



Marathon Palladium Project Environmental Impact Statement Addendum

VOLUME 2 OF 2

7.0 Environmental Management

Prepared for:

GENERATIONPGM

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MARATHON PALLADIUM PROJECT ENVIRONMENTAL IMPACT STATEMENT ADDENDUM

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Abbreviations

AIR	Additional Information Request
ARD/ML	Acid Rock Drainage / Metal Leaching
BN	Biigtigong Nishnaabeg
CEAA, 2012	<i>Canadian Environmental Assessment Act, 2012</i>
CIAR	Canadian Impact Assessment Registry
CoPC	Contaminants of potential concern
DFO	Fisheries and Oceans Canada
EA	Environmental Assessment
ECA	Environmental Compliance Approval
ECCC	Environment and Climate Change Canada
EEM	Environmental Effects Monitoring
EIS	Environmental Impact Statement
EMMP	Environmental Monitoring and Management Program
EMS	Environmental Management System
EPRP	Emergency Preparedness and Response Plan
GenPGM	Generation PGM Inc.
GHG	Greenhouse Gas
IAAC	Impact Assessment Agency of Canada
IR	Information Request
MDMER	Metal and Diamond Mining Effluent Regulations

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MECP	Ontario Ministry of the Environment, Conservation and Parks
MENDM	Ontario Ministry of Energy, Northern Development and Mines
MLTSD	Ontario Ministry of Labour, Training and Skills Development
MNRF	Ontario Ministry of Natural Resources and Forestry
MRSA	Mine Rock Storage Area
O. Reg.	<i>Ontario Regulation</i>
OCTAA	<i>Ontario College of Trades and Apprenticeship Act</i>
OHS	Occupational Health and Safety
OHSA	<i>Occupational Health and Safety Act</i>
OHSP	Occupational Health and Safety Plan
PCB	polychlorinated biphenyls
PSMF	Process Solids Management Facility
SIR	Supplemental Information Request
SSA	Site Study Area
TK	Traditional Knowledge
TLRU	Traditional land and resource use
VEC	Valued Ecosystem Component
WHS	Worker Health and Safety
WRMMP	Waste and Recycling Material Management Program

7.0 ENVIRONMENTAL MANAGEMENT

This chapter provides an update to the environmental management activities discussed in the original EIS (2012) and subsequent information requests (IRs), supplemental information requests (SIRs), and additional information requests (AIRs) to verify and support the conclusions of the effects assessment described in Chapter 6 of this EIS Addendum (Vol 2).

The management and monitoring of environmental liabilities and occupational hazards during all phases of the Project life cycle will comply with relevant federal and provincial legislation, regulations, and project approvals, as well as GenPGM policies and management programs applicable to corporate environmental and safety management processes.

7.1 ENVIRONMENTAL MANAGEMENT SYSTEM

GenPGM is committed to effective environmental management of all its activities including compliance with applicable environmental regulatory requirements. GenPGM is committed to the concept of sustainable development as a component of corporate responsibility and strives to improve environmental performance.

The components of the Environmental Management System (EMS) as described in the original EIS (2012) have not changed; however, some activities within each of the component programs have been updated to reflect the updated effects assessment and current practice.

Feedback obtained from engagement with Indigenous communities related to follow-up and monitoring was considered by the Project team during the original EIS (2012) and during preparation of this EIS Addendum. Input from Indigenous communities related to VECs has been incorporated into Chapter 6 of this EIS Addendum (Vol 2) and carried forward into the proposed monitoring programs. GenPGM will continue to engage with Indigenous communities throughout the EA process and during development of the environmental management activities. As appropriate, results of the follow-up and monitoring programs will be shared with Indigenous communities and their input sought on potential adaptive management measures; technically and economically feasible Indigenous concerns will be incorporated into adaptive management measures.

7.1.1 Environmental Management System Framework

As described in Section 1.2.2.5 of EIS Addendum (Vol 1) ([CIAR #727](#)), GenPGM has environmental policies that instill the value of environmental protection in their work through the recognition, reduction, mitigation and elimination of impacts to the environment, to the extent possible. These values are fundamental in the design of the EMS, which will be finalized after the completion of the EA process in consultation with relevant stakeholders, government and Indigenous communities.

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As outlined in Section 7.1.1 of the original EIS (2012), the EMS will:

- Set out an environmental organizational structure for the Project
- Identify roles, responsibilities and resources
- Outline requirements for planning and training activities
- Describe the practices and procedures associated with the implementation of the system and monitoring of results
- Establish a periodic system to review processes for continual improvement

7.1.2 EMS Components – Management Programs

As described in Section 7.1.2 of the original EIS (2012), the EMS will comprise three components:

- Waste and Recycling Material Management Program (WRMMP): Intended to manage the non-hazardous and hazardous waste generated on the Project site
- Emergency Preparedness and Response Plan (EPRP): Intended to establish procedures and provide clear direction in case of an on-site emergency, including the identification of responsibilities of parties
- Environmental Monitoring and Management Plans (EMMP): Sets the practices and procedures that will be implemented to reduce potential adverse environmental effects of the Project and the corresponding follow-up and monitoring programs to test predictions made in the original EIS (2012) and the EIS Addendum and to demonstrate compliance with applicable permit and licence standards.

These programs will be developed and revised as necessary as the Project moves through the environmental assessment (EA) process and into design, construction, and operation. Inherent in this management system is the provision for continual environmental improvement, ongoing periodic monitoring, consideration of stakeholder comments, and adaptability of these documents to respond to environmental conditions.

7.1.2.1 Waste and Recycling Material Management Program

Section 7.1.2.1 of the original EIS (2012) provided detail and context of the proposed WRMMP. Similar to the original plan, waste will continue to be handled, stored and disposed of in accordance with provincial and local regulations. GenPGM's WRMMP will focus on the following waste streams:

- Recyclable Materials: To the extent possible, all materials used on the mine site will be re-used or recycled to reduce the amount of material needing disposal. Recyclable materials such as scrap metal, wood, paper and cardboard that are not reusable on site will be segregated and trucked off site to appropriate facilities.

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- **Organic and Solid Waste:** Organic and non-recyclable solid non-hazardous waste collected at the mine site will be disposed of within the landfill situated in the PSMF.
- **Hazardous Waste:** Hazardous wastes will be collected, stored on site temporarily, as appropriate, and trucked off site to appropriately licensed facilities. There will be no polychlorinated biphenyls (PCB) or underground hydrocarbon storage tanks on site.
- **Sewage Treatment:** Sewage will be treated with an on-site membrane bioreactor and/or will be collected for off-site disposal at an existing, approved sewage disposal facility.

Designated areas will be established within the mine site for the storage and disposal of materials in accordance with the WRMP, including a solid non-hazardous waste disposal area (within the PSMF), material storage area (recyclable materials), special waste area (i.e., equipment maintenance products, solvents, lubricants), hazardous waste area (storage for shipment off-site) and sewage treatment.

7.1.2.2 Emergency Preparedness and Response Plan

Section 7.1.2.2 of the original EIS (2012) discussed the procedures and components that will be implemented in the preparation of an EPRP (referred to as the Emergency Preparedness Plan in the original EIS (2012)) for a prompt, efficient and safe response to emergency situations that are unforeseen with the potential to cause death or injury, shut down operations, damage equipment or the environment, and/or jeopardize GenPGM's reputation or financial viability. The EPRP will include, but is not limited to, the following elements:

- **Emergency response policy:** A concise policy that highlights GenPGM's commitment to and support for emergency preparedness.
- **Roles and responsibilities:** All persons working on site, including employees and contractors, have a role in the successful implementation and maintenance of the EPRP. By identifying roles and responsibilities, proper training can be conducted to effectively implement the EPRP. Identifying roles and training further establishes a hierarchy of command when an emergency occurs, including the identification of key personnel.
- **Hazard and emergency identification, prevention, and protection procedures:** By establishing clear and concise processes, emergencies can be better identified and prevented with proper adaptive strategies, protection measures and engineered design solutions.
- **Emergency response procedures:** While all emergencies require an immediate response, proper processes can guide the level of response and resources required, including a pre-established plan for an appropriate course of action.
- **Mine Site Map:** Illustrating the location of key emergency facilities (e.g. emergency operations centre, evacuation and escape routes, assembly locations).
- **Training procedures:** Proper training of all on-site personnel is imperative to the success of an EPRP as it establishes clear roles, responsibilities and processes should an emergency be identified.

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- Communications protocol: Outlining a protocol for communication during an emergency allows for effective dissemination of information and establishes clear roles and responsibilities for internal and external communication.
- Continual improvement plan: By reviewing and updating the EPRP, performance can be evaluated and procedures and responsibilities updated according to standard industry practice, legal requirements and through learning from prior events.

The accidents and malfunctions addressed in Section 6.3 of this EIS Addendum (Vol 2), such as releases to the environment, material handling incidents, mechanical failures, fires, structural failures, and other potential incidents, that may impact health, safety or the environment will be included in the EPRP.

7.1.2.3 Environmental Monitoring and Management Program

The EMMP consists of two distinct components, namely the management of environmental effects through the implementation of mitigation measures, and follow-up and monitoring programs to verify the accuracy of effects assessment predictions and effectiveness of mitigation measures.

7.1.2.3.1 Environmental Management

Specific management plans covering specific Project activities are proposed as part of the EMMP to guide specific actions and activities that will be implemented to reduce the potential for environmental effects during construction and operation and to clearly define GenPGM's ongoing environmental commitment. These specific plans will identify mitigation and management measures specific to:

- Waste and recycling materials management (see Section 1.5.4.15 of EIS Addendum (Vol 1) ([CIAR #727](#)) and Section 7.1.2.1 of this report)
- Access management (see Section 1.5.4.11 of EIS Addendum [Vol 1])
- Concentrate transfer station (rail load-out facility) management (see Section 1.5.6.3 of EIS Addendum [Vol 1])
- Tailings (process solids) impoundment operations (see Section 1.5.4.6 of EIS Addendum [Vol 1])
- Materials handling (non-mined materials) (see Sections 1.5.4.13 and 1.5.5 of EIS Addendum [Vol 1])
- Emergency preparedness and response (see Section 7.1.2.2 of this report)
- Erosion and sediment control (see Sections 6.2.3 and 6.2.5 of this EIS Addendum [Vol 2])
- Fish Habitat Offsetting Strategy and Compensation Plan (see Section 6.2.4 and Appendix D6 of this EIS Addendum [Vol 2])

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- Atmospheric quality management:
 - Air quality management (including air emissions and greenhouse gas (GHG)) (see Section 6.2.1 of this EIS Addendum [Vol 2])
 - Noise management (including noise and vibrations) (see Section 6.2.2 of this EIS Addendum [Vol 2])
- Water management (including quality and quantity):
 - Surface water management (see Sections 1.5.4.8 of EIS Addendum (Vol 1) ([CIAR #727](#)) and 6.2.3 of this EIS Addendum [Vol 2])
 - Groundwater management (see Section 1.5.4.8 of EIS Addendum (Vol 1) and Section 6.2.3 of this EIS Addendum [Vol 2])
- Acid Rock Drainage / Metal Leaching (ARD/ML) management (see Section 1.5.4 of EIS Addendum (Vol 1) and Section 6.2.3 of this EIS Addendum [Vol 2])
- Vegetation management (including invasive species) (see Section 6.2.6 of this EIS Addendum [Vol 2])
- Wildlife and Species at Risk:
 - Wildlife and Species at Risk management (see Sections 6.2.7 and 6.2.8 of this EIS Addendum [Vol 2])
 - Wildlife conflict management (including bear-human and wolf-human conflict management) (see Section 7.4.2 of this report)
- Reclamation and closure (see Section 1.5.2.3 of EIS Addendum [Vol 1])
- Soil salvage and storage (see Table 1.5-1 of EIS Addendum [Vol 1])
- General construction and operations management (see Sections 1.5.2.1 and 1.5.2.2 of EIS Addendum [Vol 1])
- Occupational health and safety (see Section 7.4 of this report)

Preliminary information on the design and management of specific Project activities and the mitigation measures proposed to address potential adverse environmental effects have been incorporated into the original EIS (2012) and this EIS Addendum (with relevant EIS Addendum Sections noted above). Further information and detail in regard to the plans will be developed through the EA process and detailed design / procurement process prior to construction and/or operation, as appropriate.

7.1.2.3.2 Follow-up and Monitoring

Follow-up and monitoring programs have been proposed for the Project to verify the accuracy of predicted effects and effectiveness of proposed mitigation measures. Under CEAA 2012, an EIS must consider the requirements of a follow-up program designed to:

- verify the accuracy of the effects assessment of a designated project; and,
- determine the effectiveness of any mitigation measures taken to eliminate, reduce or control the adverse environmental effects of a designated project.

The EMMP also provides a management structure for the implementation of the adaptive management program to implement alternative or additional mitigation measures where adverse effects are shown to exceed environmental effect predictions and to reduce the potential for, and consequences of, accidents and malfunctions. Compliance with the proposed implementation of mitigation measures and other commitments will be documented as part of the EMMP and communicated to community partners and to appropriate federal and provincial regulators in accordance with applicable permits, approvals and authorizations.

Specific follow-up and monitoring programs proposed by GenPGM include:

- atmospheric environment (including air quality, greenhouse gases, and noise)
- groundwater (including levels, flow, and quality)
- surface water (including quality and quantity)
- sediment and benthos
- fish and fish habitat (including mitigation and compensation measures)
- soils and terrain (including soil quality and geotechnical stability)
- vegetation (including invasive and noxious plants)
- wildlife (including wildlife mortality and encounters)
- migratory birds (including conformity with the *Migratory Bird Convention Act*)
- species at risk (including Woodland Caribou use)
- socio-economics (including demography, housing, community services and infrastructure, including monitoring with BN)
- human health (including connection to the air, surface water and groundwater programs)
- country foods (including blueberries, fish and moose)
- archaeological resources

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Further details of the proposed follow-up and monitoring programs are provided in Section 7.3 of this report. Specific follow-up and monitoring plans for each of the identified follow-up and monitoring programs will be prepared to refine and finalize details following the EA process through consultation with relevant federal and provincial agencies, Indigenous groups, and other stakeholders with knowledge or interest in the development and implementation of these programs.

Monitoring and management programs and commitments have been developed to reduce environmental and social impacts that could negatively affect communities, land users and rights and, in turn, mitigate potential impacts on Indigenous communities whose rights and interests are impacted by the Project. Monitoring programs listed take into consideration traditional land uses, water quality, fisheries, socio-economic conditions (e.g. employment, economic development, training), collection of country foods, the BN community trapline, traditional diet, and heritage features as proposed or have been specifically negotiated in any benefits agreement. GenPGM will continue to consult with Indigenous people to update their understanding of traditional knowledge and land uses and address potential issues that arise in a proactive manner. Many of the follow-up and monitoring programs listed above will address comments and concerns raised by Indigenous communities through preparation of the original EIS (2012) and this EIS Addendum.

Compliance monitoring is proposed to verify whether required mitigation measures and other commitments made through the regulatory approvals process have been implemented. Compliance with all environmental approvals, permits and authorizations will be tracked by GenPGM and communicated to appropriate agencies, identifying whether required mitigation measures and commitments were implemented. Deviations or revisions to the mitigation measures resulting from follow-up and monitoring programs (i.e., adaptive management measures) will be identified.

To the extent possible, GenPGM will engage local community members in the completion of monitoring and make the results of monitoring results and follow up management plans publicly available in a timely manner. As applicable, GenPGM will coordinate with Indigenous communities to participate in the monitoring of the Project, once approved.

7.1.3 Adaptive Management

Adaptive management is a planned and systematic process for continuously improving environmental management practices by learning from their outcomes. It provides the flexibility to address / accommodate new circumstances, to adjust monitoring, to identify and implement new mitigation measures, or to modify existing measures throughout all phases of the Project.

As described in Section 7.1.3 of the original EIS (2012), GenPGM will use an adaptive management approach as part of the EMMP. Adaptive management will be inherent in the design of the follow-up and monitoring programs. Adaptive management will subsequently become a fundamental aspect in the implementation of the follow-up program. The purpose of the program is to ensure that the monitoring elements remain valid, meet regulatory requirements, and be responsive to evolving objectives. GenPGM

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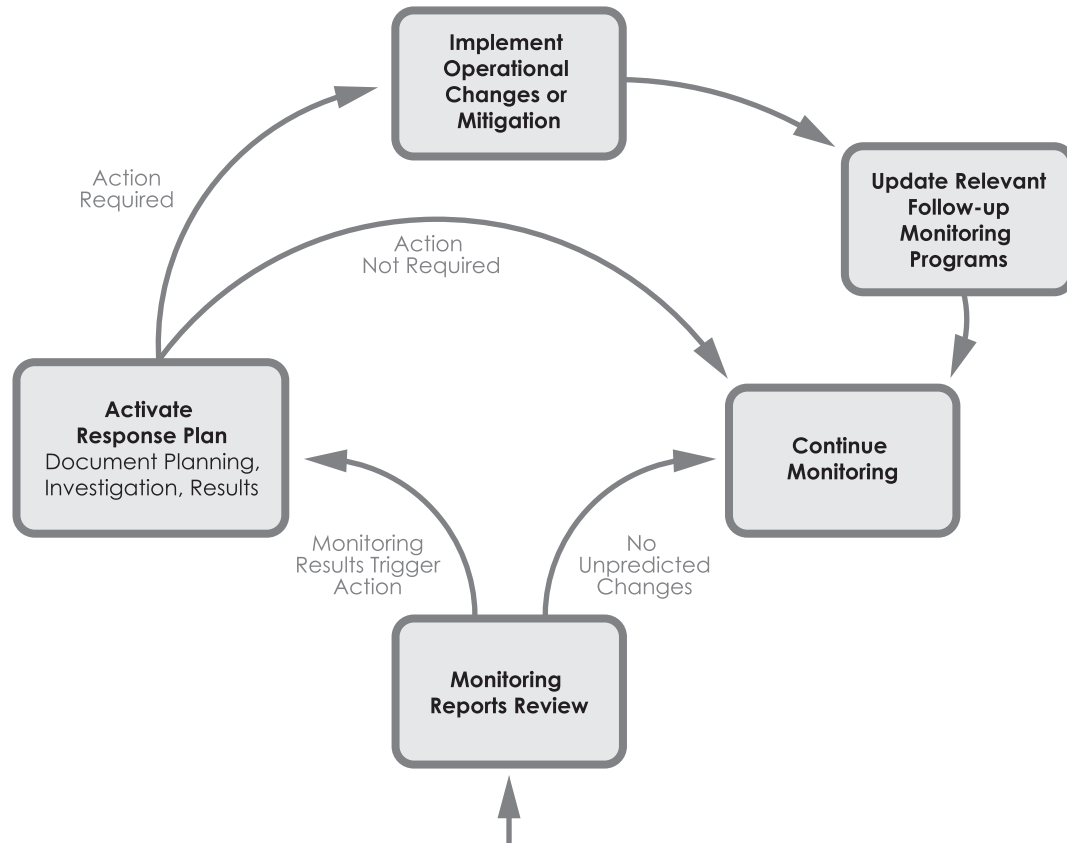
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will identify and correct incidents with appropriate measures aimed to prevent reoccurrence and/or similar occurrences.

The Adaptive Management Framework (Figure 7.1-1) provides a formalized approach to:

- track and report on monitoring activities and their results
- investigate incidents and unexpected results, including non-conformance and non-compliance events
- develop and implement corrective and preventative measures
- establish a feedback loop through continued monitoring and updated EMMPs, as necessary

The implementation of an Adaptive Management Framework provides opportunities for EMMPs to be revised, thus maintaining compliance with regulatory requirements. As part of the GenPGM Adaptive Management Framework, the EMMPs will be assessed regularly to verify implementation and the continued suitability, adequacy and effectiveness of the EMMP. The review will identify elements of the EMMPs in need of revision, and evaluate performance against established performance objectives. Furthermore, the framework provides an opportunity for community consideration to be identified and incorporated into the refinement of EMMPs.



Environmental Monitoring and Management Programs

Notes

Monitoring is conceptual and will be expanded as needed



Client/Project
GENERATION PGM INC.
MARATHON PALLADIUM PROJECT

Figure No.
7.1-1

Title
**Adaptive Management
Framework**

7.2 DECOMMISSIONING AND CLOSURE PLAN

Section 1.5.2.3 of EIS Addendum (Vol 1) ([CIAR #727](#)) includes details on the proposed closure plan, with the conceptual Closure Plan being included as Figures 1.5-3 to 1.5-5. The intent of the closure plan is to decommission and reclaim land within the Project footprint when mine operations cease, which includes decommissioning and closure of the Project site in a manner that reduces the potential impacts on the environment, to the extent possible, and returns the site to new and productive uses that support use by Indigenous peoples, the public and other stakeholders.

A closure plan will be completed in accordance with O. Reg. 240/00 and filed with the Ministry of Energy, Northern Development and Mines (MENDM) prior to the start of construction.

7.3 FOLLOW-UP AND MONITORING PROGRAMS

Follow-up and monitoring programs have been proposed for the Project to verify the accuracy of predicted effects and effectiveness of proposed mitigation measures. Under CEAA 2012, an EIS must consider the requirements of a follow-up program, designed to:

- verify the accuracy of the EA of a designated project; and,
- determine the effectiveness of any mitigation measures taken to eliminate, reduce or control the adverse environmental effects of a designated project.

The goal is to ensure that proper measures and controls are in place to reduce the potential for environmental degradation during all phases of the Project and to provide clearly defined action plans and emergency response procedures to account for human and environmental health and safety. Follow-up and monitoring programs will be used to demonstrate compliance with applicable performance standards (i.e., permit and approval limits) and/or guidelines and to verify whether the effects of the Project are comparable to those predicted in the original EIS (2012) and the EIS Addendum.

Section 7.3 of the original EIS (2012) described the framework for the follow-up and monitoring programs to be implemented to verify the accuracy of the assessment of effects, the effectiveness of mitigation and enhancement measures, and the implementation of approval conditions and proponent commitments. As part of the EIS Addendum and, based on the results of the updated effects assessment conducted in Section 6 of this EIS Addendum (Vol 2), an updated version of Table 7.3-1 has been prepared (see below) summarizing the follow-up and monitoring programs to be implemented for which more detailed follow-up and monitoring plans will be prepared.

In addition to the follow-up and monitoring programs, compliance monitoring is meant to verify whether the Proponent has implemented the required mitigation measures and fulfilled the provisions of the EA with respect to public consultation, requirements for additional studies, implementation of proposed mitigation measures, work to be completed, and all other commitments.

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Compliance monitoring will be delegated to GenPGM by provincial and federal agencies through the terms and conditions to be included with any provincial and federal regulatory instruments should the Project be approved. The EMS (as described in Section 7.1 of this report) provides a form of compliance, outlining commitments to monitoring, and mitigation measures. It is anticipated that compliance will be reported to the appropriate agencies in accordance with the requirements of the federal and provincial approvals, with a minimum annual frequency in the form of an annual report to the Impact Assessment Agency of Canada (IAAC). However, the frequency and duration of the compliance monitoring will be confirmed as the Project progresses and in accordance with the estimated time required to detect effects, the anticipated magnitude of the environmental effect, and on an adequate level of statistical confidence.

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Table 7.3-1: Follow-up and Monitoring Programs for the Project

VEC	Program Objectives	Program Structure, Overview and Activities	Roles and Responsibilities	Follow-up and Monitoring Program
Indigenous Considerations	Numerous monitoring programs presented in this table were designed through consultation with communities and in consideration of TK/TLRU reports provided by Indigenous communities.	Monitoring program focusing on the effects of the Project on Indigenous considerations, such as traditional land uses, collection of country foods, the BN community trapline, traditional diet and heritage features as proposed or have been specifically negotiated in any benefits agreement.,	GenPGM will continue to consult with Indigenous people to update its TK information and to address potential issues that arise in a proactive manner.	Follow-up and monitoring programs presented below will address specific comments and concerns expressed by Indigenous communities.
Atmospheric Environment	- Monitoring air quality, including dustfall, to confirm effectiveness of mitigation measures, to verify predicted effects with respect to changes in ambient air quality, and to confirm compliance with applicable regulations. - Monitoring of GHG emissions as a component of fuel consumption to confirm GHG emission predictions	Measurement of ambient levels of particulates, criteria air contaminants, and other parameters of potential concern at identified air quality monitoring locations. Air quality samples will be collected through high-volume samples of ambient air at locations identified through the effects assessment. Sampling will occur periodically during the Project lifespan using standard protocols. Results from this testing will be compared to the appropriate federal and provincial ambient air criteria and to the predictions in the EIS Addendum. Fugitive dust will be collected using dustfall jars at locations identified through the effects assessment. Sampling will occur at appropriate intervals throughout the life of the Project. Results will be reported as total dustfall mass per unit area, which will be compared with predictions in the EIS Addendum, and to appropriate regulatory criteria. Total metal levels will also be measured.	GenPGM - implementing the follow-up program, reporting the results to the Ontario Ministry of the Environment, Conservation and Parks (MECP) and others as appropriate, and implementing adaptive management measures where required. MECP – Responsible for environmental compliance approval (ECA) approval and reporting / monitoring approvals.	Atmospheric Environment Monitoring Program
Acoustic Environment	- Monitoring ambient noise levels at selected noise receptor locations to determine the effectiveness of design-related mitigations, to verify that noise levels are within those predicted in the EIS Addendum, and to confirm compliance with applicable regulations. - To provide the public a means to raise concerns over nuisance noise levels that may be encountered as a result of the Project	Measurement of ambient noise levels at identified sensitive receptor locations determined through the effects assessment, during various mining activities including, but not limited to, near surface blasting activities during site preparation and early operation. The plan will be in place for all Project phases.	GenPGM - implementing the follow-up program, reporting the results to the MECP and others as appropriate, and implementing adaptive management measures where required. MECP - Responsible for ECA approval and reporting / monitoring approvals.	Atmospheric Environment Monitoring Program
Groundwater Quality and Quantity	- Monitoring potential changes in groundwater quality and quantity to verify the effectiveness of mitigation measures that have been implemented to protect groundwater quantity and quality. - To address requirements for provincial and federal groundwater	Measurement of groundwater levels to document changes in level and flow in response to dewatering. Monitoring groundwater quantity and quality at the receiving environment. A water well survey will be completed within and adjacent to the SSA to confirm the results of the MECP water well record (WWR) and permit to take water (PTTW) database review. The existing monitoring well network will be reviewed and enhanced as necessary to ensure appropriate up-, down-, and cross-gradient coverage of key mine infrastructure (e.g. open pit, MRSA, PSMF, water management pond (WMP)). Water levels, flow (i.e. pumped volumes), and water quality will be measured at regular intervals. The plan will be in place for all Project phases.	GenPGM - implementing the follow-up program, reporting the results to the MECP and others as appropriate, and implementing adaptive management measures where required. MECP - Responsible for ECA and PTTW approvals, which include reporting and monitoring requirements.	Groundwater Monitoring Program

Table 7.3-1: Follow-up and Monitoring Programs for the Project

VEC	Program Objectives	Program Structure, Overview and Activities	Roles and Responsibilities	Follow-up and Monitoring Program
Surface Water Quality and Quantity	- Recording of surface water quality and quantity to confirm that source and receiving water quality predictions are consistent with those presented in the EIS Addendum and to confirm compliance with applicable regulations. - Monitoring of water quantity at the PSMF and MRSA discharge locations and other key locations around the SSA to Project site to confirm the effectiveness of designed release rates.	Measurement of water quality and quantity will be conducted at point source discharge locations (e.g. PSMF and MRSA discharge points). Water quality will also be measured in surface water receiving environments (e.g. Hare Lake, Stream 6 [post closure], Pic River) consistent with ECA and metal and diamond mining effluent regulations (MDMER) requirements. Records will include water level, flow gauging, depth and flow profiling and water quality sampling. Monitoring will occur at various times of the year, consistent with ECA and MDMER requirements. All applicable parameters will be monitored at facility commissioning to establish and confirm emissions. Results will be compared to the values used in the EIS Addendum, and to applicable regulatory criteria or objectives.	GenPGM - implementing the follow-up program, reporting the results to the MECP and others as appropriate, and implementing adaptive management measures where required. MECP - Responsible for ECA approval and reporting / monitoring approvals. ECCC – Responsible for MDMER approvals and any other prescribed in follow up/monitoring.	Surface Water Monitoring Program
Fish and Fish Habitat	Monitoring to demonstrate the effectiveness of avoidance and mitigation measures to assess potential impacts on fish and fish habitat as result of the Project and to assess the effectiveness of the fish habitat compensation plan.	Sampling of fish communities, including tissue sampling, sediments, and benthic communities at receiving watercourse (i.e. Hare Lake and Pic River) will be conducted in accordance with Environment and Climate Change Canada (ECCC) Environmental Effects Monitoring (EEM) program. Pre-operational surveys will be conducted at Hare Lake and Pic River to further characterize baseline conditions and ongoing sampling will be completed in accordance with ECCC's EEM program guidelines, MDMER requirements throughout the operation of the mine, and in accordance with the closure plan. A program consistent with EEM will be developed to monitor metal levels in fish tissues in response to concerns that metal tissue levels will be affected by discharge from mine releases. Specifically, the program will focus on recreational, food fish and /or fish collected as part of an indigenous fisheries. Interested stakeholders, including the public, Indigenous peoples and the government will be consulted when designing the program. Monitoring programs specific to fish habitat compensation measures implemented will be developed. The scope and nature of the programs will depend on scope and nature of the compensation provided and will be communicated as part of the Fish Habitat Compensation Plan. Compensation related monitoring would be implemented following completion of the individual compensation-related works.	GenPGM - implementing the follow-up program, reporting the results to Fisheries and Oceans Canada (DFO) and others as appropriate, and implementing adaptive management measures where required. DFO – Responsible for Fisheries Act Authorization and reporting / monitoring	Fish and Fish Habitat Monitoring Program

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Table 7.3-1: Follow-up and Monitoring Programs for the Project

VEC	Program Objectives	Program Structure, Overview and Activities	Roles and Responsibilities	Follow-up and Monitoring Program
Terrain and Soil	- Monitoring soil quality to assess the potential impacts of dustfall. - Monitoring of man-made structures (dams, embankments, pit walls) to demonstrate geological stability of structures. - Monitoring of soils to be used for reclamation to confirm suitability for reclamation purposes.	Soil sampling will be conducted at identified air quality monitoring locations. Samples will be analyzed for metals to provide a direct measure of metals deposition. The plan will be in place for all Project phases. Evaluation of man-made structures for geotechnical stability will be conducted regularly during various Project phases. As-built evaluations will be completed by qualified engineers as development occurs to ensure adherence to design. PSMF dam inspections will occur regularly and into the closure phase. A soils salvage and storage plan will be developed to identify the suitability of materials stockpiled during stripping for reclamation purposes. The plan will include a strategy for storage of these materials.	GenPGM - implementing the follow-up program, reporting the results to the appropriate agency, and implementing adaptive management measures where required.	- Atmospheric Environment Monitoring Program - Soil and Terrain Monitoring Program
Vegetation	Monitoring of disturbed areas within the SSA to determine the presence of invasive or noxious plant.	Surveillance monitoring will occur around the SSA to identify the presence, colonization and encroachment of invasive and noxious plants within and around disturbed areas of the Project site. Identified plants will be removed.	GenPGM - implementing the follow-up program, reporting the results to the Ontario Ministry of Natural Resources and Forestry (MNRF), ECCC, and others as appropriate, and implementing adaptive management measures where required.	Vegetation Monitoring Program
Wildlife	Record Project-related wildlife mortalities (e.g. collisions and strikes) and near-misses to assess level of interaction between Project activities and wildlife and to assess changes in mortality risk or movement disruptions.	Recording of wildlife fatalities or interactions conducted through a self-reporting program to be followed by all on-site personnel. Prior to tree clearing, surveys of the area will be conducted for migratory birds.	GenPGM - implementing the follow-up program, reporting the results to the MNRF, ECCC, and others as appropriate, and implementing adaptive management measures where required.	Wildlife Monitoring Program
Species at Risk	Assess the extent to which Woodland Caribou move through or use the site	A detailed plan will be developed with MNRF and ECCC.	GenPGM - implementing the follow-up program, reporting the results to the MNRF, ECCC, and others as appropriate, and implementing adaptive management measures where required.	Wildlife Monitoring Program
Socio-economic Environment	- Assess potential effects on Project-related on social and economic programs - Assess potential effects on the BN community	A conceptual program has been reviewed with both the Town of Marathon and BN (per SIR#7) (CIAR #227) Indicators, duration, frequency and other components of the program will be established through on-going consultation. Information regarding demography (population, employment), housing, education, community infrastructure, community services, health services, emergency services, traffic / transportation, employment and income, business development, cultural and Indigenous considerations are anticipated.	GenPGM – developing and implementing the follow-up program including collaboration with the Town of Marathon, BN, and other relevant departments and agencies on the collection and review of relevant indicators	Socio-economic Monitoring Program
Human Health	- Assess potential Project-specific effects on human health related to air quality, surface water and groundwater - Assessment of potential effects on country food, including blueberries, fish and moose - Monitor and record health and safety incidents	Contaminants of potential concern (CoPC) for air and water (surface and ground) will be monitored as part of the respective monitoring programs. A conceptual plan for monitoring country foods for CoPCs and exposure pathways during the pre-operational and operational phases of the proposed Project has been prepared (per AIR#6) (CIAR #651) A reporting system will be developed to track incidents, near misses and potential hazards.	GenPGM - implementing the follow-up program, reporting the results to the appropriate agency, and implementing adaptive management measures where required.	- Atmospheric Environment Monitoring Program - Surface Water Monitoring Program - Groundwater Monitoring Program - Country Food Monitoring Program

Table 7.3-1: Follow-up and Monitoring Programs for the Project

VEC	Program Objectives	Program Structure, Overview and Activities	Roles and Responsibilities	Follow-up and Monitoring Program
Archaeological Resources	Ensure that archaeological resources are not affected through mine construction, operation or closure.	A protocol will be developed to identify potential archaeological resources and procedures to follow in accordance with the <i>Ontario Heritage Act</i> should such resources be encountered during construction.	GenPGM – implementing procedures and adaptive management measures during site preparation and construction.	Archaeological Resources Monitoring Program

7.4 OCCUPATIONAL HEALTH AND SAFETY PLAN

7.4.1 Context

GenPGM will develop an Occupational Health and Safety Plan (OHSP) consistent with their commitment to eliminating hazards or exposures which may result in personal injury or illness (see Section 1.2.2.4 of the EIS Addendum [Vol 1]) ([CIAR #727](#)). The OHSP will be developed to conform to the requirements of the *Occupational Health and Safety Act* (OHSA) Ontario Regulation 854 – Mines and Mining Plants (O. Reg. 854) and any other applicable regulations made under the Act or relevant guidelines where regulations do not exist.

7.4.2 Generation PGM OHSP

GenPGM will develop an OHSP that includes, but will not necessarily be limited to, the following elements:

- an OHS policy - a concise policy that highlights the company's commitment to, and support for, the OHSP
- the identification of roles and responsibilities
- the definition of the plan's scope and limitations
- a commitment from GenPGM management to provide the resources necessary to implement the plan in an effective manner
- a mechanism for employee participation
- the development of an OHS Manual and description of how its contents will be communicated to employees
- an employee training program
- a documented process whereby workplace hazards are identified, assessed as to their significance, and appropriate hazard control strategies are adopted
- an incident / accident reporting and investigation procedure
- a document and record management system
- a continual improvement plan – the OHSP will outline a review framework so that plan performance is evaluated and updated according to standard industry practice and/or conformity to legal requirements, as appropriate

Among various other things, the OHSP will include procedures for the management of wildlife-human conflicts, specifically bear-human and wolf-human conflicts. These programs will be developed consistent with guidance provided by the government agencies regarding human-wildlife conflict. In both cases, the

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primary concern has to do with the proper disposal of food wastes. Improper disposal can attract bears and wolves to areas that are frequented by mine staff.

The report prepared by True Grit Consulting Ltd. as part of the environmental assessment for the Marathon PGM-Cu project and entitled "Supporting Document No. 19 – Technical Report – Worker Health and Safety – Marathon PGM-Cu Project" (WHS Document) ([CIAR# 227](#)) is considered to remain an appropriate template for an OHSP for the current project. However, there have been changes to occupational health and safety legislation since the WHS Document was submitted in July 2012 and those changes will be incorporated into the OHSP going forward. Table 7.4-1 summarizes the relevant legislative changes that are expected to impact the GenPGM OHSP.

Table 7.4-1: Summary of Relevant Occupational Health and Safety Legislative Changes Since July 2012

Reference in WHS Document	New Reference	Sections of WHS Document Affected	Comments
Ontario Regulation 572: Training Requirements for Certain Skill Sets and Trades (O. Reg. 572)	<i>Ontario College of Trades and Apprenticeship Act (OCTAA)</i>	Section 3.2 Section 5.2.3.5 Appendix B Appendix D	O. Reg. 572 was revoked and replaced with OCTAA which is referenced in the current version of O. Reg. 854. The intent remains the same and the change does not affect the basic components of the proposed OHSP. References to O. Reg. 572 should be replaced with OCTAA.
O. Reg. 854 s. 139 and Ontario Regulation 851: Industrial Establishments (O. Reg. 851) s. 293.1	Ontario Regulation 381: Noise (O. Reg. 381)	Section 3.2 Appendix B Appendix D	Effective July 1, 2016, Noise Regulation (O. Reg. 381/15) under the OHSA replaced the noise protection requirements set out in the regulations for Industrial Establishments, Mines and Mining Plants, and Oil and Gas-Offshore and extends noise protection requirements to all Ontario workplaces. This change to the legislation does not affect the basic components of the proposed OHSP. References to O. Reg. 854 s.139 and O. Reg. 851 s. 293.1 should be replaced with O. Reg. 381. O. Reg. 851 should be added to Section 3.2 of the WHS Document.
O. Reg. 854 Part XII	Ontario Regulation 632: Confined Spaces (O. Reg. 632)	Section 3.2 Appendix B Appendix D	In July 2011, all requirements related to confined spaces were consolidated into a single regulation under the Occupational Health and Safety Act, O. Reg. 632. As a result, according to the Ministry of Labour, Training and Skills Development (MLTSD): the application section of O. Reg. 632/05 is amended to make this regulation apply to construction projects, health care and residential facilities, industrial establishments, and mines and mining plants; and, the provisions that apply with respect to confined spaces in the four sector-specific regulations are revoked. This change to the legislation does not affect the basic components of the proposed OHSP.

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Table 7.4-1: Summary of Relevant Occupational Health and Safety Legislative Changes Since July 2012

Reference in WHS Document	New Reference	Sections of WHS Document Affected	Comments
			References to O. Reg. 854 Part XII should be replaced with O. Reg. 632. O. Reg. 632 should be added to Section 3.2 of the WHS Document.
O. Reg. 854 Part XII	O. Reg. 854 s. 105.1	Appendix D Appendix E	In January 2017, the MLTSD enacted changes in the mining sector to improve health and safety of workers in mines. One of the significant changes was the requirement to develop and maintain a written traffic management program that includes measures and procedures to address workplace hazards related to reduced or impeded visibility of drivers. A traffic management program should be added to Appendix D of the WHS Document. The traffic management program should reference O. Reg. 854 s. 105.1 as well as the MLTSD Guideline Document entitled "Traffic Management Programs in Mines", dated October 2019.
Emergency Response Planning for Construction Projects, Provincial Labour - Management Health and Safety Committee	Emergency Response Planning for Surface Mines, Workplace Safety North	Appendix D Appendix E	The document describing an emergency response plan for construction projects is adequate for the construction phase of the project; however, the document describing an emergency response plan for surface mines contains additional, valuable information including incident reporting requirements and contact information to be used for reporting. Both of these documents should be included in the references for the Emergency Response Policy and Program in Appendix D of the WHS Document and copies of each should be included in Appendix E of the WHS Document.