OTTAWA LIGHT RAIL TRANSIT
MAINTENANCE AND REHABILITATION

ENVIRONMENTAL MANAGEMENT PLAN

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1.0 Acronyms and Definitions

Acronym/Defining Word	Definition
CEAA	The Canadian Environmental Assessment Act
COO	City of Ottawa, the City, the Client, the Owner, the Customer, and a party to the Project Agreement
Code	Rules and standards which have been adopted by a government agency or professional regulatory body, as mandatory regulations having the force and effect of law.
DFO	Department of Fisheries and Oceans Canada (Federal)
ECCC	Department of Environment and Climate Change Canada (Federal)
Emergency	A situation or an impending situation that constitutes a danger of major proportions that could result in serious harm to people or substantial damage to property, and that is caused by forces of nature, a disease or other health risk, an accident, or an act whether intentional or otherwise.
EMP	Environmental Management Plan; the meaning given in Section 3.8(c) of Schedule 17-Environmental Obligations of the Project Agreement.
EMS	Environmental Management System. That part of the overall management system which includes organizational structure, planning activities, responsibilities, practices, procedures, and processes, and resources for developing, implementing, achieving, reviewing and maintaining the environmental policy.
Environment	Surroundings in which an organization operates, including air, water, land, natural resources, flora, fauna, humans, and their interrelation.
Environmental Aspect	An element of an organization's activities, products or services which can interact with the environment and can have an impact.
Environmental Audit	A systematic and independent examination to determine whether quality activities and related results comply with planned environmental arrangements and whether these environmental arrangements are implemented effectively and are suitable to achieve environmental and, in some cases, broader Project objectives.

Acronym/Defining Word	Definition
Environmental Impact	Any change to the environment, whether adverse or beneficial, wholly, or partially resulting from an organization's activities, products, or services.
Environmental Incident	Accidental discharge of solids, liquids or gases that is potentially harmful to the environment. It applies to hydrocarbon spills, fire, explosions, noise, odours, paint, acids, bases, pesticides, other chemical products and contaminated water emanating from maintenance and rehabilitation operations.
Environmental Objective	Overall environmental goal, arising from the environmental policy, that the organization sets itself to achieve, and which is quantified where practicable.
Environmental Policy	Statement by the organization of its intentions and principles in relation to its overall environmental performance which provides a framework for action and for the setting of its environmental objectives and targets.
EQMP	Environmental Quality Management Plan; the meaning given in Section 5.9(b) of Schedule 17– Environmental Obligations.
Fisheries Protocol	Protocol for Protecting Fish and Fish Habitat on Provincial Transportation Undertakings, 2006.
IMIRS	Integrated Management Information Reporting System
Incident	Unplanned and unwanted event that does not result in harm or loss but had the potential to (almost did) (see Near Miss); or, an act intended to cause harm, damage, or loss, whether or not the act was successful.
Instrument	A general term that incorporates applicable Legislation, Regulations, Rules, Standards, Notices and Orders.
Legal Requirement	A requirement which can be enforced by law.
LRT	Light Rail Transit
Mitigation	Actions taken during the planning, design, construction, rehabilitation and maintenance and operation of works and undertakings to alleviate potential adverse effects.
MECP	Ministry of Environment, Conservation and Parks (Ontario)
MSF	Maintenance and Storage Facility
NCR	Non-conformance report

Acronym/Defining Word	Definition
Non-conformity	The non-fulfillment of specified requirements.
OCT	Ottawa Carleton Transpo (the operator of the Confederation Line)
OLRT	Ottawa Light Rail Transit (the Confederation Line which refers to 12.5 km of LRT between Tunney's Pasture in the west and Blair in the east)
Other Requirement	Other requirements include company codes of practice, industry codes of practice; agreements with public authorities; and non-regulatory guidelines to which the organization subscribes.
PLAA	Permits, Licenses, Approvals and Agreements
Policy	A statement which guides administration, reflects management's attitudes and commitment to health and safety, and defines the authority and respective relationships required to accomplish the organization's objectives.
Preventive	Those objectives/measures/indicators/targets etc. that focus on "processes" or systems to prevent incidents (often termed "pro-active") such as the development/implementation of management systems (e.g. inspection, communication, incident investigation, training & competency assessment, auditing systems etc).
PA	Project Agreement, the executed agreement between the City and Project Co
Project Co	Rideau Transit Group General Partnership, a party to the Project Agreement
Procedure	An established and defined method of performing specified work in a step-by-step or sequential manner. There are generally "management procedures" that describe systematic management processes and "work procedures" that describe the various steps required to safely undertake a particular task.
Records	Evidence that the task(s) have been performed. Examples include reports, forms, personnel qualification records, equipment qualification records, inspection and test records.
Regulatory Authority	The Federal, Provincial, or Municipal agency having the lawful right and power to interpret the law and exercise authority.
Risk	The chance of something happening that will have an impact on objectives. *Note: A risk is often specified in terms of an event or circumstance and the consequences that may flow from it.*

Acronym/Defining Word	Definition
RTG	Rideau Transit Group General Partnership, including partners ACS Infrastructure, Atkins Realis (formerly SNC Lavalin) and EllisDon (also known as the Project Co in the Project Agreement)
RTM	Rideau Transit Maintenance General Partnership
SDS, Safety Data Sheet	Technical bulletin that provides detailed hazard and precautionary information about a controlled product, intended to provide workers and emergency personnel with procedures for handling or working with that substance in a safe manner.
Sensitive Receiver (noise and vibration)	The National Arts Centre building at 53 Elgin Street, the Canadian Broadcasting Corporation building at 181 Queen Street and the Government Conference Centre at 2 Rideau Street, as well as any other location where sensitivity to ground borne noise and vibration are determined to be high in accordance with Section 8.6 of PA Schedule 17 – Environmental Obligations.
SAR, Species at Risk	Any naturally occurring plant or animal in danger of extinction or of disappearing from the province (Ontario).
Significant Environmental Aspect	An environmental aspect that has or can have one or more significant environmental impact(s).
SPERP	Spill Prevention and Emergency Response Plan; the meaning given in Section 5.9(b) of Attachment 17 – MC Environmental Obligations.
Stakeholder	All parties who have an interest in the implementation of the OLRT project excluding the City of Ottawa. Stakeholders include the general public, businesses, community associations, educational institutions, and governmental agencies.
Standard	The defined criterion for effective HSE performance or accepted behaviours. HSE performance standards define who is responsible for performing what work and at what frequency or when.
Sustainability Plan	The meaning as given in Section 3.10 of Attachment 17 – MC Environmental Obligations.
WHMIS	Workplace Hazardous Material Information System
Workplace Hazardous Material Information System	A law that was developed to protect Canadian employees who work with hazardous products, designed around three features: product labels, safety data sheets (SDS), and education of workers exposed to hazardous product.

Acronym/Defining Word	Definition
YCC	Yard Control Centre

2.0 Introduction

The Environmental Management Plan (EMP, the Plan) describes how Rideau Transit Maintenance (RTM) manages the aspects that affect the environment on the Ottawa Light Rail Transit Confederation Line. The Plan describes the activities, processes, and resources that RTM is committed to deploying and describes the environmental requirements, standards, and procedures to be followed by RTM employees and its contractors to minimize, reduce and/or eliminate potential environmental impacts from maintenance and rehabilitation activities.

The EMP provides a structured framework for the proactive identification and elimination, or acceptable management, of environmental issues that may be associated with the execution of the work and otherwise describes the overall environmental management program.

The EMP is aligned with the requirements of *ISO 14001:2015 – Environmental Management Systems – Requirements with guidance for use*. The EMP should be read in conjunction with the *Environmental Quality Management Plan, EQMP RTM-QMS-PLN-457* which describes how RTM intends to provide the processes for verifying the environmental management implementation in compliance with the ISO 9001:2015 Standards, RTG's *Quality Manual RTG-04-0-0000-QMS-0001-* and the provisions of the Project Agreement (PA) Schedule 11, Annex F.

Several related environmental management documents are described throughout this document and are listed in the reference section 8.

The EMP was initially prepared in the previous phase of work (design and construction). This revision reflects current operations and practices namely maintenance and rehabilitation. This revision incorporates changes and updates since the previous revision.

2.1 EMP Purpose

RTM's environmental management program elaborated in this Plan follows a Plan-Do-Check-Act model. This EMP provides the environmental management framework required for the planning and implementation of RTMs maintenance and rehabilitation activities for the Ottawa Light Rail Transit (OLRT) Confederation Line. It has been developed in accordance with Schedule 17 - Environmental Obligations of the PA, legal requirements (terms and conditions of permits, licenses, authorizations, or agreements (PLAA)), best management practices, environmental policy**,** and the environmental risks and commitments identified.

The EMP, and its component plans and documentation, are intended to provide all employees and contractors with knowledge, awareness, and tools to complete their required tasks in a manner that complies with RTM's environmental policies and expectations.

The EMP will enable RTM to meet project-specific environmental objectives by:

- Identifying and compiling applicable regulatory requirements, as well as additional requirements that may be identified during maintenance activities.
- Establishing inspection, monitoring, tracking and documentation procedures to demonstrate environmental and regulatory compliance.
- Defining measurable targets and documenting procedures to promote continual improvement.
- Documenting conformance tracking and procedures to address non-conformance issues.
- Mitigating environmental aspects (per the Environmental Project Report, CEAA Final Screening Report, and additional aspects identified during maintenance activities) to minimize negative environmental impacts.
- Training RTM and its contractors for their role so they can identify significant aspects and help minimize the environmental impacts of their work activities and,
- Updating the plan to reflect changes over time to ensure that the plan is current and effective at managing potential environmental impacts.

The EMP describes mitigation measures or corrective actions to be taken to ensure works are being carried out in accordance with the environmental requirements, together with the checking, monitoring and audit processes that would be followed to ensure that those measures are successfully implemented.

3.0 The Organization and Scope

3.1 Organizational Context

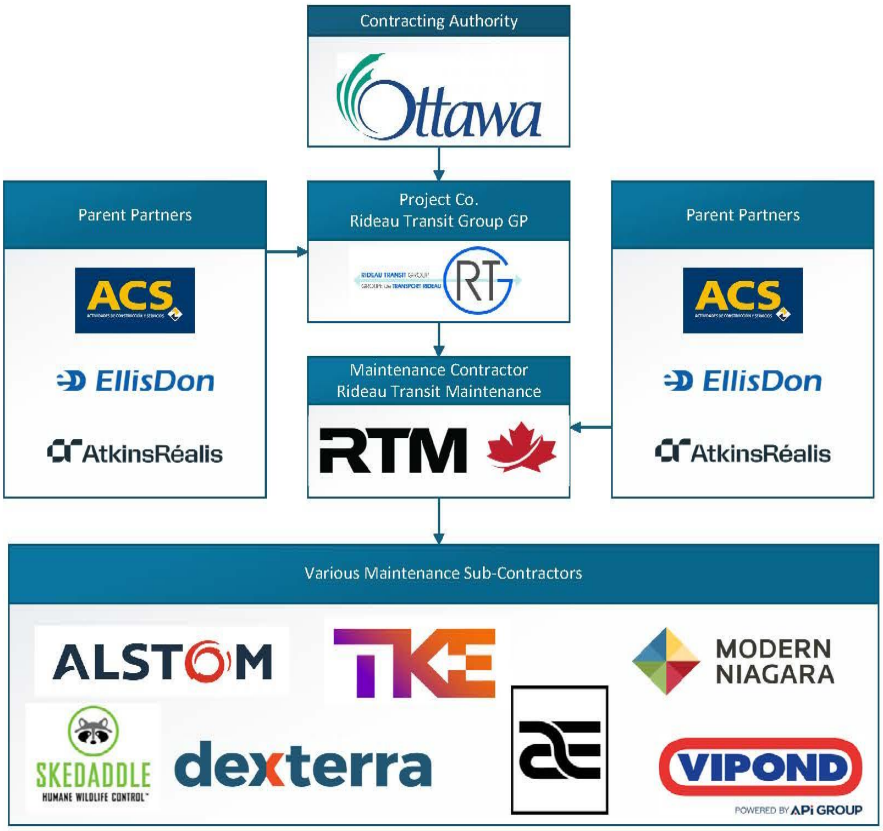
The City of Ottawa awarded Rideau Transit Group (RTG[1]) the contract to design, build, finance and maintain the OLRT Confederation Line. RTG takes on the obligations of Project Co. in the Project Agreement (PA). Subsequently, RTG have entered into a contract with Rideau Transit Maintenance General Partnership (RTM) for the maintenance and rehabilitation of the Confederation Line over a 30-year period.

More than 200 employees work with RTM, two-thirds of whom originate from Alstom. RTM uses several contractors to execute the variety of activities required under the PA.

The general organization chart for the relationships between the city, RTG, RTM and its main contractors is illustrated in Figure 1 below:

[1] RTG is a General Partnership firm of ACS Infrastructure Canada, AtkinsRealis (formerly SNC-Lavalin), and EllisDon.

Figure 1 General Organizational Structure



3.2 OLRT Confederation Line Scope, Activities and Services

Project Agreement

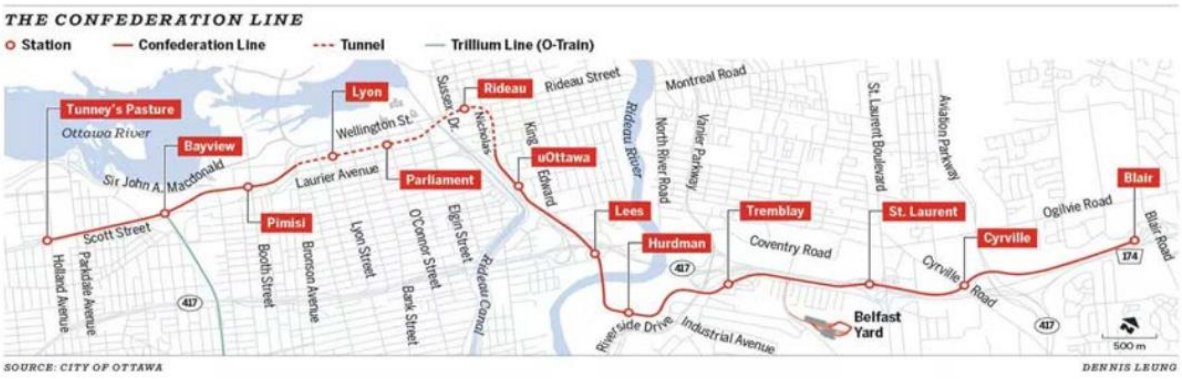
In 2013 RTG entered into the PA with the City of Ottawa (the City) for the delivery of the OLRT Confederation Line. The PA (contract) requires the design, procurement, construction, testing, operations, and maintenance of the OLRT Confederation Line for a fixed term. The PA outlines the provisions for all aspects of project management requirements by the Project Co, and which includes environmental obligations elaborated in Schedule 17. As of fall of 2019, the design, procurement, construction, and testing of Stage 1 of the OLRT was complete and revenue service commenced. RTM and its contractors are maintaining the OLRT Confederation Line Stage 1.

OLRT Confederation Line Description

Stage 1 of the Confederation Line runs between Blair station in the east and Tunney's pasture in the west and is approximately 12.5 kilometers in length including 13 stations, connected to a maintenance and facility yard located at Belfast Road main line by dual connecting tracks. Refer to Figure 2 following.

The system runs either in a trench, at grade, in a tunnel, or in an elevated section, with the exception of a short stretch of guideway which runs below grade crossing under Highway 417 and into St Laurent station. The right-of-way is segregated with no crossings and public intrusion is prevented by fencing. The Transit Operations Control Centre is operated by the City (not RTM scope) and is situated at 875 Belfast Road. RTM offices are located at the Maintenance and Storage Facility at 805 Belfast Road. The MSF also includes a Yard Control Centre, train storage shed, sand, inspect and wash facilities, shipping and receiving, and train maintenance bays and activities.

Figure 2: The OLRT Confederation Line Stage 1



Scope of Activities and Services

As the maintainer of the OLRT Stage 1, RTM is required to conduct custodial maintenance, inspection, preventive maintenance, corrective maintenance, and rehabilitation of the Confederation Line. (The Stage 2 extension(s) will also be added to RTMs scope.)

These requirements include maintenance of the following systems, subsystems and components and the management and support processes.

- **Vehicles**
- **Facilities** including 13 stations, Maintenance and Storage Facility (MSF) yard and mechanical equipment (building automation and mechanical systems, elevators, and escalators)
- **Systems** including Communications Based Train Control, SCADA, CCTV, passenger announcement, passenger information display, guideway intrusion detection, intrusion access control, communication transmission, telephony, fence intrusion and fire detection and alarm systems
- **Infrastructure** including trackwork, alignment (guideway), traction power supply and distribution, structures, tunnels, and tunnel ventilation systems, and
- **Operations** interface including yard control, help desk services, IMIRS.

Management and support services provided by RTM include MSF security, training, document control, control of change and nonconformance, customer and public communications, procurement, control of monitoring and measuring devices, and health, safety, quality and environmental management systems. Refer to the *Maintenance and Rehabilitation Plan RTM-MC-PLN-042* for further details.

Outsourced Processes and Services

RTM has awarded subcontracts to the following companies for the noted services:

- Alstom – train supply, maintenance of vehicles, infrastructure, and systems
- TKE – maintenance of escalators and elevators
- Dexterra – janitorial services
- Modern Niagara – maintenance of mechanical systems
- Vipond – maintenance and inspection of fire, and life safety systems
- Art Engineering – structural engineering services

Activities that could be contracted out include but are not limited to snow removal, cleaning, elevators/escalators, building mechanical and HVAC, fire life safety systems, electrical, plumbing, doors, and vehicle maintenance equipment. Several service agreements in support of maintenance are also subcontracted for areas such as overhead cranes, forklifts, glazing, porcelain panels, plumbing, electrical, waste removal, snow removal, landscaping, and structural repairs.

RTM subcontractors and suppliers are fully responsible for delivering their prescribed elements of the total work according to their own environmental management program unless otherwise specified in their subcontract or in the Environmental Management Plans.

3.3 Authorization and Application

The EMP requirements apply to all personnel who perform work described in the Maintenance Contract for the OLRT Confederation Line and it is implemented by RTM and its contractors.

The document is authorized for issue by the General Manager whose signature on the face sheet confirms that the document meets the requirements as stated in the PA and is aligned with the requirements of *ISO 14001:2015 – Environmental Management Systems – Requirements with guidance for use*.

This EMP is a controlled document. Changes to this document will be implemented under controlled conditions and the most current issue of this document will be available to the user at all times through the Electronic Document Management System. A notation in the footer of each page will identify that printed copies are uncontrolled.

The RTG Environmental and Sustainability Director (RTG ESD) is responsible for control of this Plan and for initiating new revisions. Any revisions to this document will be controlled and issued in the same way as the original document.

Minor amendments to this document may be authorized by the RTG ESD as memos or as countersigned manuscript amendments.

Amendments to the EMP can be initiated for:

- Issues arising as a result of an Internal Audit, External Audit or Management Review
- Changes in environmental aspects, practices, procedures, and Policy
- Non-conformance reports
- Continual improvement activities.

Any change to the EMP shall be reviewed by the RTG ESD, who will discuss them with the General Manager if needed. All amendments, including re-issue of this document, are listed under Section 11 - Revision History of this document and a copy of the amended document (Environmental Management Plan or urgent change) will be distributed to the relevant staff according to the distribution list and *RTM-QMS-PRO-002, Control of Documents*.

Submission of this Plan and updates to RTG and the City of Ottawa will be in accordance with the Schedule 10 – Review Procedure of the PA.

Any changes to the EMP shall be identified in accordance with *RTM-QMS-PRO-002, Control of Documents*.

4.0 Leadership

To demonstrate leadership and commitment, there are specific responsibilities related to the environmental management program where RTM and RTG top management are personally involved, or they direct through delegation. To that end, top management have committed to taking accountability for the following:

- The effectiveness of the EM program and ensuring the EM program achieves the intended outcomes.
- The establishment of policy and objectives.
- Ensuring the EM program is integrated into the business processes.
- Providing resources as required and supporting management roles.
- Communicating the importance of effective environmental management and following the program.
- Promoting continual improvement.

Qualified resources such as human resources and specialized skills, technology, and finances, will be provided to implement, maintain, and control the EM program and the associated procedures.

The RTM General Manager is accountable for the effectiveness of the EM program and registers his approval with his signature on EM plans and procedures. The General Manager coordinates with the Management Team to establish and maintain objectives and targets in line with the project strategic direction.

4.1 Environmental Policy

The environmental policy is the driver for implementing and improving the organization's environmental management system so that it can maintain and potentially improve its environmental performance. RTG has developed and maintains an *Environmental and Sustainability Policy RTG-POL-HSE-003* which has been formally adopted for use. The RTG CEO registers his approval by signing the Policy. The Policy states the commitment to the responsible management of the natural environment based on the principles of controlling risks associated with all environmental issues. RTM is responsible for implementing and monitoring this policy. All employees and subcontractors working for RTM must share this commitment.

The objectives in implementing the environmental policy are to:

- Prevent environmental aspects from resulting in environmental impacts;
- Protect the health and safety of the public;
- Comply with standards, regulations, know-how and good practices, as well as with implementation of appropriate technologies;
- Implement means of supervising and monitoring environmental hazards, along with means of preventing or resolving incidents that could pose hazards to health or the environment; and,
- Provide a framework for setting environmental objectives.

The policy is reviewed annually and re-issued. The policy is communicated and available to all workers. The policy is posted on the RTG website. Each re-issue of the policy is provided to the City.

4.2 Key Roles and Responsibilities

All RTM personnel are required to comply with all environmental commitments identified within this EMP, the PA and referenced documents. The following key roles with associated responsibilities are required through the PA. Key environmental management responsibilities relative to the effective functioning of the EMS are elaborated in the following sections.

The Environmental Engineer is appointed to the role of EM program representative. The responsibilities in this role include:

- Ensuring the EM program requirements are established, implemented, and maintained in accordance with the ISO 14001 standard and the various documented requirements;
- Reporting on the performance of the management system to management to review and improve the system;
- Ensuring that an annual plan supporting continuous improvement is issued;
- Ensuring all employees are familiarized with the EM program during their orientation training; and,
- Managing the Environmental internal audit program as per the documented audit procedure.

4.2.1 RTM General Manager

The General Manager is responsible for:

- Providing leadership and management of RTM while ensuring maintenance and rehabilitation requirements of the PA are met and the business operates safely, efficiently and in accordance with Standards and Legislation.
- Endorsing and supporting the Environmental Management Plan and acting as an Environmental Champion.
- Ensuring adequate resources are available to support sustainability initiatives and the execution of this Plan.

4.2.2 RTG Environmental and Sustainability Director

The Environmental & Sustainability Director (ESD) is responsible for:

- Liaising between the City Representative and RTG (Project Co) on all environmental matters during the Project Term, as described in PA Schedule 17, Part 3.1 and MC Attachment 17 Part 3.1.
- Establishing and implementing the EMP, EQMP, and Sustainability Plan, including ensuring these Plans are updated, and their implementation performance is audited.
- Ensuring compliance with the plans, approvals, permits, and licenses, and preparing periodic reports on the status of such compliance, and identifying continual improvement initiatives.
- Working collaboratively with RTM's Environmental Engineer and with the City Representative to confirm and maintain focus on the requirements outlined in this Plan. Further duties may be required as part of the Project Agreement or Maintenance Contract.

Note - This position is within RTG (Project Co), and not a position within RTM.

4.2.3 RTM Environmental Engineer (EM Program Representative)

The Environmental Engineer is responsible for:

- The development and implementation of management systems to ensure RTM's environmental objectives are achieved.
- Day-to-day implementation of environmental requirements in the EMP, the EQMP, environmental approvals, environmental plans, and reports, and for auditing and reporting on environmental performance throughout the Maintenance Term.
- In collaboration with the RTG ESD, monitoring the progress of this Plan and completing annual reviews of this Plan.
- Ensure that relevant records are maintained and retained in accordance with the EMP and the *Control of Records Procedure RTM-QMS-PRO-006.*
- Providing guidance to the GM, Directors, Managers, and staff on meeting legal requirements and achieving RTM's environmental goals.
- Acting on behalf of the ESD in liaising with City Representatives on matters pertaining to environmental management.

With respect to the responsibilities identified in Schedule 17 - Environmental Obligations of the PA, the Environmental Engineer fills the role of the Environmental and Sustainability Manager.

4.2.4 Environmental and Sustainability Coordinator

The Environmental and Sustainability Coordinator is responsible for:

- The development and implementation of a sustainability plan for the project and ensuring that the outlined sustainability requirements are met, and
- Ensuring that the development and implementation of the sustainability plan address all four sustainability dimensions including natural environment, social, cultural, and economic.

With respect to the responsibilities identified in Schedule 17 of the Project Agreement, the Environmental Engineer fills the role of the Environmental and Sustainability Coordinator.

4.2.5 Environmental Permits and Approvals Coordinator

The Environmental Permits and Approvals Coordinator is responsible for:

- Obtaining and ensuring compliance with environmental Permits, Licenses, and Approvals relating to the Works and Maintenance of the Project.

With respect to the responsibilities identified in Schedule 17 of the Project Agreement, the Environmental Engineer (with support from the ESD) fills the role of the Environmental Permits and Approval Coordinator. Contractors may assist in this role.

4.2.6 RTM Directors, Department/Functional Managers and Supervisors

Directors, managers, and supervisors are responsible for:

- Understanding the guidance provided in this Plan.
- Supporting and promoting the implementation of environmental best practices within the organization.
- Verifying staff are aware of their roles and responsibilities with respect to environmental management.

4.2.7 Employees

All employees are responsible for:

- Making a personal commitment to environmental best practice.
- Actively participating in training.
- Carrying out obligations to fully comply with environmental requirements.
- Reporting any activity that may impact adherence to this Plan.
- Documenting and implementing operational control related to environmental aspects and/or regulatory requirements and/or Quality Assurance or Manufacturing procedures.
- Monitoring and measuring key characteristics of operations and activities; identifying and informing the EM Program representative of changes in activities, processes or equipment that could/will affect the environmental aspects or applicability of regulatory requirements.

4.2.8 Contractors

Contractors are responsible for:

- Making a commitment to implementing the best environmental practices:
    - This includes developing plans/policies that are aligned with the guidance provided in this document and other Plans referenced in this document.
- Complying fully with this Plan and related procedures to support RTM's environmental efforts on the Confederation Line.
- Seek guidance, as needed, regarding environmental initiatives.
- Reporting to RTM any activity that may impact adherence to this Plan.
- Documenting and implementing operational control related to environmental aspects and/or regulatory requirements and/or Quality Assurance or Manufacturing procedures.
- Monitoring and measuring key characteristics of operations and activities; identifying and informing the EM Program representative of changes in activities, processes or equipment that could/will affect the environmental aspects or applicability of regulatory requirements.

4.2.9 Environmental Specialist Services

Environmental Specialist services may be provided by third party qualified consultants and will be directed by the Environmental Engineer to ensure compliance with the EMP. Expertise may be required and provided for:

- Environmental compliance
- Noise and vibration
- Air quality
- Contaminated lands
- Hazardous Waste
- Lab Services

4.2.10 Environmental Technician

Environmental Technician services may be procured from third party qualified consultants and will be directed by the Environmental Specialist to ensure compliance with the EMP.

5.0 Planning

5.1 Actions to Address Risks and Opportunities

RTM shall establish, implement, and maintain the processes needed to meet requirements in the following subsections taking into consideration the context of the organization, the needs and expectations of interested parties and the scope of the EM program. RTM shall determine the risks and opportunities related to its environmental aspects, compliance obligations and other issues and requirements.

5.1.1 Environmental Aspects

RTM has identified environmental aspects and their impacts pertaining to maintenance and rehabilitation activities. *An Environmental Impact and Aspect Register RTM-EMS-REG-361* is reviewed and maintained, and in consideration of planned, new and/or modified activities. The register includes the ranking criteria used to determine the aspects and consider normal, abnormal conditions and potential emergency situations.

On an annual basis, RTM's environmental aspects and impacts shall be reviewed taking into consideration emissions to air, releases to water, waste management, contamination of land, use of raw materials and natural resources, and other local environmental and community issues. The Environmental Engineer shall compare the environmental aspects with RTMs ability to control and influence those aspects.

Using the Significant Aspect Determination Process, the Environmental Engineer makes a preliminary recommendation to top management on the environmental significance.

Changes to facility processes shall be evaluated for new environmental aspects or changes to existing aspects. Project briefs and the aspect rating chart should be reviewed and updated as necessary. The method established to review is through use of the *Facility Change Assessment form RTM-EMS-FRM-722*. If possible, such aspects should be evaluated prior to their introduction.

The significant environmental aspects may be considered in the development of the Environmental and Sustainability Policy (section 2.1) and shall be considered in the deployment of environmental objectives, targets, and the environmental management program (section 3.1). All aspects that are covered by regulations shall be considered and shall be reflected accordingly in the deployment of objectives and targets and the assignment of responsibility.

5.1.2 Compliance Obligations

Development of this Plan is based on information contained in the PA, applicable legislation or regulations, and any relevant standards or guidelines. The *HSE Legal Register RTM-QMS-REG-200* summarizes applicable environmental and safety legislation for RTMs activities.

RTM acknowledges its obligations, as outlined in Schedule 17, Part 2.2 (b) (i) and ii) of the Project Agreement, to comply with the applicable commitments and assurances from the Environmental Project Report and the CEAA Screening Report. Note that the EA process applied to the previous phase of construction work and is not applicable to revenue service.

5.1.2.1 *Permits and Approvals*

RTM acknowledges its obligations, as outlined in the various permits and approvals issued for the Project and which are described in the *Permits Licenses Approvals and Agreement Register RTM-EMS-REG-288*.

5.2 Environmental Objectives and Targets

RTM shall establish environmental objectives and targets at relevant functions and levels, taking into consideration its significant environmental aspects and compliance obligations. The environmental objectives and targets shall be established annually by the RTM Environmental Specialist, with input from the RTG ESD and Management. The objectives and targets shall be consistent with its environmental policy and be measurable, monitored, and communicated appropriately. When establishing objectives and targets, the environmental policy, significant environmental aspects, regulatory and other requirements, technological options, financial, operational, and business requirements, views of interested parties and top management will be considered. The planned actions to achieve the established environmental objectives and targets shall be developed and can be integrated into RTM's business processes.

Environmental objectives and targets shall be deployed throughout the affected work force to the extent practicable. Progress of environmental objectives and targets shall be reported and communicated on a quarterly basis. EMS objectives and targets will also be reviewed with top management once a year, at a minimum. Objectives and targets may be revised from management reviews, employee feedback, introduction of new activities, or due to corrective action.

The environmental objectives and targets shall be documented in the established template form *Environmental Objective Deployment RTM-EMS-FRM-721* which includes what will be done, resources required, responsible parties and timing for completion.

6.0 Support

RTM shall determine and provide the resources needed for the establishment, implementation, maintenance, and continual improvement of the environmental management program.

6.1 Competence and Awareness

RTM shall determine the competence of person(s) doing work under its control that affects its environmental performance and its ability to fulfil its compliance obligations. Furthermore, RTM shall ensure these people are competent based on appropriate education, training, or experience. Training needs associated with its environmental aspects and its environmental management program shall be determined. Where applicable, RTM shall take actions to acquire competence and evaluate the effectiveness of the actions taken.

6.1.1 Training

RTM shall develop a Training and Competency Plan which will identify roles/individuals' training needs based on the potential environmental impact of their work activities. Training shall be provided to ensure personnel are capable of carrying out environmental functions as required. The plan will identify how those training needs shall be met, the frequency of training, and record-keeping requirements, including how long records will be kept.

RTM employees and contractors are required to undertake environmental training pertaining to their role in the organization. Training topics may include but are not limited to:

- Auditing
- Regulatory Compliance
- Spill Prevention and Control
- Emergency Response
- Transportation of Dangerous Goods (TDG)
- Waste Management
- Hazardous Materials / WHIMIS.

Spill prevention and control training RTM-EMS-TRM-161 shall be provided to all employees at least once every 2 years.

On-site contractors may require training if their activities have potential for environmental impact. Contractor Orientation is required for new contractors. Orientation is provided by the safety department. Records of this training are maintained on SharePoint. Human Resources also maintains files that define roles, responsibilities and competencies.

Training may be in a classroom environment, during the course of normally scheduled meetings (for example, communication or safety meetings), on the job training, or any other form that ensures the employees understand their responsibilities as identified in the *Training and Competency Plan RTM-ADM-PLN-123* and are competent to satisfy those responsibilities.

Training records are to be kept in accordance with the requirements of the *Quality Manual, MRQMP and RTM-QMS-PRO-002, Control of Records Procedure* to provide evidence of competence. Records of completed training and personnel attendance at a 'classroom' training session shall be documented on the *Meeting and Training Attendance Form RTM-HR-FRM-007* or equivalent. In the event that a record of competence is required it will also be noted in the records along with a reference of how competence was established (e.g. testing). Evidence that training was provided shall be incorporated into training files and may include presentation slides and evidence or certificates of completion.

6.1.2 Environmental Awareness Orientation

RTM employees and contractors are required to understand the potential environmental impacts and aspects of their activities. They are to be aware of the environmental policy, RTMs significant environmental aspects and related actual or potential environmental impacts associated with their work, their contribution to the effectiveness of the environmental management program, including the benefits of enhanced environmental performance, and the implications of not conforming with the environmental management system requirements, including not fulfilling RTM's compliance obligations.

Accordingly, training is conducted as part of the RTM HSE Orientation Training and RTM Contractor HSE Orientation programs. RTM-EMS-TRM-404 is the Environmental and Sustainability Management Awareness training module. Topics addressed in this orientation are:

- The significant environmental and sustainability aspects of their work activities, and the environmental benefits of improved personal performance.
- Recognition of environmental spill control measures and recognition of improper (existing or imminent) function or concerns.
- Proper handling, storage, and disposal of hazardous materials and controlled substances.
- Materials to be recycled and proper handling of non-hazardous waste.
- The potential consequences of non-conformance with legislative and regulatory requirements and departures from prescribed operating procedures.

- Recognition of environmental emergencies, reportable incidents, and conditions, and accompanying reporting procedures and contacts.
- Importance of reporting concerns, potential situations, and suggestions for improvement.
- Site-specific environmental requirements as outlined are appropriate to the scale and nature of the work being performed.

Orientation(s) knowledge shall be tested.

6.2 Communications

RTM shall establish a process for communicating environmental policy, environmental aspects and the EMP to internal and external interested parties and stakeholders. Section 4.2 of the *RTG Quality Manual (RTG-04-0-0000-QMS-0001)* documents known external and internal interested parties.

6.2.1 Internal Communication

Internal communication is key in achieving awareness of the EM program. Communication between RTM and support organizations is essential for effective implementation and maintenance of the EM program. RTM shall ensure communication of the environmental policy, environmental aspects and the EM program between various levels and functions. This effort may utilize existing communication mechanisms, including EH&S bulletin boards, communication meetings, newsletters, posters, notices, emails etc. Environmental information shall be posted in accessible locations on a regular basis.

Environmental Policy and EMP will be provided to all the subcontractors.

6.2.2 External Communication

The city is responsible for communicating directly with the public. The environmental policy and significant environmental aspects and environmental plans and reports shall be made available to the City following the established document control process. Any request for this information from external interested parties received at RTM or RTG will be forwarded to the City of Ottawa for action.

Specific environmental inquiries, complaints, requests and correspondence for information from external parties shall be directed to the RTM Environmental Engineer, and to the RTG Environment and Sustainability Director at the discretion of the Environmental Engineer. As per S17 – Environmental Obligations all noise and vibration or other environmental complaints received are required to follow RTM's *Environmental Complaint Handling Procedure (RTM-EMS-PRO-883)* and be communicated to the City of Ottawa and/or to the MECP following the conditions of Environmental Compliance Approvals.

Environmental incidents (spills) are to be documented and communicated to the City of Ottawa following the process outlined in the *HSE Notification Matrix RTM-SMS-FRM-510*.

The Environmental Engineer is responsible for responding to and documenting environmental complaints that may be received through the City of Ottawa and/or through the YCC. *Environmental Complaint Handling Procedure RTM-EMS-PRO-883* describes the process.

Questions, concerns, or other communications of an environmental nature, including communicating significant environmental aspects, which may be of importance or significance to RTM, should be communicated to the top management during Management Reviews (section 8.3).

6.3 Documentation

RTM has developed and maintains a system to identify documentation supporting the EM program, describing where it can be found, how it can be accessed, and its minimum retention period. The system references those responsible for document creation, revisions, and approvals.

The complete RTM documentation is described by the:

- EMP - which describes the intended course of action of the EM program;
- Procedures - which describe how the plan and policy is implemented and how work is completed;
- Work Instructions (as applicable) – which provide elaborate detail descriptions relating to procedural items;
- Related Documents – which provide additional helpful information in reference to completing a procedure; and,
- Records - which provide the evidence that work has been completed.

Control of Documents is in accordance with the requirements of the *Quality Manual, MRQMP and RTM-QMS-PRO-002, Control of Records Procedure*.

Review of the RTM EM program documentation is conducted annually through the Management Review (section 8.3) process.

The EM program documentation shall be maintained by the Environmental Engineer and located on SharePoint in a readily recognized folder. Supporting documentation such as instructions or forms, is developed and modified by the Environmental Engineer or designated individual for unique applications. Documents will be readily identifiable to RTM and contain a reference to the associated section of the EM program.

Supporting documents will also comply with the requirements of Document Control. Supporting documentation such as Work Instructions and Forms are developed and modified by designated individuals. Supporting documents will be readily identifiable and refer to the EMP where required.

Documents will be maintained electronically when possible, and in a repository as determined by RTM (e.g. shared drive, file server). If the document is in electronic format, then the most recent version of the document is found electronically.

Environmental reports as documented in Table 3.1 of Schedule 17 – Environmental Obligations are required to be submitted to the City of Ottawa Representative for information.

Records are retained where contract or good practice requires evidence of regulatory compliance and/or proof of the effectiveness of the Environmental Management Plan. Records may include:

- Required Component Plans
- Environmental Incident Reports
- Water sampling results
- Consultant reports (noise and vibration, ECA, ad hoc testing)
- Non-Conformance Reports (NCR)
- Actual permits, licenses, approvals and agreements and PLAA Register
- Completed forms
- Communication records
- Training records

7.0 Operational Planning and Control and Emergency Response

7.1 Key Environmental Features of Infrastructure

7.1.1 Stations

The following stations have a potential impact to air quality:

- Bayview Station (Methane Mitigation System) due to the presence of former landfill sites,
- Hurdman Station (Methane Mitigation System) due to the presence of former landfill sites,
- Lees Station (Coal Tar Vapour Recovery System) due to known coal tar contamination.

Monitoring, reporting, inspection and maintenance activities are conducted by the Environmental Compliance Approvals (ECA).

7.1.2 Guideway

The guideway crosses the Rideau River (Canadian Heritage River) on the Transitway Bridge. Any work on the bridge structure for the maintenance of the guideway will be undertaken in a manner that does not affect the watercourse. Mitigations may include trapping runoff and sediment, preventing discharge of washing activities to open water, installing berms and enclosing work to prevent release to air and water.

7.1.3 Tunnel

The tunnel portion of the OLRT transects downtown Ottawa from west to east heading under Queen Street, Confederation Square, the Rideau Canal (National Historic Site of Canada, a Canadian Heritage River and a UNESCO World Heritage Site), and the Rideau Centre, and eventually turning south and emerging at Waller Street.

One (1) collection sump and pumping station is located at each of the East and West Portals. The sump rooms include sand/grit/oil separators. The pumping stations discharge existing sanitary sewers located at both the East and West Portals.

Inspection and maintenance programs are conducted per the Environmental Compliance Approval (ECA) and are found in the *RTM Maintenance and Rehabilitation Plan RTM-MC-PLN-042.*

7.1.4 Belfast Maintenance and Storage Facility and Yard Including its Expansion

The Belfast Maintenance and Storage Facility and Yard was built on an existing light industrial land. The location is immediately south of an existing residential area. Monitoring and mitigation measures required for noise and vibration, and air emissions during operation and maintenance activities have been implemented to ensure impacts are minimized. Activities with emissions include touch-up painting, cleaning and degreasing, welding, grinding, wheel lathe operations, battery charging room exhaust, product storage tanks (windshield fluid and diesel fuel), sanding operations, train washing, rail switch heaters, emergency generator operation, and comfort heating.

Inspection and maintenance programs for the storm water management works, the bioretention facility and the oil and grit separator per the ECA and are found in the *RTM Maintenance and Rehabilitation Plan RTM-MC-PLN-042*. Monitoring and reporting activities are conducted for the industry self-monitoring compliance reporting program as described in the *PLAA Register*. Monitoring, reporting, inspection and maintenance activities are conducted per the Environmental Compliance Approvals (ECA).

7.2 Operational Controls

RTM will identify those operations and activities that are associated with its significant environmental aspects as determined in the environmental aspects process. RTM will establish and maintain documented procedures (with stipulated operating criteria) to cover situations where their absence could lead to deviations from the environmental policy, objectives, and targets. Operational control processes or instructions will be implemented at the point of use.

Operational controls shall be instituted for selected significant aspects to satisfy the environmental objectives and targets and comply with environmental regulations. The effectiveness of operational controls will be evaluated by the degree of conformance with environmental regulations;

performance against objectives and targets; the results of internal audits; and the occurrence of any significant environmental incidents.

The Environmental Engineer and will implement and maintain a program to address environmental aspects of companies contracted to perform work on behalf of RTM. Relevant environmental and health and safety policies and rules will be communicated to on-site contractors through *Contractor Orientation* and the *Contractor Management Plan RTM-SMS-PLN-252*. Personnel who contract with a company are responsible for ensuring Contractors receive orientation. These requirements will be communicated prior to the contractor beginning work on site and additional requirements will be communicated to the contractor by a designated individual. Refer to the section 6.1 on Training, Awareness and Competence for training requirements.

Analysis of the potential effects on the physical, natural, and socio-economic environments, led to the development of several Environmental Management Plans (EMPs) to prevent, minimize and/or mitigate the significant environmental aspects and associated effects. These Plans support the EMP for the successful management of works and are summarized in Table 1. Note that there are several environmental topics that are addressed in the *RTM Maintenance and Rehabilitation Plan RTM-MC-PLN-042* that are not listed in the table.

Several Environmental Plans (Air Quality and Dust, Dewatering Management, Archaeological Risk Management, Excavated Material Management, Erosion and Sediment Control, Built Heritage and Cultural Landscape, Wildlife and Wildlife Management) were developed to address construction specific impacts in the original construction of Stage 1. These plans are not listed in Table 1. All future construction projects to be implemented shall refer to the required environmental mitigations for these topics that are found in Appendix A of this Plan. The environmental mitigations shall be added to the scope of work as required.

Table 1. Component Environmental Plans & Related Plans

Name and RTM Document Number	Document Purpose
Sustainability Plan RTM-EMS-PLN-143	An overarching plan starting with an overall vision and mission for the project and identifying priorities, objectives, targets and strategies with performance measures to create a vibrant and sustainable system. The Plan documents how these strategies will be measured, monitored and communicated to encourage engagement and promote sustainability education to employees, contractors and other interested parties.
Spill Prevention and Emergency Response Plan RTM-EMS-PLN-207	Developed to identify and minimize the risk of spills and outline a process for remediating and reporting spills when they occur.

Name and RTM Document Number	Document Purpose
Air, Noise and Vibration Monitoring Plan RTM-EMS-PLN-394	This document describes the applied procedures to verify the compliance of the noise and vibration emissions with the criteria outlined in Schedule 17 of the Project Agreement. It also includes the procedure that will be implemented in the event of non-compliances or complaints.
Hazardous Materials and Designated Substances Plan RTM-SMS-PLN-919	This Plan communicates and addresses issues related to Hazardous Materials and Designated Substances (HMDS) expected to be encountered during the operations and maintenance phase of the Confederation Line Light Rail Transit Project. This plan has been
Green Cleaning Plan RTM-EMS-PLN-468	The goals of the Plan are to reduce building occupants and maintenance personnel's exposure to potentially hazardous chemical, biological, and particle contaminants, which adversely affect air quality, human health, building finishes, building systems, and the environment in accordance with maintaining LEED certification.
Maintenance & Rehabilitation Plan RTM-MC-PLN-042	RTM's approach to implementation of M&R activities, including the approach for compliance with Service Life and Residual Life requirements, General maintenance approach, accessibility plan, and maintenance management system type and process.
Training and Competency Plan RTM-ADM-PLN-123	The purpose of this document is to outline the training requirements for employees of RTM and sub-contractors working on behalf of RTM.
Maintenance and Rehabilitation Quality Management Plan RTM-QMS-PLN-001	Descriptions of RTMs processes to monitor and measure maintenance and rehabilitation contract, including the compliance monitoring process that assesses compliance with performance measures and defines the frequency and method of monitoring and reporting compliance.
Contractor Management Plan RTM-SMS-PLN-252	Describes the safety and other requirements and expectations when a contractor/subcontractor performs work on the Confederation Line for and on behalf of RTM.

Personnel shall use the control measures specified in these documents as guidance while completing risk assessments and will incorporate appropriate mechanisms for implementation at work.

Environmental strategies may also be developed as required over time. These will also guide environmental management of potential impacts.

7.3 Environmental Preparedness and Emergencies

Potential emergency situations in existing operations are identified during environmental aspect evaluation, risk analysis activities, and during safety and housekeeping inspections or other means.

The *Spill Prevention and Emergency Response Plan RTM-EMS-PLN-207* (SPERP) is in place for prevention, response, and remediation of environmental releases and environmental emergencies. The Plan is an outline of the information, procedures, recommendations, and measures that have been established to prevent and respond to spills, and releases.

In any other emergency, employees are to follow the Emergency Response Plan RTM-OP-PLN-237 which includes an evacuation plan and what to do in an emergency. This Plan is administered by the Safety department.

The SPERP shall be reviewed at least every 12 months. In the event of a significant spill (emergency), a detailed review shall be conducted within a reasonable and effective time frame after the emergency. This review shall address the effectiveness of the emergency preparedness and response procedures and the support organizations having primary responsibility for emergency response. Each review shall be documented. Revisions are made by the plan owner or designee.

A spill drill should be completed biannually at a minimum. Outcomes shall be documented and distributed to Management. The Spill Drill Plan and Checklist may be utilized.

8.0 Performance Evaluation

8.1 Environmental Monitoring, Measurement, Analysis and Evaluation

Environmental monitoring occurs as required by the PA and other agreements/permits issued to RTM to ensure that environmental protection and mitigation requirements are adhered to and are effective in minimizing environmental impacts.

Monitoring of project impacts will be based on the requirements detailed in the *PLAA Register (RTM-EMS-REG-288)*, both in terms of implementation of required mitigations and their effectiveness.

The following activities will be monitored to ensure that the following aspects follow this Plan:

- Air, Noise and Vibration,
- Waste Disposal and Materials Recycling,
- Wastewater Discharge,
- Spills and Uncontrolled Releases,
- Hazardous Materials Handling and Storage,
- Fueling and Equipment Servicing,
- Tree Protection/ Hoarding (as applicable),
- Wildlife and Habitat (as applicable),

- EMI/EMC (previously completed).

Monitoring will be conducted internally or through third party consultants, where appropriate. Refer to the *EQMP* Control of Process, Measurement, Analysis, and Improvement for additional information.

8.2 Evaluation of Compliance

RTM shall conduct a program of systematic compliance evaluation on a regular basis to verify compliance with the PA Schedule 17 – Environmental Obligations as well as regulatory compliance. Audits shall be conducted and scheduled on the basis of the status and importance of the activity being performed and carried out by personnel independent of those who have direct responsibility for the activity. RTM will complete an environmental regulatory compliance evaluation by an independent party, at least once in the first 5 years after revenue service begins, and on an ad hoc basis thereafter.

The *Schedule of Verification and Review Activities and Regulatory Compliance Reporting form RTM-EMS-FRM-728* summarizes the relevant environmental topics, schedule timing, impacts, environmental compliance due dates and the applicable reference.

RTM has established a process for identifying, accessing, reviewing, applying, and communicating the relevant environmental legal and other requirements to its activities. Requirements may include government legislation and instruments, policy and procedures and Industry standards of practice. The legal and other requirements may apply to equipment, facilities and activities involving air emissions, water discharges, waste disposal, spills, etc., having an impact on the environment.

8.2.1 PLAA Register

Regulatory compliance is a key objective of the Plan. Regulatory compliance is achieved by maintaining a *Permit, License, Approval, and Agreement (PLAA) Register RTM-EMS-REG-288*. This Register contains all permits required for the maintenance and rehabilitation activities performed. The Register includes the applicable federal, provincial and municipal environmental permits and explicit requirements as outlined in the Project Agreement, Schedule 17. The *PLAA Register* shall be regularly reviewed and updated as required by the Environmental Specialist or delegate.

If significant changes are noted, the RTM Environmental Specialist will notify affected personnel and the City of Ottawa following the established communications processes. All affected components of the EMP will also be reviewed and updated as required. Once these components of the EMP are updated and distributed, the affected groups/contractors/subcontractors are responsible for ensuring the changes are implemented.

Copies of all environmental permits and authorizations obtained will be retained on site, in an accessible location by RTM. These will act as a reference/guide and will be required in the event of an inspection.

The process for acquiring, managing, and ensuring the implementation of the applicable requirements listed in each individual permit is outlined in the *EQMP*.

Contractors are responsible for maintaining a current list of relevant rules and regulations as they apply to their specific activities. This includes obtaining all environmental permits in advance of work. Contractors must provide copies of all permits and approvals to RTM. These permits will be tracked in the *PLAA Register* by RTM.

8.2.2 Compliance Verification

An impartial and objective Second-Party Audit shall be conducted by an individual or team with lead auditor credentials from an accredited certification body that has been approved by the City of Ottawa. External Second Party auditing and as per Schedule 17 – Environmental Obligations shall be completed at a minimum of once every 2 years (bi-annually) before 1 June.

Compliance verification is the responsibility of the RTG ESD. The RTG ESD shall be responsible for developing, documenting, and implementing an on-going environmental regulatory compliance verification procedure. Results from the compliance verification procedure will be communicated to management. Non-conformances and opportunities for improvement arising from the audit shall be entered into the applicable Register.

8.2.3 Internal Auditing

An impartial and objective Internal Audit shall be led by an individual having auditor training and/or experience once every 12 months. The Internal Audit program will address the following:

- The scope of the audit;
- Audit methodology;
- Responsibilities associated with conducting the audit; and,
- Communication of audit findings.

An Internal Audit form shall be used to audit the EM Program and to report the findings.

At the time of the audit, results and nonconformities shall be communicated to the Environmental Engineer and to the Management Team and inputted to the respective *Opportunity for Improvement Register RTM-QMS-REG-552* or *Nonconformance Register RTM-QMS-REG-095*.

Audit results shall be provided to top management by the Environmental Engineer during Management Review and/or Management Team meetings.

8.3 Management System Review

Management reviews are to be conducted by the RTG ESD or their designee(s) at least annually. Top management shall participate. The management review shall, at a minimum, include:

- Follow up actions from previous reviews
- Results of audits
- Notification of regulatory violations
- Changes that could impact the environmental management system including:
    - external and internal issues relevant to the EMS
    - needs and expectations of interested parties
    - compliance obligations
    - significant environmental aspects
    - risks and opportunities
- Status of preventative and/or corrective actions
- Status of the EMS compared to objectives and targets, and performance;
- Customer feedback;
- Process performance;
- Review quality and environmental policies;
- Assess resources needed to maintain the maintenance work management systems and continually improve their effectiveness;
- Recommendations for improvement;
- Status of achievement of environmental objectives and targets;
- RTM's environmental performance;
- Adequacy of resources;
- Communication from relevant parties; and,
- Opportunities for improvement.

The management review shall conclude with any decisions and actions related to:

- Resource needs;
- Obtain annual concurrence from the management of the following:
    - EMS Documentation
    - Environmental Policy
    - Quality Policy
- Improvement of the suitability, adequacy, and effectiveness of the quality management system and its processes;
- Management shall address the possible need for changes to the Environmental Policy, objectives and targets, and other elements of the management system;
- A proposed date for subsequent meetings;
- Meeting attendance and minutes documentation; and,
- Summary of the Management Review Meeting and minutes will be posted for all employees.

Meeting minutes shall be produced as a minimum.

9.0 Improvement

9.1 Control of Non-Conformance

RTM shall determine opportunities for improvement and implement actions to achieve the intended outcomes of the environmental management program. Included are actual and potential non-conformances that are identified within the scope of the environmental management program as well as customer and other stakeholder complaints.

RTM shall utilize the established Quality Management process (*Control of Non-Conformances and Corrective Actions Procedure RTM-QMS-PRO-052*) to deal with non-conformities that arise including taking action to control and correct and deal with the consequences including mitigating adverse impacts. Nonconformities may arise through emergencies and/or through auditing or compliance evaluation.

Environmental deficiencies are tracked and managed in accordance with the *EQMP* and tracked using the Non-Conformance Reporting and Corrective Action procedure. The process shall include an evaluation of the need for action to eliminate the cause of the nonconformity in order that it does not recur or occur elsewhere.

RTM shall implement corrective actions to address nonconformities.

10.0 Reference and Related Documents

Document Number	Title
Ottawa Light Rail Transit Project Agreement	Schedule 17 - Environmental Obligations
BS EN ISO 14001:2015	ISO 14001: Environmental Management Systems – Requirements with guidance for use
RTG-04-0-0000-QMS-0001	RTG Quality Manual
RTM-QMS-PLN-457	Environmental Quality Management Plan
RTM-QMS-PLN-001	Maintenance and Rehabilitation Quality Management Plan
RTG-POL-HSE-003	Environmental and Sustainability Policy
RTM-EMS-REG-361	Environmental Impact and Aspect Register
RTM-EMS-FRM-722	Facility Change Assessment

RTM-EMS-REG-288	Permits, Licenses, Approvals, and Agreement Register
RTM-EMS-FRM-721	Environmental Objective Deployment
RTM-QMS-PRO-006	Control of Records Procedure
RTM-ADM-PLN-123	Training and Competency Plan
RTM-HR-FRM-007	Meeting and Training Attendance Form
RTM-SMS-TRM-282	Safety Management System Presentation
RTM-SMS-TRM-281	Contractor HSE Orientation
RTM-EMS-TRM-404	Environmental and Sustainability Management Awareness
RTM-EMS-TRM-161	Spill Prevention and Control Training
RTM-EMS-PRO-883	Environmental Complaint Handling Procedure
RTM-SMS-FRM-510	HSE Notification Matrix
RTM-QMS-PRO-052	Control of Non-Conformances and Corrective Actions Procedure
RTM-MC-PLN-042	RTM Maintenance and Rehabilitation Plan
RTM-EMS-PLN-143	Sustainability Plan
RTM-EMS-PLN-207	Spill Prevention and Emergency Response Plan
RTM-EMS-PLN-394	Noise and Vibration Monitoring Plan
RTM-SMS-PLN-919	Hazardous Materials and Designated Substances Plan
RTM-EMS-PLN-468	Green Cleaning Plan
RTM-EMS-FRM-728	Schedule of Verification and Review Activities and Regulatory Compliance Reporting form
RTM-QMS-REG-095	Non-conformance Register
RTM-QMS-REG-552	Opportunity for Improvement Register
Ottawa Light Rail Transit Project Agreement	Schedule 10 – Review Procedure
Ottawa Light Rail Transit Project Agreement	Schedule 18 - Communications and Public Consultation Protocol
Ottawa Light Rail Transit Project Agreement	Schedule 15-3 - Maintenance and Rehabilitation Requirements

Ottawa Light Rail Transit Project Agreement	Schedule 15-4 – Regulatory Requirements
Ottawa Light Rail Transit Project Agreement	Schedule 11 - Quality Management

11.0 Revision History

Revision	Date	Description of Revision	Owner	Approver
1	2019-06-11	Per tracked changes – RTG Review	Mark Desilets	Claude Jacob
2	2021-06-30	Complete document re-write and update	Tammy Lévesque	Mario Guerra
3	2022-04-18	Substantial revision and reorganization to reflect changes to the environmental management program and align with ISO 14001:2015 requirements	Tammy Lévesque	Mario Guerra
4	2023-05-08	Revision to reflect revised role names, new cleaning subcontractor, Table 1 update and addition of new Appendix A	Zahra Rajaeitabar	Enrique Martinez Asensio
5	2024-04-15	Revision to reflect minor verifications to roles and responsibilities.	Zahra Rajaeitabar	Enrique Martinez Asensio
6	2025-04-24	6.2.2: update to reflect changes to external Communication procedure 3.1: Organizational Structure Section 10.0: References and Related Documents	Zahra Rajaeitabar	Enrique Martinez Asensio

Appendix A: Environmental Mitigations for RTM Construction Projects

A1: Archaeological Risk and Unexpected Finds

There is a limited potential to encounter archaeological remains during construction activities that disturb the lands and turn up the soil. Unknown and undocumented archaeological resources which could be found include tools, pottery shards, arrowheads, remnants of settlement or buildings, unmarked graves or otherwise human remains. The highest potential of such encounters include undisturbed lands, particularly within areas of elevated topography, ravines and areas in proximity to watercourses.

Construction activities most likely to uncover archaeological resources include:

- Re-locating existing subsurface utilities;
- Site preparation, including earthworks, shoring, tiebacks, surface excavation, soil stripping, clearing, grubbing, earthmoving and stockpiling;
- Cut and cover construction;
- Bridgework, Roadwork;
- Soil handling, removal and grading.

Following are the required management strategies for managing archaeological risk:

- Before work commences, identify all ground disturbing activity planned around stations, MSF and portals and assess for potential archaeological resources and probability of uncovering human remains.
- Identify a local Professional Archaeologist having a license to practice archaeology in the Province of Ontario in accordance with the Heritage Act (Ontario) to provide services, if required.
- Daily reports are to be provided by the Site Inspector and will capture any findings or concerns observed during monitoring ground disturbance activities.

Protocol for Archaeological Finds

If an Archaeological Find occurs, Stop Work in the immediate area. Notify the RTM Environmental Specialist. The Environmental Specialist shall notify the RTG ESD and the City of Ottawa.

NOTE: It is the responsibility of RTM to retain a Professional Archaeologist.

In the field, take all steps to not disturb the item and to preserve the item in the same position and

condition, in which the item was found.

Take Digital Photographs of the discovery, from several different angles but do not reposition the find in so doing.

Cordon off the area and restrict access including suitable buffer; do not move or further disturb the material or remains.

The retained Archaeologist is required to review the photographs and conduct fieldwork, document the findings, consult with the Ministry of Tourism, Culture and Sport and provide direction.

> NOTE: The City of Ottawa is responsible for engaging local Aboriginal representatives, as required.

Keep the area cordoned off and secure until clearance is provided in writing by the Archaeologist.

Comply with all requirements of Governmental Authorities and applicable laws with respect to such a discovery, including Standards & Guidelines for Conservation of Provincial Heritage Properties issued under the Ontario Heritage Act.

Protocol for Human Remains or Possible Human Remains

Stop work in the immediate area.

Comply with all requirements of Governmental Authorities and applicable laws with respect to such a discovery, including the Funeral, Burial and Cremations Services Act, 2002 (Ontario)

Contractor/Subcontractor will immediately notify Environmental Specialist whose duty is then to immediately inform the RTG Safety Officer and Communications Director.

RTM will immediately notify the Police, the Coroner and, as required, the Ministry of Public and Business Service Delivery (MPBSD) Registrar (which manages the administrative procedures when a burial site is discovered) and the City of Ottawa.

In the field, cordon off the area and restrict access including suitable buffer, do not move or further disturb the material or remains.

All workers remain at the scene until it has been determined that the area is not a crime scene, or they are cleared by police to leave.

> NOTE: City of Ottawa to arrange for local Aboriginal representatives to be engaged, as required.

Keep the area cordoned off until clearance is provided in writing by the Police or Coroner and RTM provides authorization to proceed in writing.

A2: Air Quality and Dust Management

This section describes the measures to be used to control fugitive dust emissions during construction. While potential air quality effects are expected to be limited to the immediate vicinity of the work area, mitigation will be customized to meet site specific conditions, considering such factors as proximity to sensitive receptors and prevailing weather conditions.

Before work begins, Contractors are required to review the scope of work and identify dust-producing activities. Contractors are to implement the following dust control BMPs, as required based on the scope of work, on active construction sites:

Dust Control

- Use wind fencing in construction areas that are frequently subjected to high winds and/or restrict or reduce activity during windy conditions.
- As necessary, use environmentally acceptable dust suppressants or water to control dust on access roads, lay-down areas, and active work areas.
- Stabilize surfaces of completed earthworks and/or bare areas with vegetation, stones, geo-textile, mulch or other erosion resistant cover.
- Use temporary surface covers such as mulch, tackifiers on soil surfaces that will remain exposed for extended periods (e.g. >45 days).
- Minimize the tracking of soil or mud onto paved streets or roads (e.g. use wheel washes or other method to mitigate tracking). Refer to the Erosion and Sediment Control section for further details on mitigation of mud tracking.
- Promptly clean paved streets/roads where tracking of soil, mud or dust has occurred. (Regular street sweeping will be required during wet conditions to remove mud and dirt that is deposited onto City streets).
- Cover fine grained materials when transporting them (to prevent or mitigate loss of material through wind exposure). All soil loads leaving construction sites must be covered.
- Design soil stockpiles to limit loss of particulate matter due to wind. Design elements should include stockpile shape (cigar shaped stockpiles present smaller footprints for wind exposure), stockpile size (allow access to the entire stockpile for weed control), prevailing wind direction (face stockpile shape into the wind, only disturb stockpiles on the downwind side of the pile), etc.
- Minimize drop height at material transfer locations (e.g. when loading soil onto haul trucks).
- Comply with posted speed limits and, as appropriate, further reduce speed when traveling on unpaved surfaces to reduce dust creation. The speed limit on construction sites will be 15km/h unless otherwise stated or posted.
- Implement contingency plans should dust become a problem (for example, if heavy winds cause an increase in dust above acceptable levels, additional dust control measures should be implemented such as wind fencing, water spraying, etc.).
- Do not use oils for dust control. The use of any chemical-based products for dust suppression must be pre-approved by the HSE Team.

Combustion Emission Control

- Inspect equipment regularly to ensure it is in optimum working order and maintain records.
- Operate equipment at optimum rated loads.
- Follow equipment manufacturer specifications relating to maintenance and service.
- Ensure all original equipment emissions and pollution control equipment is in place and functional.
- Position stationary emission sources away from sensitive receptors.

Equipment Idling Control

- Turn off equipment when not in use.

NOTE: As per Section 2 of the Idling Control By-law (2007-266), “No person shall cause or permit a vehicle to idle for more than three (3) consecutive minutes in a sixty (60) minute period. As per Section 3 (i) of the Idling Control By-law, the above referenced shall not apply to “occupied vehicles when the temperature outside the vehicle is greater than twenty-seven degrees Celsius (27 C), including the humidex calculation, or less than five degrees Celsius (5 C), including the wind chill value, as determined by the Environment Canada temperature readings”.

Implement a daily monitoring program / inspection program documenting compliance with the above mitigations. Provide the inspection report to RTM on a weekly basis. Follow the noted principles:

- Minimize work in adverse weather conditions
- Monitoring will be based on the following basic principles
- Minimize the duration and area of disturbed soils exposed to wind to reduce fugitive dust potential
- Minimize the height of stockpiles
- Water down sites on a regular basis under dry conditions
- Clean-up tracked dirt and mud from City streets as soon as possible
- Locate stationary combustion equipment away from sensitive receptors (e.g., residences) and eliminate excessive idling.

A3: Erosion and Sediment Control (ESC)

The fundamental principles of erosion and sediment control which are to be incorporated into site construction works include:

- Erosion prevention is preferred over erosion control
- Minimize surface disturbance as much as possible
- Divert offsite runoff from construction areas
- Reduce runoff volumes and velocity at the construction site

- Install sediment controls prior to site disturbance
- Limit construction works during wet weather periods
- Stage construction activities such that the amount of soil surface exposed, and the exposure time is limited.
- Stabilize disturbed areas as soon as possible.

Site run-off will be managed by applying typical ESC Best Management Practices (BMPs) in combination to first prevent run-off, attempt to minimize entrainment of sediment, and finally capture/contain sediment laden run-off (as needed). These principles will be achieved by applying best management practices individually or in combination.

> Erosion Controls: i) Ground cover practices - maintain existing vegetation, hydro-seeding, sodding, polymer soil stabilizers/tackifiers, riprap, mulch, geotextiles and erosion control blankets, ii) Structural measures - check dams, slope drains, and storm drain protection
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> Sediment Controls: i) Filtration/Settling - silt fencing, sediment traps, sediment basins, check dams, and even vegetative covers

Following are the required control measures that are to be implemented to control sedimentation and erosion.

- Follow all ESC design requirements on drawings and in specifications.
- Install sediment controls, drainage ditches and catch basin protection prior to construction.
- Grade work sites to ensure positive drainage (e.g., minimize the collection of water onsite).
- Limit slope length and gradient for disturbed areas.
- Identify appropriate soil stockpile locations and enclose them with silt fences.
- Design and maintain gentle slopes for all stockpiles.
- Where vegetation exists, maintain vegetative cover for as long as possible during the construction phase and limit clearing activities for site facilities, where feasible.
- Maintain existing vegetation “buffer strips” wherever possible adjacent to stormwater conveyance structures and watercourses.
- Progressively stabilize disturbed areas during construction including material stockpiles, with vegetative cover or other protection measures to limit exposure to the erosive forces of wind and water (All exposed areas not subject to active construction 30 days after area grading should be stabilized immediately after completion of grading).
- Immediately following any seed application, a straw erosion control blanket should be installed on any exposed areas.
- Install crown ditches upstream of the work area to divert runoff and protect the work area from erosion when working on slopes. As construction proceeds, diversion swales should be graded

where needed to intercept drainage from external areas and direct it away from exposed surfaces.

- Make provisions to ensure that extra erosion and sediment control materials are stockpiled on site.
- Minimize water velocity with the use of constructed ditches, berms, and check dams.
- Temporary silt fencing and sedimentation traps should be placed around inlets and outlets from existing storm inlets in the drainage system, if applicable.
- Any culvert installation/work should be conducted “in the dry”.
- Straw bale flow and rock checks should be provided in ditches, as required.
- Implement an ESC inspection program to verify the implementation and appropriateness of ESC measures and to ensure that measures are adequately monitored, maintained and, that corrective actions have been taken to address non–compliance issues.
- Complete visual site inspections of measures before and after large weather events. This includes quality checks on fencing, storm drains, catch basins etc.

Implement a daily monitoring program / inspection program documenting compliance with the above mitigations. Provide the inspection report to RTM on a weekly basis.