include those Facilities related to the operation, maintenance, and preservation of the OLRT System and include Stations and Maintenance and Storage Facility (MSF).
- B. Project Co is fully responsible for keeping all Facilities assets safe, functional, reliable, maintainable and to develop an asset preservation strategy (including preventative maintenance and replacement) by focusing on general assessment of the condition of all Facility assets. The target condition for all Facility assets is a condition rating of “Good” or better, as defined in 6.7.4 below, at all times.
- C. Routine maintenance of the OLRT System is addressed in Appendix A to this Schedule. The performance requirements noted in Appendix A to the M&R Specifications supersede the requirements noted here.
- D. Project Co is responsible for monitoring, maintaining, and reporting Facilities assets performance.

## (ii) The Facility Asset Management cycle includes:

- A. Inspection at appropriate intervals for each Facility according to regulatory requirements, industry standard or recommended practices, as referenced in CSA S448.1 – Repair of Reinforced Concrete in Buildings, CSA S478 – Guideline on Durability in Buildings, CSA S413 – Parking Structures (as it may be applicable to building structures), the Ontario Structure Inspection Manual (OSIM), and MTO’s Structure Rehabilitation Manual (as it may be applicable to building structures), and as defined in Project Co’s Maintenance and Rehabilitation Plan;
- B. Rating the condition of each Facility and Facility Elements (meaning those elements as defined in the National Institute of Standards Technology’s “Uniformat II Elemental Classification of Building Specifications, Cost Estimating, and Cost Analysis”);
- C. Programming treatments/rehabilitation;
- D. Undertaking remedial works;
- E. Inventory and condition updating; and

- F. Reporting achievements.
- (iii) Project Co's delivery of services must be based upon:
  - A. Emphasis on the availability of each Facility across a range of physical and operating conditions;
  - B. Outcome-based specifications, with Project Co given the latitude for treatment selection to control/correct defective conditions as per the material requirements defined in this Project Agreement;
  - C. A life-cycle approach to maintenance and asset preservation that is in conformance with good industry practices and with the APPMs;
  - D. Emphasis on meeting the prescribed standards and APPMs on an ongoing basis;
  - E. A mechanism for the City to correct non-compliance if Project Co fails to meet the APPMs; and
  - F. Quality management and environmental management processes underpinning the delivery of services.
- (iv) Facilities Condition Data Collection
  - A. Project Co is responsible for collecting Facilities condition data for the purposes of Asset Management and measuring performance achievement based on the requirements of this Appendix, and Appendices A and C of this Schedule, as required under Article 5.0 of this Appendix. The collection of Facilities condition data shall occur as part of Project Co's ongoing inspection, testing, and monitoring activities as required and specified for each Facility and/or Facility component by regulation, good industry standards and practices, and as necessary for Project Co to execute its maintenance obligations as specified in Project Co's maintenance plans.
  - B. Facilities Inspections
    - i Project Co shall use Qualified Inspectors, defined as individuals with at least five (5) years of experience in Facilities inspections.
  - C. The program of Facilities inspections must be managed by a suitably qualified Buildings Structural Engineer, who:
    - i Is a Professional Engineer with a background in inspection, design, construction, maintenance, and rehabilitation of buildings;
    - ii Has extensive experience in supervising buildings design, construction, inspection, maintenance, and asset preservation;

- iii Maintains overall management and technical supervision of the buildings inspection and Maintenance/asset preservation program;
  - iv Accepts responsibility for the technical competence of all personnel involved in Facilities inspection and reporting;
  - v Accepts responsibility for the structural safety of all buildings;
  - vi Has the overall responsibility for assessing the buildings functionality/safety, buildings risks, and potential risks to OLRT Passengers, and to determine an appropriate asset preservation strategy.
- D. While the Qualified Inspector is tasked with identifying defects, it is the Buildings Structural Engineer who is required to interpret the observations and implement appropriate structure asset preservation strategies to meet the Project Agreement performance requirements.
- E. The types of buildings inspections required are as indicated in Table 6.7.4.

| <b>TABLE 6.7.4</b><br>Inspection Types |  |  |
|--|--|--|
| <b>Type</b>                            | <b>Description</b>   | <b>Maximum Inspection Frequencies</b>                        |
| Superficial (maintenance)              | Focus on OLRT Passenger safety and Facilities functionality; refer to Appendix A [Operation and Maintenance Performance Requirements] to this Schedule   | These are as part of routine OLRT management and operations. |
| Detailed                               | Focus on a general assessment of condition and developing an annual, five (5)-year and ten-year asset preservation programs (including Preventative Maintenance and replacement)   | Once every two (2) years                                     |
| Condition Surveys                      | Focus on producing a comprehensive assessment of condition, including undertaking physical testing, in order to develop an appropriate asset preservation program (including preventative maintenance, rehabilitation and replacement) | As required by Tunnel Engineer                               |

- F. Facilities exhibiting significant displacement, deterioration, defects or damage are required to be inspected and assessed more frequently with the intervals determined by the Buildings Structural Engineer to meet the performance requirements of this Project Agreement and Good Industry Practice.
- G. Facilities condition inspection is required to be undertaken using format and detail consistent with that specified reference documents. The inspection data is to be provided to the City in a format acceptable and pursuant to Table 5.2.
- H. Project Co is required to retain files of Facilities inspection records and asset preservation plans so that a continuous history of each Facility is available throughout the Project Term.

- I. Inspections of Facilities shall commence following Commencement of Revenue Service.
- (v) Performance Measures
- A. Project Co shall utilize data from its routine inspections, testing and monitoring activities as described in this Article to prepare a condition assessment for each Facility according to the rating methodology in Table 6.7.4 for annual condition reporting per Article 5.0 of this Appendix. In addition, a five-year detailed rating condition assessment of each system shall be undertaken to obtain the current condition and inventory of each system and subsystem based on the rating methodology described in Table 6.7.5. Non-Conformance applies to each system and subsystem component that does not meet the maximum response time noted below.
- B. At each occurrence of Project Co failing to meet the Asset Preservation Performance Measure by the expiry of the Maximum Response Time, Project Co shall be assigned a relevant Quality Failure (Major, Medium, or Minor). Project Co shall be assigned a further relevant Quality Failure for each subsequent week of non-conformance until the failure has been either rectified or a disposition has been accepted by the City in accordance with Schedule 11 – Quality Management.”

**TABLE 6.7.5**  
Facilities Condition Rating

| Label     | Description   | Maintenance or Repair  | Maximum Response Time  |
|-----------|---|--|--|
| Excellent | New or as good as new, fully functional, high reliability, Facility components are fully supported  | None   | None   |
| Good      | Normal aging, fully functional, reliability meeting industry targets, Facilities are available and can be used, failures can be remedied with normal maintenance actions without significant disruption                               | Conduct Maintenance only   | 12 months  |
| Fair      | Substantial aging/wear approaching end of useful life, functional but reliability below minimum industry targets, diminishing or more costly maintenance of Facility components, requires more substantial maintenance and monitoring | Conduct Maintenance and undertake asset preservation work to correct deficiency up to and including replacement of component | 12 months  |
| Poor      | Exceeds useful life, reliability well below acceptable industry targets, frequent systemic failures, Facility components unavailable, maintenance and monitoring  | Conduct Maintenance and undertake asset preservation work to correct deficiencies up to and including system or              | Three (3) months, with plan of action due within two (2) weeks |



|  |  |                       |  |
|--|--|-----------------------|--|
|  | efforts are excessive and disruptive to system operation and to other maintenance activities | subsystem replacement |  |
|--|--|-----------------------|--|

- C. Repairs and asset preservation are to be completed within the maximum response times in Table 6.7.5. Any safety hazards and/or conditions preventing the operation of the OLRT service shall be remedied immediately.

(h) Drainage and Sedimentation Control Structures

(i) General

- A. Drainage and sedimentation control structures, other than those defined as part of Structures, shall meet the provisions of the Design and Construction Specifications related to drainage and sedimentation control structures, and continually meet the requirements of Appendix A and Appendix C to this Schedule. The drainage structures and sedimentation control structures are targeted to ensure:

- i System safety;
- ii That functionality is at an acceptable level; and
- iii Asset consumption is limited.

- B. The drainage structures and sedimentation control structures Asset Management cycle includes, in addition to routine inspection and maintenance as addressed in Appendix A to this Schedule:

- i Inspection ;
- ii Rating the condition of the structure and its elements;
- iii Programming correction of deficiency;
- iv Undertaking remedial works;
- v Inventory updating; and
- vi Reporting achievements.

- C. The required delivery of services is to be based upon:

- i Emphasis on System safety;
- ii Outcome based specification with Project Co given the latitude for treatment selection to control/correct defective condition as per the requirements of this Project Agreement;



- iii A life-cycle approach to maintenance and asset preservation; and
  - iv A preventative rather than reactive maintenance/repair strategy to limit asset consumption with inspections recommended to facilitate this strategy.
- (ii) Drainage and Sedimentation Control Structures Inspection Management
  - A. In this Project Agreement the maximum duration between inspections for the drainage and sediment control structures is:
    - i Superficial—refer to the response times in Appendix A (Maintenance and Rehabilitation Requirements) to this Schedule;
    - ii Routine structure condition inspection—annual condition assessments focused on developing an annual asset preservation program; and
    - iii Detailed structure condition assessment—five (5)-yearly detailed inspections focused on producing a comprehensive assessment of condition and if necessary undertaking physical testing in order to develop an appropriate asset preservation program.
  - B. Structures exhibiting significant deterioration, defects, or damage are to be inspected more frequently with the intervals determined by experienced Professional Engineers.
  - C. Project Co shall develop and report Culvert treatment recommendations based on the annual Culvert assessment findings.
  - D. In general, the treatment recommendations for Culverts shall generally be developed and applied as follows (based on defined terms in the Culvert Assessment Guide):
    - i An imminent danger of failure shall be replaced immediately;
    - ii A **Remaining Life or Material Rating** in either the Poor or Below Minimum Tolerable condition category at the time of construction shall be considered for replacement or lining;
    - iii A **Shape Rating** in either the Poor or Below Minimum Tolerable condition category shall be considered for remedial action and only where the distortion to the shape of the Culvert is adversely affecting capacity or there is a reasonable expectation the distortion will continue to progress and adversely affect road performance;
    - iv A **Capacity Rating** in either the Poor or Below Minimum Tolerable condition category shall be considered for cleanout, ditching, or other

- remediation, and only when surface drainage is being adversely impacted;
- v An **Invert, Scour, or Slope Erosion Rating** in either the Poor or Below Minimum Tolerable condition category shall be considered for remedial action, and only where there is a reasonable expectation that the condition may progress to undermining and failure of the Culvert invert, and adversely affect road performance;
  - vi A **Settlement Rating** in either the Poor or Below Minimum Tolerable condition category should be identified for a Pavement engineering investigation.
- E. Each annual assessment shall be completed and a Culvert condition assessment report including general details, condition ratings, treatment recommendations and the treatment priorities for the recommended Culvert replacements shall be completed for each Culvert within the Lands, notwithstanding the Culverts which remain the City's responsibility as indicated in Appendix A of this schedule. The Culvert general details shall, at minimum, include the date of inspection, municipality, Asset Inventory number, location within the Lands, type, shape, length (m), size (mm) and fill (depth and type), condition ratings, treatment recommendation, treatment priority and accomplishment.

## (iii) Culvert Assessment Guide

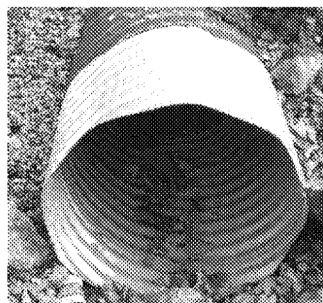
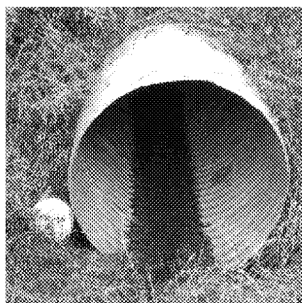
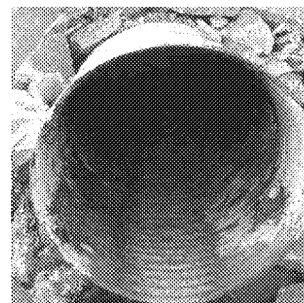
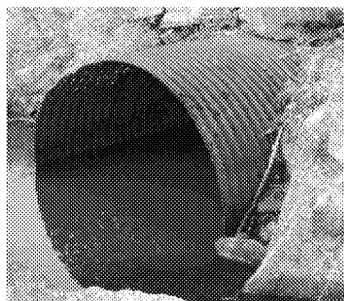
| Remaining Life Span Rating Criteria |  |
|-------------------------------------|--|
| Category                            | Description                                |
| Very Good (VG)                      | Has more than 15 years remaining in life   |
| Good (G)                            | Has Between 10 to 15 years remaining       |
| Fair (F)                            | Has between five (5) to 10 years remaining |
| Poor (P)                            | Has less than five (5) years remaining     |
| Below Minimum Tolerable (BMT)       | Has less than one (1) year remaining       |
| Imminent Danger of Failure (IDF)    | Failure is about to happen                 |

**Note:**

Use an understanding of Culvert condition performance gained through years of engineering experience, or general maintenance activities, or equivalent, to determine the remaining life span of the Culvert and to recognize if there is an imminent danger of failure.

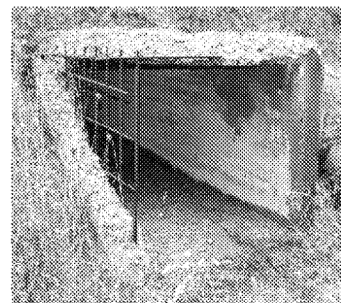
## (iv) Material Rating Criteria

| Material Rating Criteria – Corrugated Metal Culverts |  |
|--|--|
| Category   | Description  |
| Very Good  | New condition, may also exhibit slight discolouration of surface, galvanizing partially gone along invert.   |
| Good   | Discolouration of surface, galvanizing completely gone along invert but no layers of rust. Minor pinholes in pipe material located at end of pipe but not located beneath Roadway.       |
| Fair   | Layers of rust forming. Sporadic pitting of invert, minor pinholes forming throughout pipe.  |
| Poor   | Heavy rust, thick scaling throughout pipe. Deep pitting, perforations throughout in invert.  |
| Below Minimum Tolerable                              | Extensive heavy rust, extensive perforations throughout pipe. End sections corroded away. Bottom portion completely corroded exposing underlying granular. Partially to fully collapsed. |

**VERY GOOD****GOOD****FAIR****POOR****BELOW MINIMUM TOLERABLE**



| Material Rating Criteria – Concrete Culverts |   |
|--|---|
| Category                                     | Description   |
| Very Good                                    | New Condition, hairline cracking without rust staining or delaminations, surface in good condition, isolated damage from construction.  |
| Good   | Hairline cracking parallel to the direction of traffic with no crack greater than 1 mm and without rust staining. Light scaling on less than 10% of the exposed surface area and greater than 3 mm deep. Delaminated/spalled area less than 1% of surface area.   |
| Fair   | Map cracking. Cracks parallel to traffic no greater than 4 mm, cracks transverse to traffic no greater than 2 mm. Rust staining and leakage occurring. Scaling on less than 30% of exposed area and less than 5 mm deep. Spalled areas with exposed reinforcing less than 10%.  |
| Poor   | Transverse cracks greater than 3 mm wide with extensive rust staining. Spalling at numerous locations, extensive surface scaling on invert greater than 15 mm. Extensive cracking with cracked open more than 4 mm. Spalling has caused exposure of heavily corroded reinforcing steel in bottom or top slab. Extensive surface scaling on invert greater than 25 mm. |
| Below Minimum Tolerable                      | Full depth holes. Extensive cracking greater than 15 mm. Spalled areas with exposed reinforcing greater than 25%. Total delaminated, spalled and punky concrete areas are greater than 50% of surface area. Perimeter of reinforcing bars is completely exposed.  |

**VERY GOOD****GOOD****FAIR****POOR****BELOW MINIMUM TOLERABLE**

| Material Rating Criteria – Plastic Culverts |   |
|---|---|
| Category                                    | Description   |
| Very Good                                   | Minor isolated rip caused by floating Debris or construction. Minor discolouration.   |
| Good  | Slit no longer than 150 mm and no wider than 10 mm at two or three locations. Damage (cuts, gouges or distortions) to ends sections from construction or maintenance. Perforations caused by abrasion located within 1.5 m of outlet and not under Roadway. |
| Fair  | Slit longer than 150 mm and wider than 10 mm at two or three locations.   |
| Poor  | Slit longer than 150 mm and wider than 10 mm at several locations. Perforations throughout the pipe.  |
| Below Minimum Tolerable                     | Slits in pipe causing the loss of backfill. Section loses throughout the pipe caused by abrasion. Invert eroded away. Partially collapsed.  |

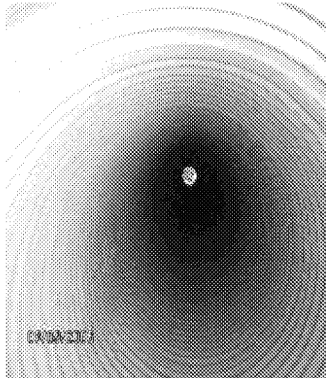
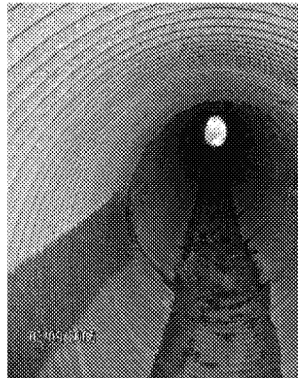
**Note:**

This type of material has not been in service for a sufficient period of time to obtain accurate pictures to show the various stages of deterioration.

## (v) Shape Rating Criteria

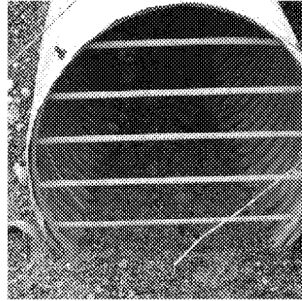
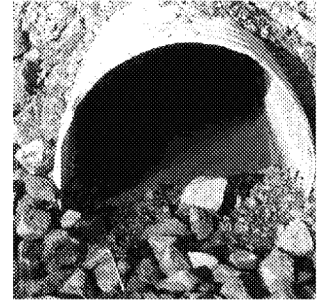
| Shape Rating Criteria   |  |
|-------------------------|--|
| Category                | Description  |
| Very Good               | Smooth curvature in barrel. Span dimension within 3% of design.  |
| Good                    | Smooth curvature in top half of barrel with flattening on bottom portion. Span dimension up to 5% greater than design.   |
| Fair                    | Slight distortion in one location on the top portion. Bottom has slight reverse curvature in one location. Span dimension up to 10% greater than design. Non-symmetrical shape.              |
| Poor                    | Significant distortion throughout length. Lower 1/3 may be kinked. Span dimension up to 15% greater than design.   |
| Below Minimum Tolerable | Extreme deflection at isolated locations. Flattening at top of arch or crown. Bottom has reverse curvature throughout. Span dimension greater than 15% of design. Extremely non-symmetrical. |



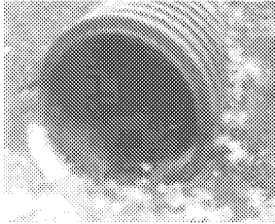
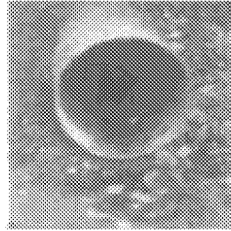
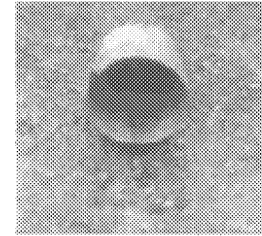
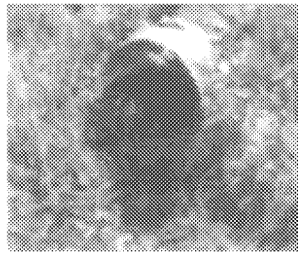
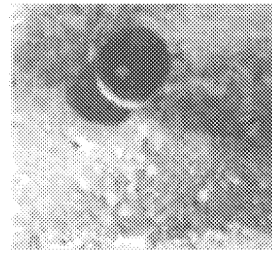
**VERY GOOD****GOOD****FAIR****POOR****BELOW MINIMUM TOLERABLE****(vi) Capacity Rating Criteria**

| <b>Capacity Rating Criteria</b> |  |
|---------------------------------|--|
| <b>Category</b>                 | <b>Description</b>   |
| Very Good                       | Little to no sediment build-up in pipe. Culvert ends are undamaged. Little to no Debris blocking flow. |
| Good                            | Original Culvert capacity diminished by 5% or less.  |
| Fair                            | Original Culvert capacity diminished by less than 15%.   |
| Poor                            | Original Culvert capacity diminished by less than 25%.   |
| Below Minimum Tolerable         | Original Culvert capacity diminished by more than 25%.   |



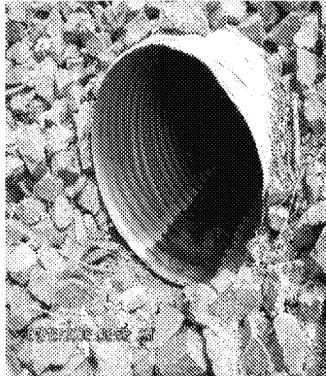
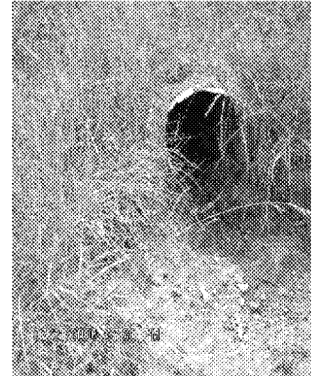
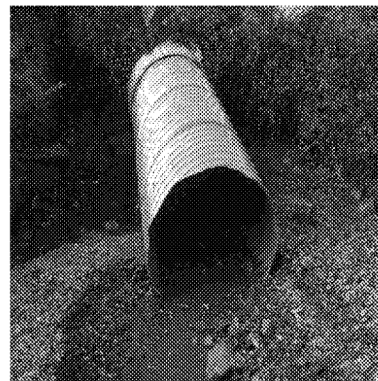
**VERY GOOD****GOOD****FAIR****POOR****BELOW MINIMUM  
TOLERABLE****(vii) Invert Rating Criteria**

| <b>Inverting Rating Guideline</b> |  |
|-----------------------------------|--|
| <b>Category</b>                   | <b>Description</b>   |
| Very Good                         | Invert slightly below the ditch elevation approximately 50 mm.       |
| Good                              | Invert 50 mm higher than the ditch elevation.                        |
| Fair                              | Invert less than 150 mm higher or lower than the ditch elevation.    |
| Poor                              | Invert greater than 150 mm higher or lower than the ditch elevation. |
| Below Minimum Tolerable           | Invert greater than 300 mm higher or lower than the ditch elevation. |

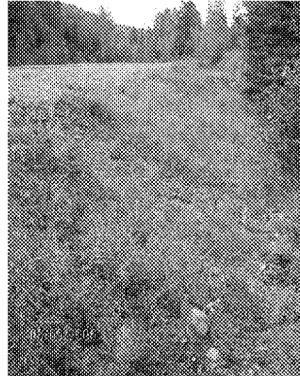
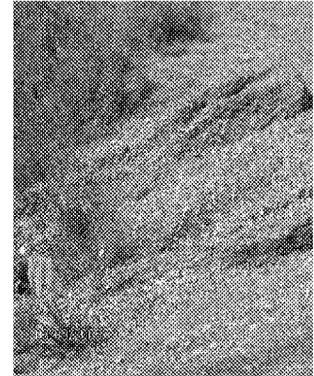
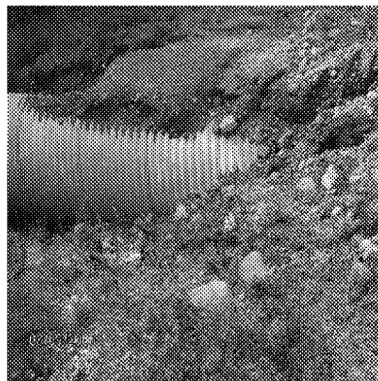
**VERY GOOD****GOOD****FAIR****POOR****BELOW MINIMUM TOLERABLE****(viii) Scour Rating Criteria**

| <b>Scour Rating Criteria</b> |  |
|------------------------------|--|
| <b>Category</b>              | <b>Description</b>   |
| Very Good                    | Minor Scour holes at inlet and outlet.   |
| Good                         | Minor scour holes developing at inlet or outlet. Top of footing is exposed. Probing indicates soft material in scour hole.                   |
| Fair                         | Scour holes developing at inlet or outlet that are 300 mm or less in depth. Footings along sides are exposed.                                |
| Poor                         | Sour holes at inlet or outlet that are 600 mm or less in depth. Bottom of footing exposed.   |
| Below Minimum Tolerable      | Scour holes at inlet or outlet that are in excess of 600 mm in depth. Erosion occurring behind headwall that threatens to undermine Culvert. |



**VERY GOOD****GOOD****FAIR****POOR****BELOW MINIMUM TOLERABLE****(ix) Slope Erosion Rating Criteria**

| <b>Slope Erosion Rating Criteria</b> |  |
|--------------------------------------|--|
| <b>Category</b>                      | <b>Description</b>                                       |
| Very Good                            | No slope erosion.  |
| Good                                 | Slope erosion around Culvert ends is less than 50 mm.    |
| Fair                                 | Slope erosion around Culvert end is less than 150 mm.    |
| Poor                                 | Slope erosion around Culvert end is greater than 150 mm. |
| Below Minimum Tolerable              | Slope erosion around Culvert end is greater than 300 mm. |

**VERY GOOD****GOOD****FAIR****POOR****BELOW MINIMUM TOLERABLE****(x) Settlement Rating Criteria**

| <b>Settlement Rating Criteria</b> |   |
|-----------------------------------|---|
| <b>Category</b>                   | <b>Description</b>                        |
| Very Good                         | No noticeable deflection in rail profile  |
| Good                              | Less than 9mm deflection in rail profile. |
| Poor                              | 10mm to 15mm deflection in track.         |
| Below Minimum Tolerable           | deflection in track is 16 mm or more.     |

**(xi) Asset Preservation Performance Measure**

- A. Project Co is required to comply with the Design and Construction Specifications and Appendices A and C to this Schedule as relevant to drainage and sedimentation control structures.

**Table 6.6.11**

## Culverts

| <b>Asset Preservation Performance Measure</b> | <b>Performance Measure</b> | <b>Intervention Criteria</b>   | <b>Action</b>                              | <b>Maximum Response Time</b> | <b>Penalty*</b> |
|---|----------------------------|--|--|------------------------------|-----------------|
| PCUL1   | Remaining Life Span Rating | Project Co fails to meet all requirements that are specified to be taken when Project Co Detects or was Made Aware of, an imminent danger of a Culvert failure | Immediate                                  | 24 hours                     | Major           |
| PCUL2   | Remaining Life Span Rating | Project Co fails to maintain a Non-Structural Culvert at a Remaining Life Span Rating of at least “Good” or better   | Consider Asset Preservation or Replacement | 12 months                    | Major           |

\* At each occurrence of Project Co failing to meet the Asset Preservation Performance Measure by the expiry of the Maximum Response Time, Project Co shall be assigned a relevant Quality Failure (Major, Medium, or Minor). Project Co shall be assigned a further relevant Quality Failure for each subsequent week of non-conformance until the failure has been either rectified or a disposition has been accepted by the City in accordance with Schedule 11 – Quality Management.

## (i) Other Asset Classes

## (i) General

- A. This Article relates to all other assets and asset classes for which specific APPMs have not been identified in the previous Articles.
- B. Project Co is fully responsible for keeping all System assets safe, clean, tidy, functional, and maintainable to develop an asset preservation strategy (including



preventative maintenance and replacement) by focusing on general assessment of condition of all System assets. The target condition for all other assets is a condition rating of “Good” or better, as defined in 6.9.2 below, at all times.

- C. Routine maintenance and operation of the System are addressed in Appendix A to this Schedule. The performance requirements noted in Appendix A to the Maintenance Specifications supersede the requirements noted here.

(ii) Performance Measures

- A. Project Co shall utilize data from its routine inspections, testing, and monitoring activities to prepare a condition assessment for asset according to the rating methodology in Table 6.9.2 for annual condition reporting per Article 5.0 of this Appendix. Additionally, Project Co shall conduct a five-year detailed rating condition assessment of other assets and asset classes to obtain the current inventory and condition based on the rating methodology described in Table 6.9.2. Non-Conformance applies to each asset component that requires Asset Preservation works due to one or more of the conditions below and for which the maximum response time is exceeded.

| <b>TABLE 6.9.2</b><br>Other Asset Classes Condition Rating |   |                                       |  |
|--|---|---------------------------------------|--|
| <b>Label</b>   | <b>Description</b>  | <b>Maintenance or Repair</b>          | <b>Maximum Response Time</b>                                   |
| Excellent  | New or as good as new   | None                                  | None   |
| Good   | Normal wear and tear, asset performs as intended, asset is maintainable using normal maintenance efforts and practices, no requirement for repair or replacement parts and services are readily available             | Maintenance only                      | 12 months  |
| Fair   | Minor defects present, asset performs as intended, increasing effort is required to maintain asset, no major repairs are imminent, parts and service availability is limited.   | Maintenance and asset preservation    | 12 months  |
| Poor   | Advanced defect(s), asset performance frequently impaired or diminished, extensive maintenance, monitoring and/or frequent repairs are required, major repairs may be imminent, parts and/or services are unavailable | Maintenance and/or asset preservation | Three (3) months, with plan of action due within two (2) weeks |
| Very Poor  | Advanced defect(s)—Requires immediate maintenance/repair. An imminent safety  | Maintenance and/or asset preservation | Immediate  |



**Ottawa Light Rail Transit Project****Schedule 15-3 to Project Agreement  
Execution Version**

|  |        |  |  |
|--|--------|--|--|
|  | Hazard |  |  |
|--|--------|--|--|

At each occurrence of Project Co failing to meet the Asset Preservation Performance Measure by the expiry of the Maximum Response Time, Project Co shall be assigned a relevant Quality Failure (Major, Medium, or Minor) each week beyond the Maximum Response Time until the failure has been either rectified or a disposition has been accepted by the City in accordance with Schedule 11 – Quality Management.

- B. Repairs and asset preservation are to be completed within the maximum response times in Table 6.9.2. Any safety hazards and/or conditions preventing the operation of the OLRT shall be remedied immediately.
  - (iii) Performance Measures
    - A. In addition to the items noted in the above table, Project Co is required to comply with the measures, minimum condition and response times applicable to System as defined in Appendix A to this Schedule.
- (j) Additional Inspection of the OLRT
  - (i) Project Co is required to undertake additional inspection of the System assets under circumstances that affect the integrity of System which include, but are not limited to:
    - i Accident or LRV collision;
    - ii Vehicle collision with a structure;
    - iii Unusual/severe weather conditions or natural disasters;
    - iv Where a perceived problem exists; and
    - v Flooding/ice jams.
  - (ii) Project Co shall undertake inspection and report the inspection results within seven (7) days of any significant natural event or other events impacting the integrity of System assets or the safety of the System and Passengers. The reporting format shall be consistent with the requirements of the Operation and Maintenance Performance Requirements and Article 5 of this appendix. The APPM indicated is applicable to the submission of complete and satisfactory inspection report for each event.
  - (iii) At each occurrence of Project Co failing to meet the Asset Preservation Performance Measure by the expiry of the Maximum Response Time, Project Co shall be assigned a relevant Quality Failure (Major, Medium, or Minor). Project Co shall be assigned a further relevant Quality Failure for each subsequent week of non-conformance until the failure has been either rectified or a disposition has been accepted by the City in accordance with Schedule 11 – Quality Management.

## APPENDIX C EXPIRY DATE REQUIREMENTS

### 1.0 Introduction

#### (a) General

- (i) This Appendix sets forth the requirements for the condition of the System when it is returned to the City at the Expiry Date. The objectives of these requirements are to:
  - A. Define minimum required condition levels at the Expiry Date;
  - B. Ensure a suitable distribution of remaining life expectancy;
  - C. Achieve Remaining Service Life expectations;
  - D. Ensure all documentation (Design Data, Maintenance Services records and reports, Permits, Licences and Approvals, etc.) for all Infrastructure is up-to-date and submitted to the City;
  - E. Ensure all System assets are fully operational and functional;
  - F. Ensure a current and complete inventory of spare parts and supplies is provided; and
  - G. Ensure no outstanding safety issues exist.
- (ii) The procedures for meeting the Expiry Date requirements are outlined in Schedule 24 – Expiry Transition Procedure of this Project Agreement.

#### (b) Objective

- (i) At the Expiry Date, the condition of the System must meet the minimum standards defined in this Appendix in addition to having met requirements stated elsewhere in this Project Agreement that include, but are not limited to, the Design and Construction Specifications and the remainder of the Maintenance Specifications. The requirements set out in this Appendix are intended to protect the City from excessive asset consumption during the Maintenance Term, to facilitate hand over of the System to the City at the Expiry Date in a condition that reflects proactive maintenance and rehabilitation during the Maintenance Term, and to ensure that the System has sufficient Remaining Service Life as defined in this Appendix. Additionally, at the Expiry Date the System shall have no material deficiencies and shall require no urgent maintenance shortly after the Expiry Date.
- (ii) Article 1.1 (Responsibility for Maintenance and Rehabilitation) of Part 1 (Introduction) to the Maintenance Specifications discusses applicability of Expiry Date requirements set

forth in this Appendix to the New Municipal Infrastructure at such time when such Infrastructure is handed back to the relevant municipality in accordance with Part 1, Article 3 of the Design and Construction Specifications.

(c) Performance Measures

- (i) In addition to the requirements set out in this Appendix, at the Expiry Date, the System condition must also satisfy the requirements of Appendices A and B to this Schedule 15-3 and the performance measures set forth in each such Appendix.

## 2.0 Determination of Remaining Service Life

(a) Remaining Service Life

- (i) The Remaining Service Life for the purposes of this Appendix shall be the service life that remains for each component of the System measured in years taking into account the historic performance of the System of similar construction used under similar conditions. At the Expiry Date, the System shall meet the performance levels noted in the Project Agreement, and the Remaining Service Life will be determined to have been achieved only if there is no need for any repairs or rehabilitation in respect of the System at such time (other than custodial, preventative and handover maintenance of any component of the System which will be required during the anticipated Remaining Service Life).

| <b>TABLE 2.1</b><br>Remaining Service Life |                                       |   |
|--|---------------------------------------|---|
| <b>System Element</b>                      | <b>Remaining Service Life (years)</b> | <b>Percentage of System Element<br/>(Minimum Requirement)</b> |
| New Structure                              | BCI > 70                              | 100   |
| Existing Structure                         | BCI > 70                              | 100   |
| Elevated Guideway                          | BCI > 70                              | 100   |
| Stations                                   | >10                                   | 100   |
| Tunnel – Structure                         | >70                                   | 100   |
| Tunnel – Fit Out                           | >10                                   | 100   |
| Track – Ballast                            | >10                                   | 100   |
| Track – Fixed                              | >10                                   | 100   |
| Ties                                       | >10                                   | 100   |
| Switches and Cross-Overs                   | >10                                   | 100   |
| Maintenance Building                       | >10                                   | 100   |
| Communications                             | >10                                   | 100   |
| Vehicles' Carbody                          | >10                                   | 100   |

| <b>TABLE 2.1</b><br>Remaining Service Life |                                       |   |
|--|---------------------------------------|---|
| <b>System Element</b>                      | <b>Remaining Service Life (years)</b> | <b>Percentage of System Element<br/>(Minimum Requirement)</b> |
| Catenary                                   | >10                                   | 100   |
| Traction Power Equipment                   | >10                                   | 100   |

- (b) Measuring and Establishing Remaining Service Life
- (i) Project Co shall measure and establish the Remaining Service Life for each OLRT System Element included in Table 2.1, by measuring the condition of each OLRT System Element for;
- A. Compliance with the standards and / or requirements of Design and Construction in Schedule 15-2;
  - B. Compliance with the standards and / or requirements defined in the Maintenance and Rehabilitation in Schedule 15-3, Appendix A and Appendix B;
  - C. Compliance with the standards and / or requirements as proposed by Project Co and approved by the City, which resulted from Project Co's choices during the performance of Schedules 15-2 and 15-3; and
  - D. Compliance with all regulatory and code requirements.
- (ii) The program of measuring the Remaining Service Life and associated inspections must be managed by a suitably qualified Professional Engineer, who:
- A. Is a Professional Engineer with a background in inspection, design, construction, and maintenance of the respective OLRT System Element;
  - B. Has extensive experience in supervising the respective OLRT System Element design, construction, inspection, maintenance, and asset preservation;
  - C. Evaluates the overall management and technical supervision of the respective OLRT System Element inspection and Maintenance/asset preservation programs conducted pursuant to Appendix B of Schedule 15-3;
  - D. Accepts responsibility for the technical competence of all personnel involved in inspection and reporting when measuring and establishing the Remaining Service Life of the respective OLRT System Element;
  - E. Consults with other specialist professionals when necessary; and
  - F. Has the overall responsibility for establishing the Remaining Service Life of the respective OLRT System Elements.

- (c) While the Qualified Inspector is tasked with measuring, testing, and making observations, pursuant to Article 2.0(b)(1) with respect to OLRT System Element, it is the Professional Engineer who is required to interpret the measurements, testing, and observations and establish an appropriate Remaining Service Life.

### 3.0 General Requirements

(a) Operations and Maintenance Manual

- (i) Project Co shall prepare an Operations and Maintenance Manual (OMM), the requirements of which are set forth in this Article 3.1, for each System Element provided in Table 2.1 such that the asset can be operated and maintained by the City after the Expiry Date;
- (ii) Each OMM shall be provided to the City no later than six (6) months prior to the Expiry Date and shall be sufficiently detailed to enable a person unfamiliar with the relevant System Element to efficiently maintain and operate it;
- (iii) Each OMM shall include comprehensive instructions to operate and maintain all aspects of the relevant Infrastructure including at a minimum the following content:
  - A. the purpose and functional objectives of the System Element;
  - B. all necessary steps to safely operate and maintain such System Element;
  - C. any hazards to avoid while operating and maintaining such System Element;
  - D. clear diagrams and/or photographs to illustrate the operational / functional process; and
  - E. any separate component maintenance, installation and instruction manuals from the manufacturer.
- (iv) Each OMM shall identify all activities required to maintain the relevant System Element in prescribed condition including inspections, proactive component replacements, and Preventive Maintenance, with specific instructions for:
  - A. daily requirements;
  - B. weekly requirements;
  - C. monthly requirements;
  - D. annual requirements; and
  - E. history of maintenance services.

(b) Handover of System



- (i) Upon the Termination Date, Project Co shall transfer control of and responsibility for the Maintenance of the System, including all Fixed Equipment, Vehicles and Fixed Facilities which Project Co has supplied, Designed, Constructed and Maintained, to the City.
- (c) Handover Maintenance Requirements
  - (i) Project Co shall develop and submit a Handover Maintenance Plan which includes but not limited to the requirements of this schedule and the Project Agreement. The Handover Maintenance Plan shall be submitted 6 months prior to the commencement of the Handover Maintenance Period.
  - (ii) Project Co shall cause Handover Maintenance to be effected within the Handover Maintenance Period in accordance with Article 3.0(d)(ii), and prior to the expiry of the Maintenance Term, without limiting the provisions otherwise contained in this Schedule 15-3 respecting obligations which include obligations for Handover Maintenance.
  - (iii) Project Co shall ensure that at the Termination Date, the System, including all Fixed Equipment, Vehicles and Fixed Facilities which Project Co has supplied, Designed, Constructed and Maintained are in a good state of repair and good working order, and in a state which complies with the Project Scope, Design and Construction Requirements, the Standard, the Design and Construction Performance Requirements and with all other standards to which Project Co is required to Maintain the System under the Project Agreement, taking into account the age of the System but without derogation from any of the Maintenance obligations of Project Co (including all of the foregoing obligations set out in this Article 3.0(c)(ii)) and subject always to compliance with the obligations of Project Co for performance of the Maintenance Services during the Maintenance Term (including the Termination Date). On the Termination Date, Project Co shall submit to the City a report confirming that the System meets the Standard as of the Termination Date.
  - (iv) Project Co shall ensure that each Fixed Component and Vehicle Component and each of their components and subsystems transferred to the City upon the Termination Date:
    - A. shall achieve its minimum Remaining Service Life, to the extent that the asset(s) comprising such Fixed Component or Vehicle Component have a specified Design Life, if the asset continues to be operated and maintained in an appropriate manner after the Termination Date;
    - B. shall submit the Remaining Service Life assessments as determined pursuant to Article 2.0 of this Appendix.
  - (v) For further certainty, Project Co's obligations pursuant to Article 3.0(c)(iii) do not include any obligation to provide Maintenance following the Termination Date.
  - (vi) Project Co shall perform all Handover Maintenance required to comply with Article 3.0(c)(ii), including all Corrective Maintenance required to remedy all Defects identified



by the Pre-Handover Inspections, or otherwise identified by Project Co or the City, within the Handover Maintenance Period.

(d) Inspection Prior to Handover

- (i) Prior to the Termination Date, the City and Project Co shall jointly perform three (3) inspections of the System (the “**Pre-Handover Inspections**”), which shall consist of the examination and testing which is required of each Fixed Component and Vehicle Component so as to determine its state of repair and operation.
- (ii) The Pre-Handover Inspections shall occur as follows:
  - A. the first Pre-Handover Inspection shall take place no earlier than 60 calendar months and no later than 54 calendar months prior to the Termination Date;
  - B. the second Pre-Handover Inspection shall take place no earlier than 24 calendar months and no later than 18 calendar months prior to the Termination Date;
  - C. the final Pre-Handover Inspection shall take place no later than 2 calendar months prior to the Termination Date.
- (iii) The failure of the City to request a Handover Maintenance requirement on any Pre-Handover Inspection or a repair made by Project Co following any Pre-Handover Inspection shall not constitute a waiver of or derogate from the Handover Maintenance obligations of Project Co contained in this Schedule 15-3.

(e) Remedial Action

- (i) Project Co shall perform the necessary Handover Maintenance to remedy any Defects in the System identified by the Pre-Handover Inspection, so as to meet the standard set out in Article 3.0(c)(ii).
- (ii) Following each Pre-Handover Inspection, Project Co shall prepare a handover Maintenance Services plan detailing the Handover Maintenance required to remedy all identified Defects in the System, which shall include a schedule for the performance of such Handover Maintenance (the “**Handover Maintenance Services Plan**”). The following are the deadlines by which Project Co is required to submit a Handover Maintenance Services Plan to the City for review:
  - A. within two (2) calendar months of the conclusion of the first Pre-Handover Inspection;
  - B. within one (1) calendar month of the conclusion of the first Pre-Handover Inspection;
  - C. within one (1) week of the conclusion of the final Pre-Handover Inspection.

- (iii) The City shall review each Handover Maintenance Services Plan in consultation with Project Co to verify that the Handover Maintenance Services Plan complies with the Handover Maintenance Plan. Upon the City's confirmation to Project Co that the Handover Maintenance Services Plan complies with the Handover Maintenance Plan, Project Co shall undertake the work set out therein, which must be completed prior to the Termination Date. Project Co shall keep a record of all work performed in accordance with the Handover Maintenance Services Plan and shall advise the City, at regular intervals, of its progress toward completing the Handover Maintenance Services Plan.
  - (iv) In the event that Project Co fails to perform the Handover Maintenance in accordance with the Handover Maintenance Services Plan, the City may, in addition to any other rights or remedies of the City pursuant to the Project Agreement, undertake remedial action in accordance with provisions included in Appendix A. In addition, in the event that Project Co is in breach of any of its obligations to perform Handover Maintenance pursuant to this Schedule 15-3, the City shall be entitled to take security provided to the City in accordance with any remedial action to rectify the breach under any other provision of the Project Agreement.
- (f) Turnover of Replacement Parts
  - (i) On the Termination Date, Project Co shall transfer to the City all spare Fixed Components and Vehicle Component replacement parts (the "**Replacement Parts**") that it has in its inventory and possession for purposes of the Maintenance of the System. For further certainty, at the Termination Date Project Co shall have an inventory of Replacement Parts which is reasonably in accordance with the amount and type of inventory maintained throughout the Maintenance Term in compliance with the provisions included in Appendix A. The City reserves the right not to accept obsolete, damaged or any other Replacement Parts from Project Co's inventory the use of which the City deems not to be in the best interest of the City or the System. Project Co shall ensure that all Replacement Parts are stored on the premises of the Maintenance and Storage Facility at the Termination Date. On the occurrence of the Termination Date, Project Co shall be deemed to have released and transferred to the City all its right, title and interest in any and all such Replacement Parts. Project Co shall, at the City's request, provide a Bill of Sale to the City itemizing all the Replacement Parts which are required to be turned over to the City pursuant to this Appendix.
  - (ii) The City shall deliver payment to Project Co on account of the Replacement Parts which the City has agreed to purchase, such payment to be equivalent to a Cost Recovery calculation with respect to the Replacement Parts.
- (g) Status and Components
  - (i) All System, including both hardware and software, must be in proper working order, and must meet all applicable requirements of the Project Agreement;

- (ii) No hardware or software components shall be incompatible with the System at the Expiry Date and all third party software shall be the latest full release version with similar compatibility; and
  - (iii) Corrective and Preventative maintenance shall have been carried out throughout the Maintenance Term on all System assets in accordance with Project Co's Maintenance and Rehabilitation Plan, applicable manufacturers' requirements, and Good Industry Practice.
- (h) Inventory and Verification of Inventory
  - (i) Project Co shall provide an updated System Inventory report, in accordance with the requirements of Article 5.8 of Appendix B, plus a basic inventory of other Infrastructure and spare parts to be handed over to the City at the Expiry Date, within 30 days prior to the Expiry Date.
- (i) As Built Drawings
  - (i) The most current and up-to-date versions of all As-Built Drawings prepared in connection with the Project shall be submitted to the City at Expiry Date.