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NORTHERN
Applied Sciences Inc.

ENVIRONMENTAL SCREENING REPORT

Electric Arc Furnace Dust Recycling and Zinc Manufacturing Facility

227-237 Brant Street, Hamilton, ON

Project Ref. No: 22-064
Report Date: December 30, 2022

PREPARED FOR:

GFL GREEN FOR LIFE environmental

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In partnership with

Cobric Chemicals

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EXECUTIVE SUMMARY

GFL Environmental Services Inc. (GFL) owns a waste transfer and processing site at 227-237 Brant Street in Hamilton, Ontario. The Site is currently approved to store waste paints. GFL, in partnership with Cobric Chemicals Inc. (Cobric), is proposing to construct and operate a thermal treatment system to recycle Electric Arc Furnace Dust (EAFD), including other zinc bearing materials, to recover zinc and other valuable metals from a waste stream that would otherwise be disposed in landfills or shipped to the U.S. for treatment. The High Temperature Metal Recovery (HTMR) technology will separate zinc and lead from EAFD generated by steel mills in order to prepare it for beneficial reuse.

The HTMR project has been evaluated to be a new establishment that is a Class D thermal treatment site. Per Ontario Regulation (O. Reg.) 101/07 (Waste Management Projects), and following initial consultation with the Ministry of Environment, Conservation, and Parks (MECP), this project is exempt from Part II of the Environmental Assessment Act (EAA) on the condition that an Environmental Screening Process (ESP) be completed. The Project falls under Section 11 of the O. Reg. 101/07 ("Establishment of Site") as the Project would be a new undertaking to which the EAA applies.

The HTMR project will provide several significant advantages and net positive effects to the local community and overall environment. The HTMR project addresses a current need in southern Ontario, by providing steel mills with a local Canadian alternative to recycle one of largest waste streams for steel mills. The HTMR project is an alternative to the existing options for EAFD, which are to either dispose the EAFD in landfills or engage in long-distance transport of the EAFD to the U.S. for recycling. Eliminating EAFD from landfills allows for the curtailing of contaminated leachate and extending the lifespans of landfills, while eliminating long-distance transport of EAFD provides a net-decrease in the greenhouse gas emissions of the project.

The potential environmental effects that were identified in the Screening Criteria Checklist include impacts to groundwater from accidental spills, impacts to air, impacts from noise, and impacts to socio-economic conditions. As part of the Screening Process, public, government agencies and indigenous communities were consulted. No written comments or concerns were received during the consultations and all questions were answered directly by GFL and its consulting team.

Overall, the ESP identified many advantages of the HTMR project and determined that there would be no significant negative impacts to the local environment and community. The Environmental Screening Report (ESR) concludes that the overall net effect of this project will be positive at both the local and regional level.

GFL Environmental Services Inc. intends to proceed with the proposed HTMR project, subject to the required MECP approvals process.

Public notices and project information is available online at the GFL Brant Street community page:
https://gflenv.com/brant-street/brant-street-community/

TABLE OF CONTENTS

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APPENDICES

Please note due to file size limitations, Appendices are not included in this report.

You can view the appendices on our project webpage at:
https://gflenv.com/brant-street/brant-street-community/

Appendices can also be requested by contacting GFL Environmental Services Inc. by email at rlagani@gflenv.com

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1 INTRODUCTION

GFL Environmental Services Inc. (GFL) owns a waste transfer and processing site at 227-237 Brant Street in Hamilton, Ontario (Site). The Site is currently used store waste paints. GFL, in partnership with Cobric Chemicals Inc. (Cobric), is proposing to construct and operate a thermal treatment system to recycle Electric Arc Furnace Dust (EAFD), including other zinc bearing materials, to recover zinc and other valuable metals from a waste stream that would otherwise be disposed in landfills or shipped to the U.S. for treatment.

Per Ontario Regulation (O. Reg.) 101/07 (Waste Management Projects), this project is exempt from Part II of the Environmental Assessment Act (EAA) on the condition that an Environmental Screening Process (ESP) be completed. The Project falls under Section 11 of the Regulation ("Establishment of Site") as the Project would be a new undertaking to which the Act applies. Initial consultation with the Ministry of Environment, Conservation, and Parks (MECP) also concluded that the Environmental Screening Process would be appropriate for this proposed project.

The ESP for Waste Management Projects was prepared in accordance with the requirements of the O. Reg. 101/07 under the EAA. This Environmental Screening Report (ESR) has been prepared to document the process followed and the conclusions reached in the ESP.

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2 ENVIRONMENTAL SCREENING PROCESS

The EAA provides planning and decision-making processes for the undertaking of certain projects to ensure the protection, conservation and wise management of the environment through responsible environmental decision-making.

The Waste Management Project Regulation (O. Reg. 101/07), enacted under the EAA, identifies the environmental assessment requirements for waste management projects to ensure that a review of the environmental effects is conducted for new, or changes to, waste management projects. This Regulation identifies the waste management projects that are designated under the EAA. For the designated waste management projects, the Regulation further identifies that major projects with the potential for significant environmental impacts would be required to complete an environmental assessment, while smaller projects which are considered to have predictable environmental impacts, which are impacts that can be readily mitigated, are exempt from being required to complete an environmental assessment on the condition that the ESP is completed for the project.

The HTMR project to recover zinc and other metals from EAFD has been evaluated to be a new establishment that is a Class D thermal treatment site with a maximum amount of waste that is subject to thermal treatment at the site on any day, measured by weight, is more than 10 tonnes but less than or equal to 100 tonnes, and the annual recovery rate in respect of thermal treatment at the site is less than 70%. This project has been evaluated to be a project that is exempt from an environmental assessment on the condition that the ESP is completed.

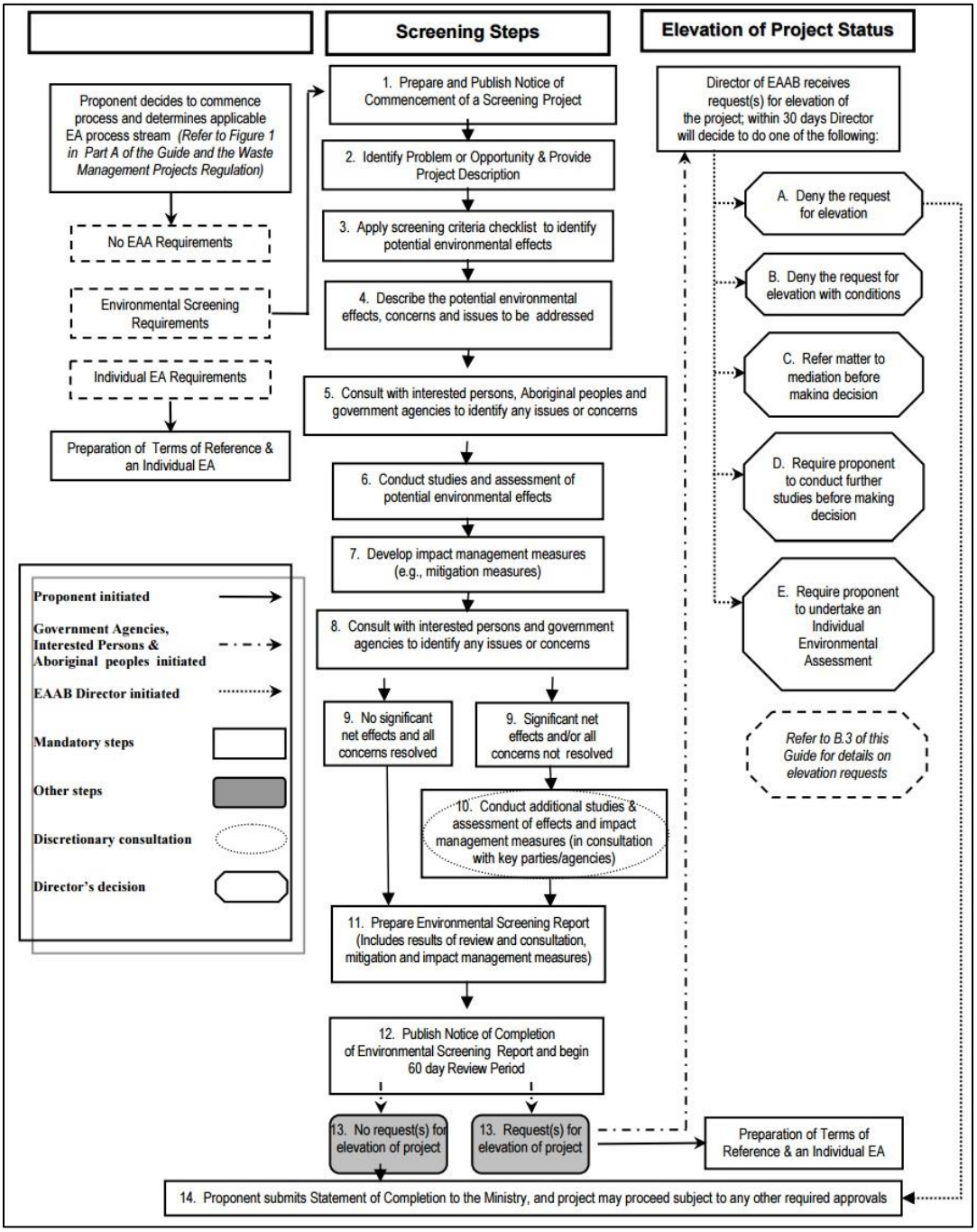
The ESP is a proponent driven, self-assessment process to streamline the review and assessment of the environmental effects of certain waste management projects in a way that ensures that the purpose of the EAA is maintained while promoting a fair, timely, consistent and predictable process. The MECP document “Guide to Environmental Assessment Requirements for Waste Management Projects”, dated March 15, 2007 (EA Guide), was prepared as a guideline to support environmental assessment and screening processes under O. Reg. 101/07. The screening process includes a screening approach to identify potential negative environmental effects, with additional or detailed studies to be conducted for any identified potential negative environmental effects.

The flow chart outlining the steps in the ESP is provided as Figure 2-1 and is summarized as follows:

1. Prepare and publish notice of commencement of a screening project.
2. Identify problem or opportunity and provide project description.
3. Apply screening criteria checklist to identify potential environmental effects.
4. Describe the potential environmental effects, concerns and issues to be addressed.
5. Consult with interested persons, Aboriginal peoples and government agencies to identify any issues or concerns.
6. Conduct studies and assessment of potential environmental effects.
7. Develop impact management measures (e.g., mitigation measures).
8. Consult with interested persons and government agencies to identify any issues or concerns.
9. Evaluate significant net effects and resolve concerns, if required.
10. Conduct additional studies and assessment of effects and impact management measures, if required.
11. Prepare Environmental Screening Report

12. Publish Notice of Completion of Environmental Screening Report and begin 60-day review period.
13. Address request(s) for elevation of project, if applicable.
14. Submit Statement of Completion to the MECP.

Figure 2-1: Environmental Screening Process



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3 PROJECT & SITE DESCRIPTION

3.1 Problem and Opportunity

Steel scrap contains a significant portion of zinc-galvanized steel. Zinc, during the processing of steel scrap, is vapourized with other impurities and collected in the form of EAFD. Due to the nature of EAFD, steel producers generally arrange to have it disposed or transport it outside of Canada to be recycled.

This project introduces a more environmentally conscious and local Canadian cost-effective option as this project will recover valuable metals from EAFD, including zinc content up to 25% in EAFD. The High Temperature Metal Recovery (HTMR) technology will separate zinc and lead from EAFD generated by steel mills in order to prepare it for beneficial reuse.

The HTMR project addresses a current need in southern Ontario, by providing steel mills with a Canadian alternative to recycle one of largest waste streams generated by steel mills. The HTMR project is an alternative to the existing options for EAFD, which are to either dispose the EAFD in landfills or engage in long-distance transport of the EAFD to the U.S. for recycling. Eliminating EAFD from landfills allows for the curtailing of contaminated leachate and extending the lifespans of landfills, while eliminating long-distance transport of EAFD provides a net-decrease in the greenhouse gas emissions of the project.

3.2 Project Description and Technologies to be Used

The HTMR technology is the pyrometallurgical extraction of zinc from zinc-bearing waste that will be received externally from steel mills. The HTMR reactor is an indirectly-heated rotary tube furnace, and consists of a sealed rotary tube surrounded by the furnace. The external furnace uses natural gas to produce heat which is then transferred into the rotary tube. The HTMR reactor is a countercurrent system, where the charge (i.e., dried pellets) flow in the opposite direction of the hot gases. During the thermo-process, the pellets are indirectly exposed to the high temperature. Processing parameters such as temperature, retention time, gas velocity, and processing environment are continuously controlled as these parameters have impact on the final quality of zinc product and the iron pellet product.

The volatilization of metals from the pellets into the space above the bed of the rotary tube under the controlled conditions present in the rotary tube results in the separation of zinc and other volatile metals from iron and other non-volatile metals. The volatilized metals and alkali metal salts exit above the bed of the rotary tube. These compounds exit the rotary tube as part of the gas stream and are directed to the gas cooler and dust collector.

The collected particulates are transferred to the Zinc Purification System to separate the impurities from the zinc oxide, transferred to bulk bins for future shipment to the metal refining company. The process will be fully contained in the building (or in storage silos) at the site and any air/dust emissions from the facility will be minimized by emissions capture and control technology.

3.2.1 Site Location

The Site has a municipal address of 227-237 Brant Street in Hamilton, Ontario, and is situated between Burlington Street E, Sherman Avenue N, Brant Street, and Birch Avenue. Refer to Figure 3-1 for an area map showing the Site and the surrounding lands.

The Site is located in an industrial area of the City of Hamilton in an industrially-zoned property and surrounded mainly by industrially-zoned properties. The neighbouring properties include a mix of mostly

industrial and commercial, and some residential land uses. The Site is in close proximity to the major steel manufacturers in Ontario.

3.2.2 Property Description

The Site has an area of 0.9 hectares (2.22 acres), which includes an existing entrance, an existing administration building (with office and change rooms), an existing large storage/processing building, and an existing separate exit and scale. The main storage/processing building is a 3229.15 m² (34,758.28 sq. ft.) single storey industrial building centrally located on the property. The second building is a small administration building measuring 179.28 m² (1929.74 sq. ft.) located in the southeast corner of the property. The property is fully enclosed with a 1.83 m high security fence and lockable gates. All parking and storage areas are asphalt covered. Refer to Figure 3-2 for a site plan showing the existing buildings and features at the Site.

EAFD and other solid materials used in the HTMR process will be stored in storage silos that will be installed in the area northwest of the existing processing building. All other material storage and processing will occur inside the processing building.

3.2.3 Operating Period

The HTMR project is seeking to operate 24 hours per day, 365 days a year. Receiving of waste and other raw materials needed for the HTMR process, as well as shipping of the products and residual waste would typically be from 7 am to 7 pm during the weekdays and weekends.

3.3 Existing Approvals and Permits

The Site was granted ECA Number A100143 on May 3, 2022 by the MECP for a waste transfer and processing site for the temporary use of the Site for waste paint and coatings. The approved activities of receiving and processing waste paint and coatings do not currently occur at the Site and will not occur at the Site when the HTMR project is operational.

Figure 3-1: Area Map

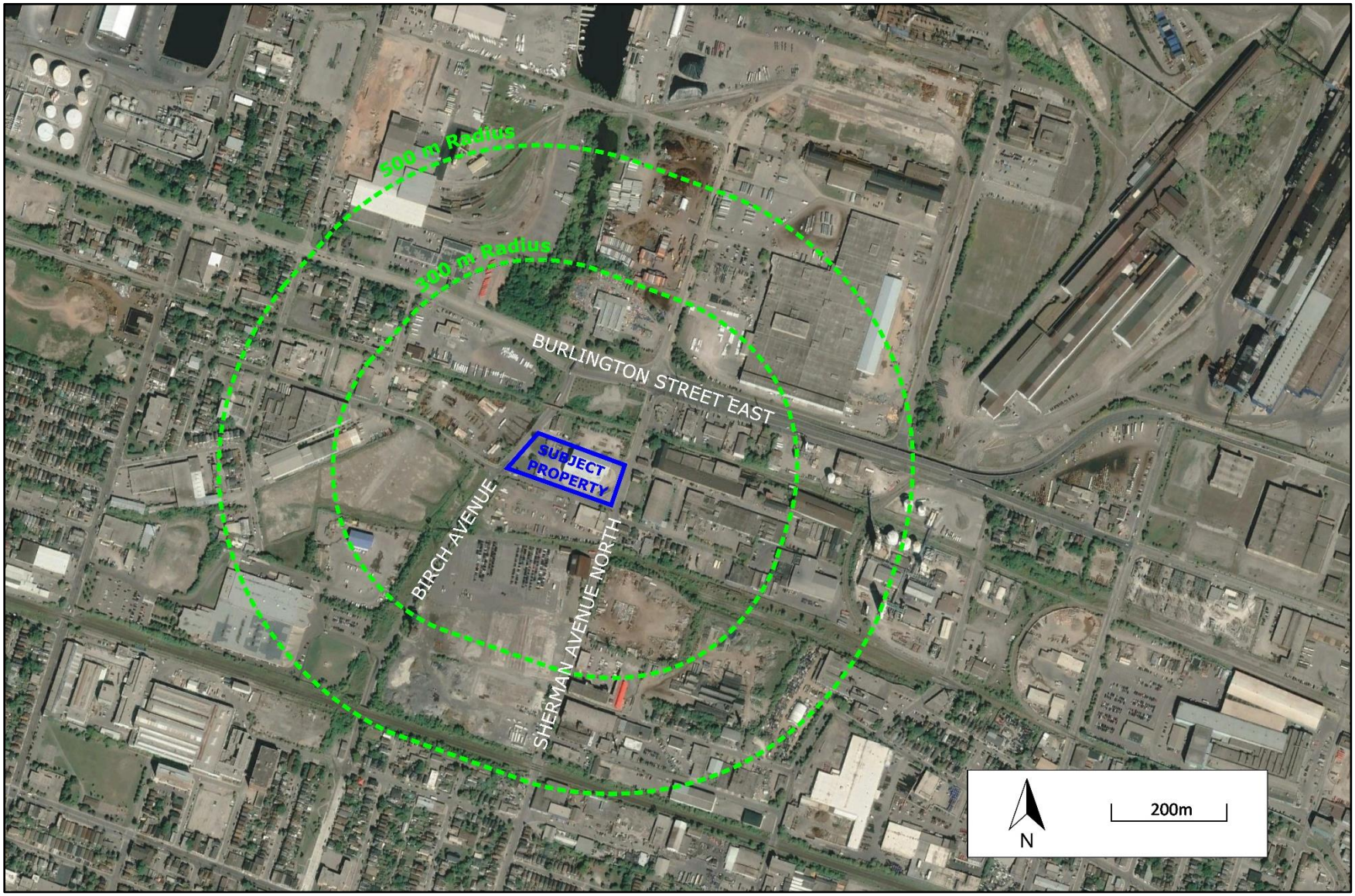

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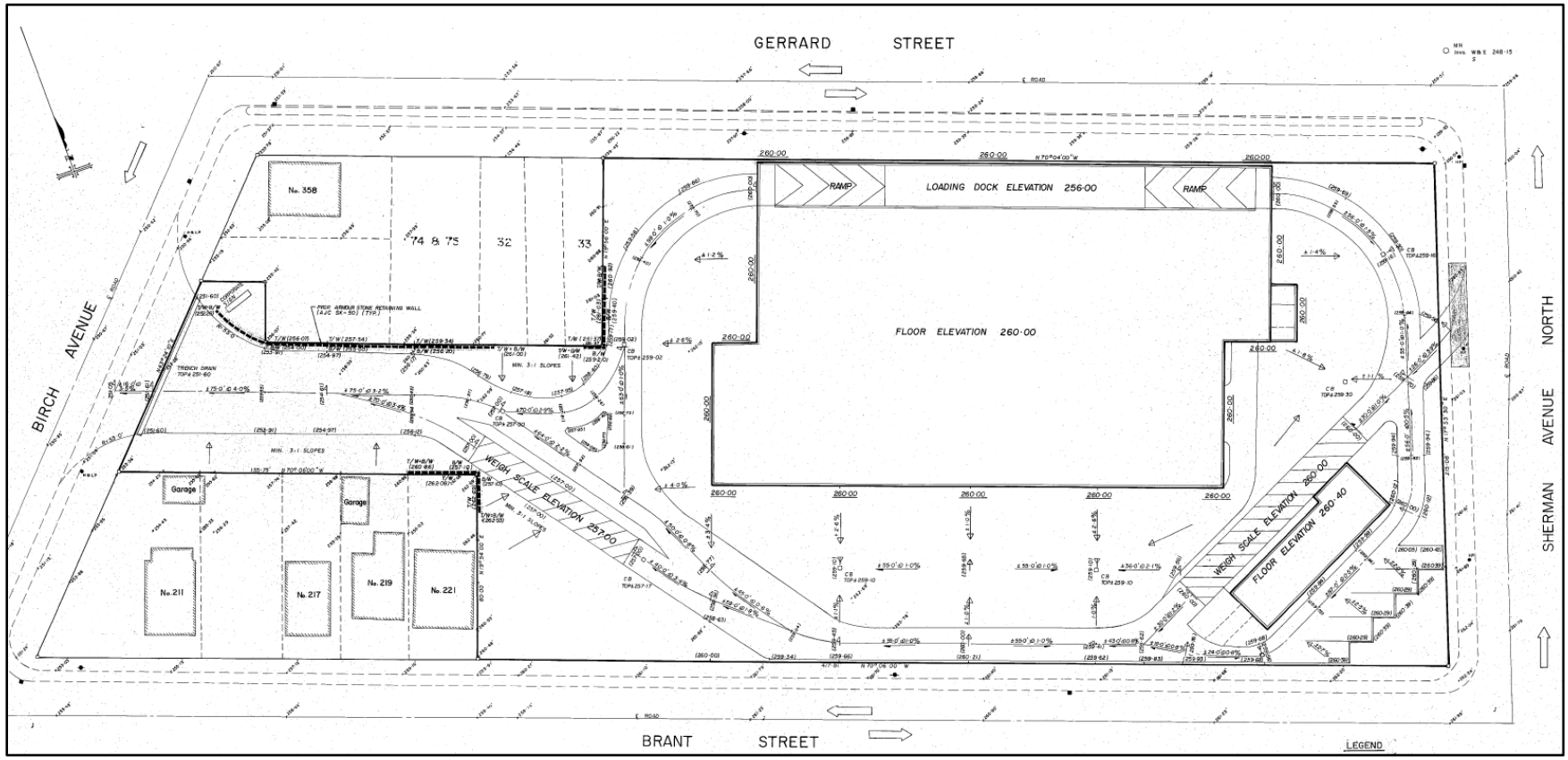
Figure 3-2: Existing Site Plan



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4 SCREENING CRITERIA CHECKLIST

Under Step 3 of the ESP, the Screening Criteria Checklist in Schedule I of the EA Guide is required to be completed to identify the potential for any negative effects on the environment, where 'environment' is the broad definition contained in the EAA to include social, cultural and economic environment in addition to the physical environment such as land, air and water.

The completed Screening Criteria Checklist is provided below as Table 4-1. In accordance with the EA Guide, mitigation measures are not considered for evaluating the environmental criteria. Refer to Section 5 for information on the existing environmental conditions and additional information relating to the responses in the completed Screening Criteria Checklist.

Table 4-1: Screening Criteria Checklist

SCREENING CRITERION (Might the project…)	YES	NO
1. Surface and Ground Water		
1.1 cause negative effects on surface water quality, quantities or flow?	✓	
1.2 cause negative effects on ground water quality, quantity or movement?	✓	
1.3 cause significant sedimentation or soil erosion or shoreline or riverbank erosion on or off site?		✓
1.4 cause negative effects on surface or ground water from accidental spills or releases (e.g., leachate) to the environment?	✓	
2. Land		
2.1 cause negative effects on residential, commercial, institutional or other sensitive land uses within 500 metres from the site boundary?		✓
2.2 not be consistent with the Provincial Policy Statement, provincial land use or resource management plans?		✓
2.3 be inconsistent with municipal land use policies, plans, zoning by-laws (including municipal setbacks)?		✓
2.4 use lands not zoned as industrial, heavy industrial or waste disposal?		✓
2.5 use hazard lands or unstable lands subject to erosion?		✓
2.6 cause negative effects related to the remediation of contaminated land?		✓
3. Air and Noise		
3.1 cause negative effects on air quality due to emissions (for parameters such as temperature, thermal treatment exhaust flue gas volume, nitrogen dioxide, sulphur dioxide, residual oxygen, opacity, hydrogen chloride, suspended particulates, or other contaminants)?	✓	
3.2 cause negative effects from the emission of greenhouse gases (e.g., carbon dioxide, carbon monoxide, methane)?	✓	
3.3 cause negative effects from the emission of dust or odour?	✓	
3.4 cause negative effects from the emission of noise?	✓	
3.5 cause light pollution from trucks or other operational activities at the site?		✓
4. Natural Environment		
4.1 cause negative effects on rare (vulnerable), threatened or endangered species of flora or fauna or their habitat?		✓

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SCREENING CRITERION (Might the project…)	YES	NO
4.2 cause negative effects on protected natural areas such as, ANSIs, ESAs or other significant natural areas?		✓
4.3 cause negative effects on designated wetlands?		✓
4.4 cause negative effects on wildlife habitat, populations, corridors or movement?		✓
4.5 cause negative effects on fish or their habitat, spawning, movement or environmental conditions (e.g., water, temperature, turbidity, etc.)?		✓
4.6 cause negative effects on locally important or valued ecosystems or vegetation?		✓
4.7 increase bird hazards within the area that could impact surrounding land uses (e.g., airports)?		✓
5. Resources		
5.1 result in practices inconsistent with waste studies and/or waste diversion targets (e.g., result in final disposal of materials subject to diversion programs)?		✓
5.2 result in generation of energy that cannot be captured and utilized?		✓
5.3 be located a distance from required infrastructure (such as availability to customers, markets and other factors)?		✓
5.4 cause negative effects on the use of Canada Land Inventory Class 1-3, specialty crop or locally significant agricultural lands?		✓
5.5 cause negative effects on existing agricultural production?		✓
6. Socio-Economic		
6.1 cause negative effects on neighbourhood or community character?	✓	
6.2 result in aesthetics impacts (e.g., visual and litter impacts)?		✓
6.3 cause negative effects on local businesses, institutions or public facilities?		✓
6.4 cause negative effects on recreation, cottaging or tourism?		✓
6.5 cause negative effects related to increases in the demands on community services and infrastructure?		✓
6.6 cause negative effects on the economic base of a municipality or community?		✓
6.7 cause negative effects on local employment and labour supply?		✓
6.8 cause negative effects related to traffic?	✓	
6.9 be located within 8 km of an aerodrome/airport reference point?		✓
6.10 interfere with flight paths due to the construction of facilities with height (i.e., stacks)?		✓
6.11 cause negative effects on public health and safety?	✓	
7. Heritage and Culture		
7.1 cause negative effects on heritage buildings, structures or sites, archeological sites or areas of archeological importance, or cultural heritage landscapes?		✓
7.2 cause negative effects on scenic or aesthetically pleasing landscapes or views?		✓
8. Aboriginal		
8.1 cause negative effects on land, resources, traditional activities or other interests of Aboriginal communities?		✓

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SCREENING CRITERION (Might the project…)	YES	NO
9. Other		
9.1 result in the creation of non-hazardous waste materials requiring disposal?	✓	
9.2 result in the creation of hazardous waste materials requiring disposal?	✓	
9.3 cause any other negative environmental effects not covered by the criteria outlined above?	✓	

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5 LOCAL ENVIRONMENTAL CONDITIONS & POTENTIAL ENVIRONMENTAL EFFECTS

The local environment and conditions and the potential environmental effects have been described below to elaborate on the responses to the screening criteria checklist of this report. For each criterion that has been identified to have potential for negative environmental effects, detailed evaluation of the impacts and net effects are provided.

5.1 Surface and Groundwater

A hydrogeological baseline study was prepared by XGC Consulting Limited (XCG) in the report titled "Preliminary Hydrogeologic Baseline Study (5-5030-01-02)" to assess hydrogeological features associated with the site and to establish surface and groundwater baseline data to evaluate the existing site conditions with the applicable MECP standards. Refer to Appendix A for the hydrogeological baseline study.

Based on initial site investigations conducted as part of the hydrogeological baseline study, the on-site storm waster services consist of catch basins and sewers that collect and direct the storm water to the municipal storm sewer system. The site does not contain any surface water features, including drainage swales, storm water management ponds or rivers. Negative effects to surface water quality, quantities or flow are not anticipated.

Monitoring wells installed as part of the hydrogeological baseline study indicated a shallow groundwater table, approximately 1.5 m to 6.5 m below ground surface. On-site operations, including accidental spills or releases, have the potential to impact the shallow ground water quality or flow.

The assessment of environmental impacts to groundwater from accidental spills or releases is discussed further in section 6.1.

5.2 Land

The Site is currently developed with an administration building (with office and change rooms), a 3229.15 m^2 (34,758.28 ft^2) single storey storage/processing building and truck scale. The existing buildings will be utilized as part of the HTMR project. No new buildings will be required to be constructed at the Site other than outdoor storage silos to be installed northwest of the existing processing building. The effects on surrounding residential, commercial, institutional or other sensitive land uses from the HTMR project on the Site are not anticipated to change from the existing use of the Site.

The Site and the surrounding properties are currently zoned with an industrial zoning designation. The zoning designation of the Site permits the use of the Site for waste processing, a waste transfer facility and a hazardous waste management facility. The HTMR project is consistent with the Provincial Policy Statement and provincial land use, and is a permitted use under the existing municipal land use policies, plans, zoning by-laws. Refer to Section 6.3 for the socio-economic assessment which contains additional information on the land uses and zoning information of the Site and the surrounding properties.

As the Site in its existing state will be used for the HTMR project, impacts are not anticipated from demolition or the remediation of the land.

5.3 Air and Noise

The Site is currently only used to park GFL fleet vehicles and equipment; there is currently no on-site waste-related activities or operations. There are no significant sources of air or noise emissions at the Site.

Operations at the Site as part of the HTMR project will include several exhausts to vent process emissions and general building ventilation, truck traffic and loading and unloading operations. The HTMR project at the Site will discharge air and noise emissions, including potentially dust and greenhouse gases, which have the potential to impact sensitive receptors. The nearest potential sensitive receptor is located immediately east of the Site, fronting the east side of Sherman Avenue.

The assessment of environmental effects of air quality and noise from the HTMR project at the Site are discussed further in Section 6.2.

5.4 Natural Environment

The Site and the surrounding area are currently developed with industrial, commercial and mixed uses. There are no protected natural areas, sensitive natural habitat, designated wetlands or sensitive (i.e., rare, threatened or endangered) species at the Site or in the immediate surrounding areas. There are no locally important or valued ecosystems or vegetation at the Site. There are no wildlife habitat, populations, corridors or movements at or through the Site. There are no waterbodies at the Site, and therefore, no fish or fish habitat. As the HTMR project will utilize the existing building and no new buildings or structures will be constructed, there will be no increase to bird hazards associated with the HTMR project.

Negative effects to the natural environment therefore are not anticipated as a result of the HTMR project.

5.5 Resources

There are currently no companies in Ontario that accept EAFD for the purposes of recovering the valuable metals contained in this waste. The HTMR project will recover valuable resources from the EAFD (i.e., waste), which will minimize the need for virgin materials and generate products for reuse. The recovery of metals from the EAFD will reduce landfilling, eliminate long hauling of hazardous waste over the border and is consistent with waste diversion targets.

The Site is strategically located in proximity to existing large steel mills in Hamilton, which are the producers of the EAFD that will be received by the Site. The processing stages in recovering valuable metals from the EAFD will not result in the generation of energy that cannot be captured or utilized. The HTMR project is located in an industrialized part of Hamilton, away from agricultural lands.

Negative effects to the resources therefore are not anticipated as a result of the HTMR project.

5.6 Socio-Economic

As previously identified, there are currently no firms in Ontario that accept EAFD for the purposes of recovering the valuable metals contained in this waste. The HTMR project will generate immediate local employment and contracting opportunities. The HTMR project is not anticipated to negatively affect the economic base of the community or the city, and is not anticipated to negatively impact the local employment or labour supply.

The Site is currently developed with buildings and contains the necessary infrastructure, such as storm and sanitary sewers and electrical connections, to support the HTMR project. The HTMR project is not anticipated to have a negative impact on the demand to community services and infrastructure.

The Site is not located within 8 km of an aerodrome or airport. As no new major construction is required for the HTMR project, the HTMR project will not interfere with flight paths.

The HTMR project is located immediately adjacent to the industrial and commercial uses of the Hamilton port lands. The Site and the surrounding properties are zoned for industrial use and currently used for significant industrial and commercial operations. The HTMR project is not anticipated to have negative effects on the local businesses. There are no institutions, public facilities, recreation, cottaging or tourism-related activities or uses in the area of the HTMR project.

The nearest sensitive land use is the property located immediately east of the Site which has residential uses. The Site is developed with buildings and structures but is not currently used for any industrial operations. Although the nearest sensitive use is located on an industrially zoned property and is located in proximity to existing industrial and commercial operations, the HTMR project may potentially impact the neighbourhood or community character in terms of air and noise. The truck traffic associated with on-site shipping and receiving activities would be considered to be very minor in terms of an increase from existing Site usage.

The assessment of potential negative impacts associated with the HTMR project at the Site is discussed further in section 6.3.

5.7 Heritage and Culture

The City maintains an active program to survey, inventory, register and designate properties identified as having cultural heritage value or interest. The City has an inventory of over 6,000 properties that have been researched and surveyed to evaluate the properties for cultural heritage value or interest. A property that has been identified as having a cultural heritage value or interest will be listed on the City's Municipal Heritage Register. Properties that have significant architectural, historical and/or contextual value will be designated as a heritage property and will be protected from alterations or changes.

The buildings at the Site were built approximately in the early 1990s. The main industrial building at the Site consists of metal siding panels along the exterior of the building, while the administration building has a concrete block exterior façade. The Site is not listed on the City's Built Heritage Inventory or the Cultural Heritage Landscape Inventory as a property that was surveyed for having cultural heritage value or interest. The Site is also not on the City's Municipal Heritage Register and is not a designated heritage property. Based on the construction date of the on-site buildings, as well as the on-site buildings having no significant architectural, historical and/or contextual value, the HTMR project will not impact the heritage or cultural value of the Site.

The nearest property to the Site that has been designated as a heritage property is located at 270 Sherman Avenue North, approximately 390 m to the south of the Site. Further, there is no property located within a 500 m radius of the Site that is listed on the Municipal Heritage Register.

The nearest property located to the Site that is an inventoried (i.e., surveyed) property, but not designated as a heritage property or listed on the Municipal Heritage Register, is the property located at 388 Sherman

Avenue North, immediately east of the Site. Located northwest of the Site is a railway bridge over Birch Avenue, which has been surveyed and is listed on the Heritage Bridge Inventory, but has not been designated as a heritage bridge and is not listed on the Municipal Heritage Register.

The existing on-site buildings, as well as the exterior landscaping, for the HTMR project will be similar to the existing condition and are not anticipated to have negative impacts on scenic or aesthetically pleasing landscapes or views.

5.8 Indigenous

Indigenous groups potentially impacted by the project include the Six Nations of the Grand River and the Haudenosaunee Confederacy. Communication was established with Six Nations of the Grand River and the Haudenosaunee Confederacy Chiefs Council. The communication included the Project Description, completed Screening Criteria Checklist, and a request to identify their interest in the project.

Public consultation is further addressed in Section 8.

5.9 Other

The HTMR project will yield purified zinc oxide concentrate, which can be used as feedstock in a variety of applications and replaces mining of virgin zinc material. During the recycling process, a non-hazardous slag is created, which can potentially either be shipped to manufacturing facilities to be used as an iron additive or alternatively this material will be disposed in landfill. The HTMR process also creates a by-product hazardous wastewater, which will be fully contained and disposed at a local permitted hazardous waste facility.

The assessment of impacts associated with the creation of hazardous and non-hazardous waste materials at the Site are discussed further in Section 6.4.

6 ASSESSMENT OF ENVIRONMENTAL EFFECTS, IMPACT MANAGEMENT PLAN & NET EFFECTS

A response of 'Yes' was given in Section 4 for any environmental effect on the Screening Criteria Checklist that has, or could potentially have a negative effect. For each of the environmental effects in Screening Criteria Checklist for which a response of 'Yes' was given, assessments, studies and analysis were conducted to determine the potential environmental effects, to develop impact management measures (including mitigations) where necessary and to evaluate the net effects for each environmental effect.

6.1 Surface and Groundwater

The following surface/groundwater environmental effect was given a 'Yes' response in Section 4 on the Screening Criteria Checklist:

- cause negative effects on surface or ground water from accidental spills or releases (e.g., leachate) to the environment?

For this environmental effect which was given a 'Yes' response, this section describes the environmental effects based on the conducted analysis, identification of any impact management and mitigation measures, any commitments to monitoring and the overall net effects to air and noise from the HTMR project.

6.1.1 Assessment of Environmental Effects

Monitoring wells installed as part of the hydrogeological baseline study indicated a shallow groundwater table, approximately 1.5 m to 6.5 m below ground surface. On-site operations, including accidental spills or releases, have the potential to impact the shallow ground water quality or flow.

As the only impact to groundwater is from accidental spills and discharges, all liquid handling and storage areas, as well as receipt, storage and handling operations, will be designed and operated to minimize accidental spills and discharges in accordance with the Site's Design and Operations Report and Spills Contingency and Emergency Response Plan (SCERP).

The only waste shipments that will be received by the Site is EAFD from steel mills (i.e., Ontario Waste Class 143 – residues from steel making). No liquid waste will be received at the site, significantly reducing risk associated with spills to the natural environment. There will not be any processing activities conducted outdoors.

There will be limited liquid waste generated onsite from the HTMR process. An estimated 88% of generated wastewaters will be recycled by reverse osmosis and contained in storage tanks having secondary containment. All liquid storage tanks will be located inside the processing building. The concentrated salt solution waste products will be shipped offsite via tanker truck for disposal. Regularly inspected sealed concrete floors and curbing inside the processing building will prevent potential leaks into the natural environment. Liquid waste transfers will take place indoors under direct supervision of facility staff, in accordance with the Standard Operating Procedure (SOP). Onsite generated waste streams will be registered with the Resource Productivity and Recovery Authority (RPRA).

In accordance with Ontario Regulation 224/07, a SCERP will be assembled before the site is operational, and all staff will be trained on it as part of their onboarding.

6.1.2 Impact Management and Mitigation Measures

All liquid handling and storage areas, as well as receipt, storage and handling operations, will be designed and operated in accordance with the Site's Design and Operations Report and SCERP.

6.1.3 Commitments to Monitoring

The site will develop a long-term groundwater monitoring plan for implementation once the HTMR facility is operational, following the recommendations provided by XCG in the document titled "Assessment of Groundwater Threats and Recommended Long-term Monitoring Plan for the Proposed Electric Arc Furnace Dust Recycling at 237 Brant Street, Hamilton (5-5030-01-02)", provided in Appendix A. The plan recommends biennial groundwater sampling and water level measurements at the identified monitoring wells. Analysis of the samples would be performed by an accredited laboratory and compared to the appropriate groundwater criteria. A general assessment of the condition of the asphalt surfaces and monitoring wells would also be concurrently conducted.

Routine inspection and monitoring of all liquid handling and storages areas, as well as receipt, storage and handling operations, will be conducted by designated Site personnel to minimize the risk of any spills and to ensure that all containment systems are in good working condition.

6.1.4 Net Effects (Surface and Groundwater)

As the liquid handling and storages areas, as well as receipt, storage and handling operations, will be designed and operated Site's Design and Operations Report, negative net effects are not anticipated to the groundwater from the HTMR project.

6.2 Air and Noise

The following air and noise environmental effects were given a 'Yes' response in Section 4 on the Screening Criteria Checklist:

- cause negative effects on air quality due to emissions (for parameters such as temperature, thermal treatment exhaust flue gas volume, nitrogen dioxide, sulphur dioxide, residual oxygen, opacity, hydrogen chloride, suspended particulates, or other contaminants)?
- cause negative effects from the emission of greenhouse gases (e.g., carbon dioxide, carbon monoxide, methane)?
- cause negative effects from the emission of dust or odour?
- cause negative effects from the emission of noise?

For these environmental effects which were given a 'Yes' response, this section describes the air and noise effects based on the conducted studies and analysis, an identification of any impact management and mitigation measures, any commitments to monitoring and the overall net effects to air and noise from the HTMR project.

6.2.1 Potential Effects

6.2.1.1 Local Air Quality

A detailed study of the air emissions from the HTMR project was prepared by O2E Inc. to identify the impacts associated with the operations and if mitigations are required. The detailed study, entitled "Emission Summary and Dispersion Modelling Report (22-024)" (ESDM) identified the sources of emissions, estimated the worst-case emission rate from each source of emissions under the maximum

operating scenario, and conducted air dispersion modelling to evaluate the maximum off-property concentrations. Refer to Appendix B for the ESDM Report.

The significant processes generating emissions and discharging emissions to the environment from the HTMR project will include:

- bulk material receiving into the storage silos, generating emissions consisting of suspended particulate matter, metals and inorganic compounds;
- pellet granules formation in the pelletizing drum, generating emissions consisting of suspended particulate matter, metals and inorganic compounds;
- drying of pellet granules in the pellet dryer, generating emissions consisting of suspended particulate matter, metals and inorganic compounds;
- separation and recovery of metals and other compounds from the from pellets (i.e., processed raw material/waste) in the HTMR reactor, generating emissions consisting of suspended particulate matter, metals and inorganic compounds (including sulphur dioxide and carbon monoxide);
- separation and purification of zinc compounds from other compounds at the zinc purification process; and
- storing of the zinc product.

All emissions generated from the various processing and ancillary stages of the HTMR project will be controlled using the following air pollution control equipment to control the emissions of suspended particulate matter, metals and inorganic compounds (including sulphur dioxide).

- General Dust Collector: the primary purpose of this dust collector will be to control emissions from the pelletizing unit (i.e., pelletizing drum). This dust collector will also control emissions generated during the transfer of slag from the HTMR reactor to the slag storage. Controlled emissions from this dust collector will be discharged to the environment through a stack.
- Central Dust Collector: this dust collector will control emissions from the pellet dryer. Controlled emissions from this dust collector will be discharged to the environment through a stack.
- Zinc Dust Collector: this dust collector will control emissions from the zinc purification stage as well as emissions of other compounds in the process gas from the HTMR reactor. Controlled emissions from this dust collector will be discharged to the environment through a stack.
- Silo-Top Filter Vents: each outdoor silo will consist of a silo-top filter vent to control emissions generated during the transfer of material into the respective silos.
- Sodium Hydroxide Scrubber System: this scrubber will be used to remove sulphur dioxide in the process gas from the HTMR reactor. The scrubbed gas will be discharged to the environment through the Zinc Dust Collector exhaust stack.
- Thermal Oxidizer: the thermal oxidizer will be used to abate carbon monoxide produced in the process gas from the HTMR reactor by oxidizing carbon monoxide into carbon dioxide. Emissions from the Thermal Oxidizer are discharged to the environment through a stack.

The sources discharging emissions to the environment are various process exhaust stacks, storage silo vents and natural gas-fired combustion unit exhaust stacks. The significant contaminants that will be emitted from the Site are particulate matter, metals and inorganic compounds from the process stacks and silo vents, and natural gas combustion by-products from the natural gas combustion units.

The air quality assessment was based on the maximum operating scenario where the HTMR processing occurs 24 hours a day, 7 days a week, 365 days per year. Emission rates for the sources were estimated as follows:

- Dust collectors: using an emission factor (outlet concentration) and maximum concentration of specific metals in the EAFD as determined by assays from monthly sampling over a 6-year period of the raw material used.
- Silo-Top filter vents: maximum receiving rates (i.e., loading rate into silo) and an emission factor.
- Sodium hydroxide scrubber: estimated scrubber inlet loading (i.e., SO_2 concentration) and manufacturer guaranteed scrubbing efficiency.
- Thermal oxidizer: estimated scrubber inlet loading (i.e., CO concentration) and estimated abatement efficiency.
- Natural gas-fired equipment: maximum thermal input capacity.

The emissions from the sources at the Site were modelled using the MECP-approved AERMOD air dispersion model to predict the maximum concentration of each contaminant in the area at and beyond the Site property boundary by placing receptors (i.e., Point of Impingement; POI) in a grid around the Site. The maximum ground level concentrations for each contaminant were compared to the standards, guidelines and screening levels published in the Ontario MECP document "Air Contaminants Benchmarks List: standards, guidelines and screening levels for assessing point of impingement concentrations of air contaminants", version 2, dated April 2018.

Maximum emissions rates, maximum modelled POI concentration and the MECP POI limit are summarized in the Emission Summary Table in the ESDM Report. A copy of the Emission Summary Table is provided below as Table 6-1.

Under the worst-case assessment consisting of the Site operating at the operating scenario at the same time as with the meteorological conditions that would result in the maximum ground level concentrations, the Site has been predicted to meet the MECP POI limit for all contaminants for all applicable averaging periods. The maximum modelled POI concentrations, as shown in Table 6-1, are located at or near the Site's property boundary, and decrease thereafter with distance.

The existing design for the HTMR project includes air pollution control equipment to minimize air emissions, as well as optimized stack design (i.e., vertical stacks with unimpeded flow), in order to reduce the maximum off-property impacts.

The Site is located within the area of Hamilton that is targeted under the MECP's cumulative effects policy with respect to benzene and benzo(a)pyrene emissions. The HTMR project will not emit benzene and benzo(a)pyrene and is therefore not subject to the MECP's cumulative effects policy for these two compounds.

Vehicle emissions (i.e., tailpipe and brake and tire wear) are considered to be negligible. Emissions due to re-suspension of particulates from vehicle traffic are also considered to be a negligible source of emissions as the on-site roads are paved, truck traffic is low, and the Site will adhere to its Best Management Practices Plan (BMPP) for dust.

Table 6-1: Emission Summary Table

Contaminant	CAS	Emission Rate (g/s)	Air Dispersion Model Used	Maximum Concentration (µg/m³)	POI Limit (µg/m³)	Limiting Effect	Averaging Period (Hours)	Limit Source	Percentage of Limit
Cadmium and compounds	7440-43-9	9.53E-05	AERMOD v19191	2.36E-02	0.025	Health	24	Standard	94%
Calcium oxide	1305-78-8	7.96E-03		2.55E+00	10	Corrosion	24	Standard	26%
Carbon	7440-44-0	2.53E-03		9.41E-01	1.75	Health	24	SL-JSL	54%
Chromium compounds (di, tri, metallic)	7440-47-3	1.64E-04		4.10E-02	0.5	Health	24	Standard	8%
Ferric oxide	1309-37-1	2.24E-02		5.52E+00	25	Soiling	24	Standard	22%
Lead and compounds	7439-92-1	1.02E-03		2.63E-01	0.5	Health	24	Standard	53%
	7439-92-1	1.02E-03		9.84E-02	0.2	Health	720	Standard	49%
Manganese and compounds	7439-96-5	1.64E-03		3.59E-01	0.4	Health	24	Standard	90%
Nickel and compounds	7440-02-0	2.71E-05		2.49E-03	0.04	Health	8760	Standard	6%
	7440-02-0	2.71E-05		2.49E-03	0.4	AAV	8760	AAV	0.6%
	7440-02-0	2.71E-05		6.69E-03	2	DAV	24	DAV	0.3%
Nitrogen oxides	10102-44-0	2.40E-01		6.53E+01	200	Health	24	Standard	33%
	10102-44-0	2.40E-01		1.04E+02	400	Health	1	Standard	26%
Potassium	7440-09-7	4.03E-04		9.96E-02	1	Health	24	SL-JSL	10%
Silicon dioxide	7631-86-9	4.07E-03		1.00E+00	5	Health	24	SL-MD	20%
Sodium (as Sodium monoxide)	12401-86-4	6.45E-04		1.59E-01	0.5	Health	24	SL-JSL	32%
Sulfur	7704-34-9	3.88E-04		9.83E-02	2.5	Health	24	SL-JSL	4%
Sulphur dioxide	7446-09-5	6.42E-03		1.48E+00	275	Health & Vegetation	24	Standard	1%
	7446-09-5	6.42E-03		2.64E+00	690	Health & Vegetation	1	Standard	0.4%
	7446-09-5	6.42E-03		5.35E-01	10	Vegetation	8760	Standard - 2023	5%
	7446-09-5	6.42E-03		2.64E+00	100	Health	1	Standard - 2023	3%
Suspended particulate matter	N/A(9)	5.55E-02		1.47E+01	120	Visibility	24	Standard	12%
Zinc	7440-66-6	1.55E-02		3.93E+00	120	Particulate	24	Standard	3%

Notes: Assessment of compliance with Annual Standards and Annual Assessment Values was determined by using the maximum annual POI concentration multiplied by 140% as advised by Technical Bulletin (O.Reg. 419/05) - Methodology for using "Assessment Values" for contaminants with Annual Air Standards.

6.2.1.2 Dust

Potential dust-generating activities from the HTMR project will be limited to the handling of raw, intermediate and final products. Based on the design of the HTMR project, all material handling and processing stages are designed to eliminate fugitive release of dust through enclosed or sealed systems and through the control of emissions with air pollution control equipment. The handling of material and the operation of the equipment will be conducted in accordance with the Site's BMPP for dust.

6.2.1.3 Odour

The raw materials and finished products from the HTMR project are odourless solid compounds. The intermediate processing stages involve thermo-chemical reactions which primarily produces odourless intermediate products and odourless gases, with the exception of sulphur dioxide. Sulphur dioxide can be produced in the HTMR reactor and will be controlled using the sodium hydroxide scrubber system to remove sulphur dioxide from the air stream discharged to the environment. Based on the maximum modelled POI concentrations for sulphur dioxide, as shown in Table 6-1, odour from sulphur dioxide is not expected at any point off the Site. Residual waste produced from the HTMR processing stages, including brine solutions, are not anticipated to be sources of odour.

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6.2.1.4 Greenhouse Gases

The Site contains natural gas-fired equipment that produce greenhouse gases. In addition, the HTMR reactor produces carbon monoxide which will be oxidized by the thermal oxidizer to form carbon dioxide. The projected greenhouse gas generation from the facility was calculated by Cobric to be approximately 11,266 tonnes of CO2 equivalent per year, as shown in Table 6-2.

Although the HTMR project will result in a local increase of greenhouse gas emissions from the Site, the overall release of greenhouse gases, when considering external factors would be a significant CO2 reduction.

The greenhouse gas emissions that would be released from the HTMR project will be significantly lower than the existing alternative where EAFD is transported to the United States for processing and recycling. The proposed project uses less energy to process the same quantity of material. It is presently estimated based on the energy inputs that the existing US alternative technology would produce twice as much of CO2 equivalent. Further offset of greenhouse gases from transportation would also result, as shown in Table 6-2, below.

Table 6-2: Summary of Greenhouse Gas (GHG) Emissions*

Scenario	Projected Net-Annual Greenhouse Gas Emissions (tCO_2 equivalents)
GHG Generated	
Post-project Brant Street Facility	11,266
GHG Reduction/Offset	
Nearest US Alternative Processing Output	(22,500)
Transportation	(709)
Total GHG Reduction from Atmosphere (tonnes)	11,943

* Based on 10,000 tonnes of EAFD processed

There is interest from many stakeholders into potential GHG reductions especially since the steel industry and Canadian government are committed to reduction targets. A detailed greenhouse gas emission study will be prepared to quantify the benefits.

6.2.1.5 Noise

A detailed study of the noise emissions from the HTMR project was prepared by O2E to identify the impacts associated with the operations and if mitigations are required. The detailed study, in the form of an Acoustic Assessment Report (22-024), (AAR), identified the sources of noise, estimated the noise release from each source under the maximum operating scenario, and conducted sound-level propagation modelling to evaluate the maximum off-property impacts at nearby points of reception. Refer to Appendix C for the AAR Report.

Potential sources of noise at the facility with the potential to impact the community include:

- Building ventilation exhaust fans (13 in total)
- Dust collector exhausts (general exhaust, central exhausts, and Zinc exhaust fan)
- Compressor room exhaust fan
- Onsite idling of various trucks
- Onsite movement of various trucks
- Pneumatic truck pump and blower

The resultant noise impacts predicted by O2E at the nearby sensitive points of reception are shown in Table 6-3.

Table 6-3: Acoustic Assessment Summary Table

Notes to Table:

1. "Continuous" noise sources includes sum of steady, quasi-steady impulsive, tonal, cyclical and buzzing noise sources, with appropriate penalties applied, in accordance with documents NPC-104 and NPC-300
   Impulsive noise sources are assessed seperately from continuous noise sources.
2. Daytime occurs from 0700-1900h. Evening occurs from 1900h to 2300h. Night-time occurs from 2300-0700h
3. Worst-case cumulative sound level from all applicable sources operating.
4. Has an acoustic audit (as defined in Publication NPC-233) been conducted with source in place and operating?
5. Applicable worst-case sound level limit, as per NPC-300.
6. Performance limit (aka guideline limit) based on following:
   C = Calculated based on road traffic volumes in compliance with NPC-206 requirements.
   M = Measured based on monitoring for a minimum 48 hour period, in accordance with NPC-233 requirements.
   D = Default guideline minima per NPC-300, as applicable (e.g., 50 dBA for daytime)

Assessment of Impacts for "Continuous" Noise Sources [1]

Point of Reception ID	Point of Reception Description	Class of Area	Time Period [2]	Total Sound Level at PoR [3] (dBA)	Verified by Acoustic Audit [4] (Yes/No)	Performance Limit [5] (dBA)	Peformance Limit Source [6] (C / M/ D)	Compliance with Performance Limit (Yes/No)
POR1	House to Southeast at Sherman & Imperial	1	Daytime	52	No	55	M	Yes
			Evening	50	No	51		Yes
			Night-time	45	No	45		Yes
POR2	House to Southeast on Imperial St.	1	Daytime	50	No	50	D	Yes
			Evening	47	No	50		Yes
			Night-time	41	No	45		Yes
POR3	House to West on McKinstry St	1	Daytime	45	No	50	D	Yes
			Evening	40	No	50		Yes
			Night-time	34	No	45		Yes

The location of the sensitive points of reception, and the predicted noise impact contour lines for the worst-case night time operation is provided as Figure 6-1. Figure 6-2 presents the noise contours occurring for the day time periods.

The noise contours help to visualize the propagation of the noise impacts and demonstrate that the facility will be below the respective MECP criteria during maximum operation of the facility.

Figure 6-1: Maximum Noise Impact Contours for the Night Time Periods (11 PM to 7 AM)

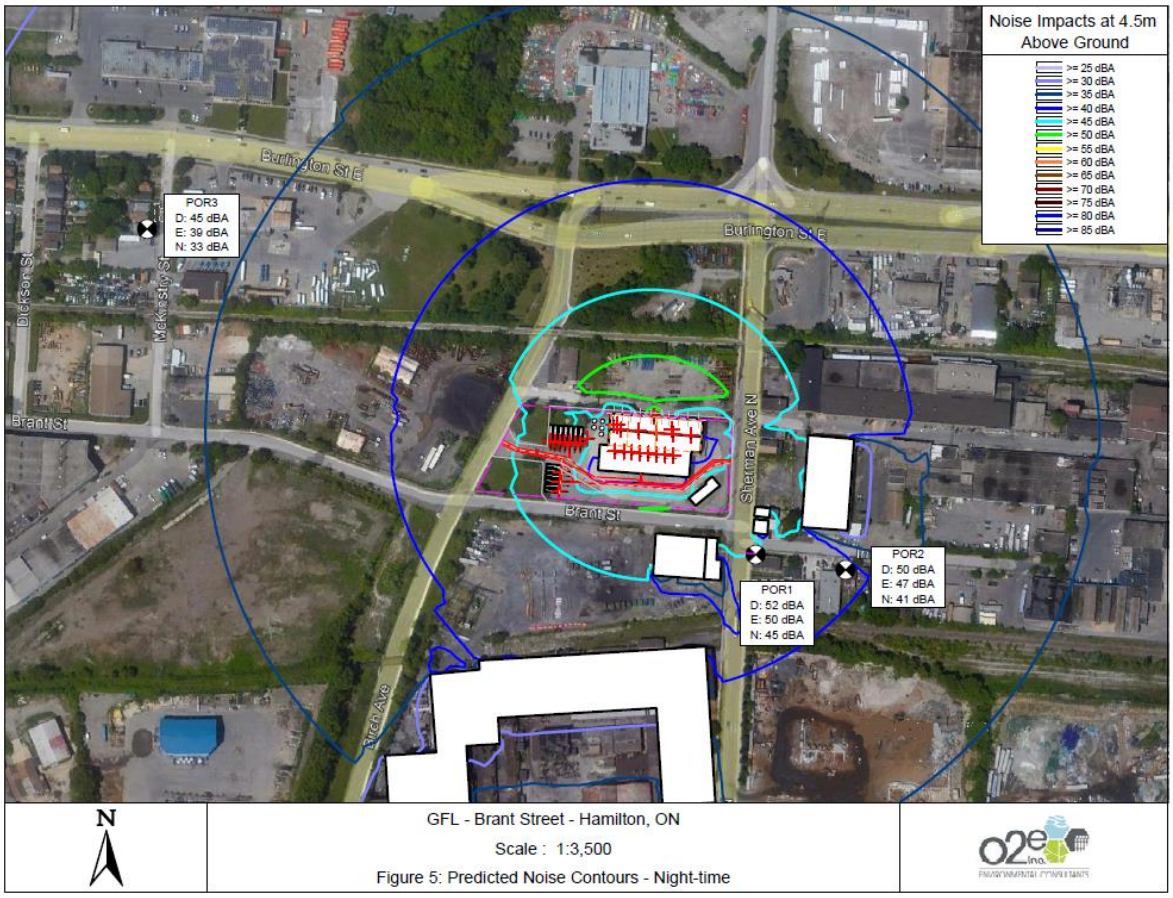

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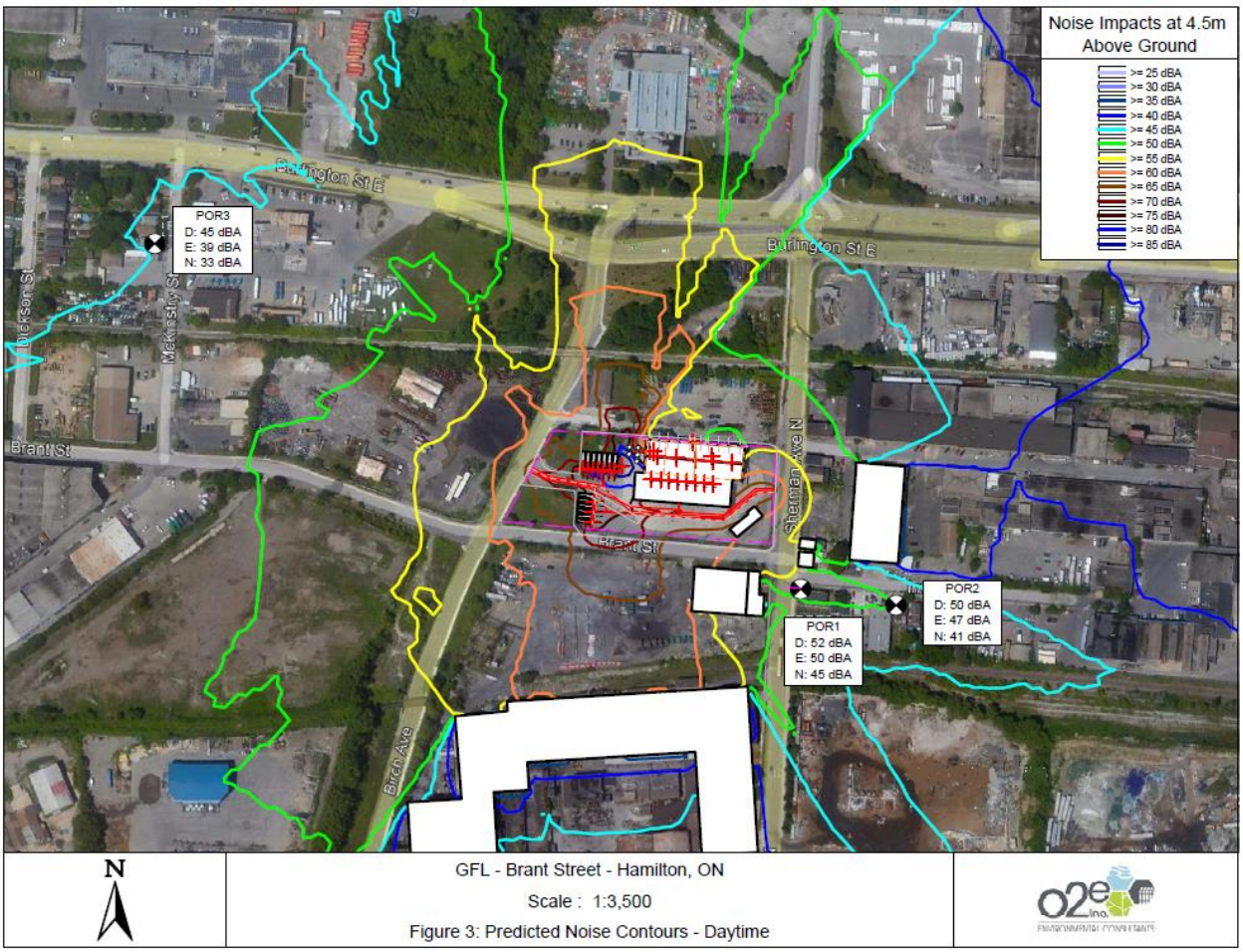
Figure 6-2: Maximum Noise Impact Contours for the Day Time Periods (7 AM to 7 PM)



6.2.2 Impact Management and Mitigation Measures

6.2.2.1 Local Air Quality

The assessment of air quality impacts in Section 6.2.2.1, as well as the referenced air quality study (i.e., ESDM Report), includes air pollution control equipment. The air pollution control equipment will be operated as part of the HTMR project. No further mitigations or impact management measures are required.

6.2.2.2 Dust

The operation of the air pollution equipment identified in section 6.2.3.1 to capture and control air emissions will also ensure that fugitive emissions of dust are minimized. Further, the BMPP for dust will ensure that any activities with a potential to cause the generation of dust are operated in a manner that minimizes the generation and/or release of dust. No further mitigations or impact management measures are required.

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6.2.2.3 Odour

Odour impacts are not anticipated and odour impact management measures or mitigation are not required.

6.2.2.4 Noise

Operational activities will be limited to the periods identified in the AAR. No additional noise impact measures or mitigations will be required in order to meet the applicable noise limits.

6.2.3 Monitoring

6.2.3.1 Local Air Quality

Ongoing regular inspection and monitoring of all air pollution control equipment will be conducted by trained Site personnel, and will include the development and implementation of an Operation and Maintenance Plan which will identify the frequency of inspections and scheduled preventative maintenance and procedures to prevent upset conditions.

Monitoring conditions and requirements for significant processes and air pollution control equipment will be identified in the Environmental Compliance Approval (ECA) that will be issued by the MECP, which will be implemented by the Site. Additional information on the ECA is provided in Section 7, which describes the additional permits and approvals that will be required for the Site.

Direct ongoing monitoring for air quality emissions or impacts have not been determined to be required as the maximum modelled concentrations at the POIs will meet all applicable MECP air quality limits under the Site's worst-case operating scenario.

6.2.3.2 Dust

Trained Site personnel will monitor and inspect all potential dust-generating activities in accordance with the Site's BMPP to minimize the conditions that can generate fugitive dust. Similar to section 6.2.3.1 for monitoring commitments for air quality, ongoing regular inspection and monitoring of all air pollution control equipment will be conducted by trained Site personnel and will ensure that the air pollution control equipment is effectively capturing and controlling the emissions.

Monitoring conditions and requirements for significant processes and air pollution control equipment will be identified in the ECA that will be issued by the MECP, which will be implemented by the Site. Additional information on the ECA is provided in Section 7, which describes the additional permits and approvals that will be required for the Site.

Direct ongoing monitoring for dust has not been determined to be required as impacts from dust are not anticipated.

6.2.3.3 Odour

Odour monitoring has not been determined to be required as impacts from odour are not anticipated.

6.2.3.4 Noise

Ongoing regular inspection and monitoring of all equipment will be conducted by trained Site personnel, and will include the development and implementation of an Operation and Maintenance Plan which will

identify the frequency of inspections and scheduled preventative maintenance and procedures to prevent upset conditions.

Monitoring conditions and requirements may also be identified in the ECA that will be issued by the MECP, which will be conducted and/or implemented by the Site. Additional information on the ECA is provided in Section 7, which describes the additional permits and approvals that will be required for the Site.

Ongoing noise monitoring has not been determined to be required as the maximum modelled noise impacts at sensitive receptors will meet all applicable MECP noise limits under the Site's worst-case operating scenario. However, one potential condition that may be included in the ECA by the MECP is for the Site to conduct an Acoustic Audit in order to measure noise impacts at the sensitive receptors to determine the actual noise impacts from the Site at the receptors.

6.2.4 Net Effects

6.2.4.1 Local Air Quality

The air quality assessment conducted under the worst-case operating scenario for the HTMR project predicted that the air emissions will meet all applicable MECP air quality limits. The HTMR project will not have a significant net negative effect on the local air quality. Negative net effects to the air quality are not anticipated.

6.2.4.2 Dust

The operation of the Site with the air pollution control equipment and under the BMPP will ensure that minimal dust is generated from the Site. Negative net effects from dust are not anticipated.

6.2.4.3 Odour

Odour impacts from the HTMR project are not anticipated. Negative net effects from odour are not anticipated.

6.2.4.4 Noise

The noise assessment conducted under the worst-case operating scenario for the HTMR project predicted that the noise emissions will meet all applicable MECP noise limits at the surrounding sensitive receptors. The HTMR project will not have a net negative effect on the noise impact.

6.3 Socio-Economic

The following socio-economic environmental effects were given a 'Yes' response in Section 4 on the Screening Criteria Checklist:

- cause negative effects on neighbourhood or community character?
- cause negative effects related to traffic?
- cause negative effects on public health and safety?

For these environmental effects which were given a 'Yes' response, this section describes the socio-economic effects based on the report entitled "Socio-Economic Study (22-041)" prepared by Northern Applied Sciences Inc. The report is presented in Appendix D.

6.3.1 Potential Effects

6.3.1.1 Neighbourhood or Community Character

The HTMR project will utilize the existing building at the Site. Outdoor storage silos will be installed on the northwest corner of the existing production building. No other building expansions or significant changes to the building exterior are required. All production and processing activities associated with the HTMR Project will be installed inside the existing building. Outdoor activities will be limited to truck movements within the Site. There will be no outdoor storage or processing activities that will occur at the Site. Exhausts and vents will be installed on the existing buildings to discharge heat and emissions, but will have minimal visual impacts and will not change the existing character of the on-site buildings. The surrounding area consists largely of general and heavy industrial uses, some commercial uses and some interspersed residential uses. The existing industrial uses in the surrounding area include operations with significant outdoor storage and processing area, such as a demolition site, a salvage yard, scrap metal yard, waste disposal and handling sites, recycling centers and a container terminal.

Table 6-4: Significant Industrial and Commercial Operations Surrounding Site

ID Number on Figure 6-3	Site/Facility Name	Type of Facility/Operations	Significant Outdoor Storage or Operations?
1	Hamilton Container Terminal	Shipping container terminal	Yes
2	Fibre Laminations Ltd.	Manufacturer of fibre-reinforced plastic products	Yes
3	Fluke Transportation Group	Trucking, logistics and warehousing	Yes
4	Air Liquide Canada Inc.	Industrial gas supplier	Yes
5	Hotz Ferrous Inc.	Scrap metal dealer, salvage yard	Yes
6	City of Hamilton Transit Maintenance and Storage Facility (Proposed)	Transit (bus) maintenance and storage building (Proposed)	No
7	GFL Environmental Services Inc.	Disposal bin and fleet vehicle storage	Yes
8	Budget Demolition	Demolition contractor	Yes
9	American Iron & Metal Company	Salvage yard	
10	American Iron & Metal Company	Currently vacant; proposed relocation of American Iron and Metal business currently located at 19 & 75 Steel City Court, per Development Application file number DA-19-096	None currently
11	Air Liquide Canada Inc.	Industrial gas production plant	No
12	AVL Manufacturing	Manufacturing plant of power generation and related equipment	Yes
13	GFL Environmental Services Inc.	Waste processing facility	Yes
14	Budget Iron & Metal	Scrap metal dealer, salvage yard	Yes
15	Canadian Liquids Processors	Recycling facility	Yes

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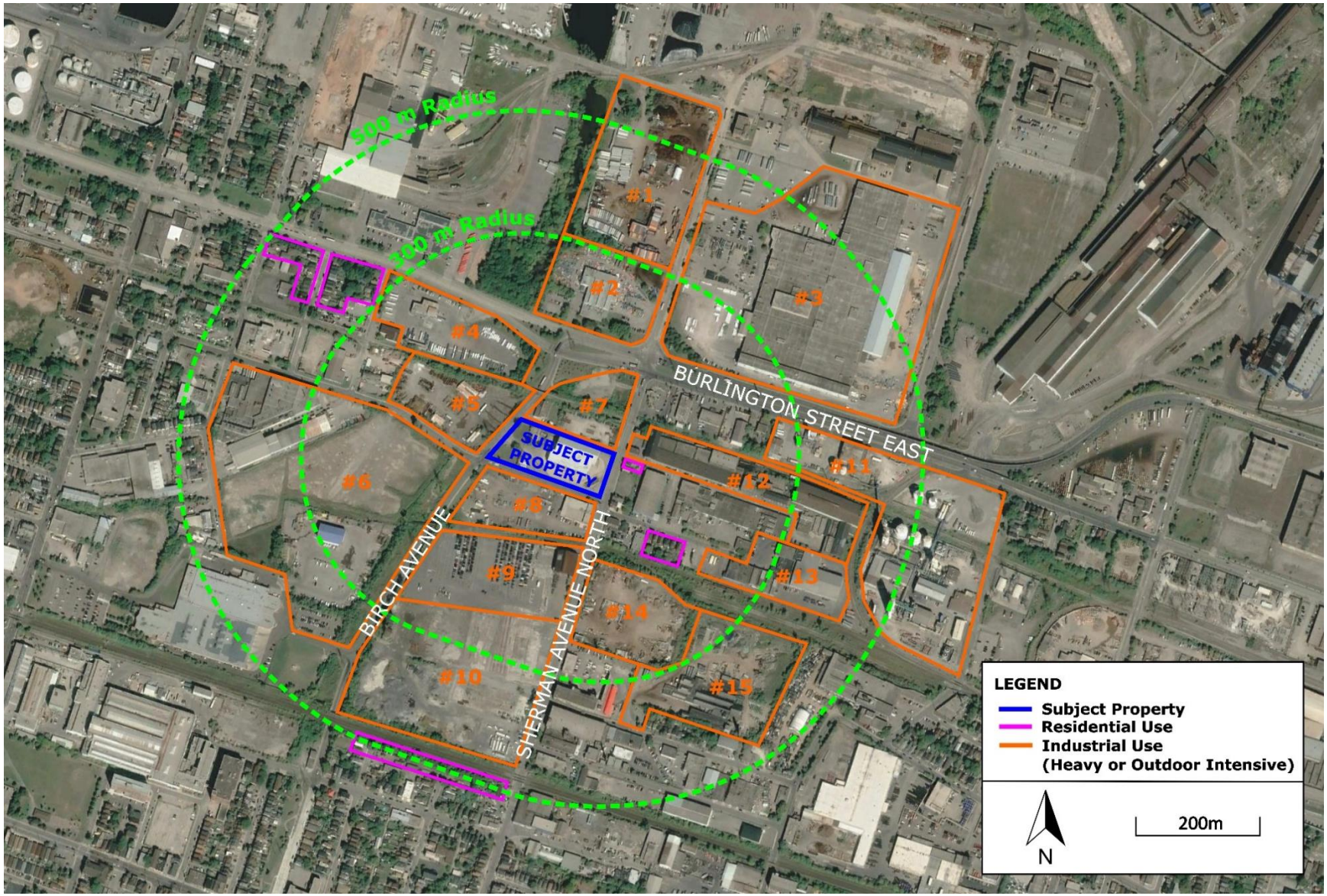
Figure 6-3: Significant Industrial and Commercial Operations Surrounding Site



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The surrounding area is a well-established industrial area and consists of some industrial, and historic, buildings dating to the early 1900s. The adjacent buildings located east of the Site, fronting the west side of Sherman Avenue, consist of brick-clad facades in conditions varying from well-maintained to poorly maintained. Some of the historic industrial buildings have been repurposed for various commercial and mixed uses, including the building located at 270 Sherman Avenue, which has been designated "as being a property of cultural heritage value."

There are some existing residential uses within the 500 m radius from the Site, including a two-storey building at 290 Sherman Avenue North, located immediately east of the Site that has potential residential uses. Other residential dwellings are located approximately 100 m southeast of the Site along the south side of Imperial Street, approximately 490 m south of the Site and approximately 400 m northwest of the Site.

Since the existing industrial buildings at the Site will be utilized for the HTMR Project, and no significant changes will be required to the building exterior and outdoor space, the impact of the HTMR Project with respect to the neighbourhood and community character is expected to be minimal to insignificant.

6.3.1.2 Traffic

Similar to the existing condition, the Site will be bound by one-way streets. All traffic accessing the Site will travel southbound on Birch Avenue and make a right-turn onto the Site, while all traffic exiting the Site will make a right-turn to travel northbound on Sherman Avenue North. There is a City of Hamilton plan to change Birch Ave. and Sherman Ave. from 1-way to 2-way between Burlington and Wilson streets, but it is not expected to have a significant impact as it relates to the proposed operation.

The number of trucks accessing and exiting the Site is forecasted to be only 2 trucks per day, up to a maximum of 4 trucks per day. The impacts of trucks entering and exiting the Site will have minimal to insignificant impacts on the traffic flow. Further, the truck traffic (i.e., forecasted volume of up to 4 trucks per day) accessing or exiting the Site will have minimal to insignificant effects on the road traffic volume.

6.3.1.3 Public Health and Safety

Similar to the existing condition, the Site will be fully enclosed with a 1.83m high security fence with barbed-wire and lockable gates. The only outdoor use of the Site is for the parking and storage of fleet vehicles and equipment. There will be no public traffic and pedestrian access at the Site.

The processing activities and equipment to be installed at the Site as part of the HTMR Project will be contained within the existing buildings. All truck traffic entering, exiting and within the Site will be limited to a maximum and is not expected to have any impacts related to public safety.

6.3.2 Impact Management and Mitigation Measures

6.3.2.1 Neighbourhood or Community Character

As impacts to neighbourhood or community character are not anticipated from the HTMR project, impact management and mitigation measures are not necessary.

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6.3.2.2 Traffic

As the number of vehicles accessing and exiting the Site is expected to be insignificant relative to the existing traffic volume on the adjacent streets, impact management and mitigation measures are not considered necessary.

6.3.2.3 Public Health and Safety

As the Site is already equipped with a fully enclosed security fence with barbed-wire and lockable gates, with no access to the general public, further impact management and mitigation measures are not considered necessary.

6.3.3 Monitoring

6.3.3.1 Neighbourhood or Community Character

Monitoring has not been determined to be required as impacts to the neighbourhood or community character are not anticipated.

6.3.3.2 Traffic

Monitoring has not been determined to be required as impacts to traffic are not anticipated.

6.3.3.3 Public Health and Safety

Monitoring has not been determined to be required as impacts to the public health and safety are not anticipated.

6.3.4 Net Effects

6.3.4.1 Neighbourhood or Community Character

Impacts to the neighbourhood or community character are not anticipated. Therefore, negative net effects from neighbourhood or community character are not anticipated.

6.3.4.2 Traffic

Impacts to the traffic are not anticipated. Therefore, negative net effects from traffic are not anticipated.

6.3.4.3 Public Health and Safety

Impacts to the public health and safety are not anticipated. Therefore, negative net effects from public health and safety are not anticipated.

6.4 Other

The following additional environmental effects were given a 'Yes' response in Section 4 on the Screening Criteria Checklist:

- result in the creation of non-hazardous waste materials requiring disposal?
- result in the creation of hazardous waste materials requiring disposal?
- cause any other negative environmental effects not covered by the criteria outlined above?

For these environmental effects relating to the creation of hazardous and non-hazardous waste requiring disposal for which were given a 'Yes' response, this section describes the environmental effects based on a review of supporting documents, an identification of any impact management and mitigation measures,

any commitments to monitoring and the overall net effects to the generated waste from the HTMR project.

6.4.1 Potential Effects

The recycling of EAFD to recover valuable metals will produce residual wastes that require off-site disposal. The generated wastes that require off-site disposal includes non-hazardous solid waste from the HTMR reactor and non-hazardous liquid concentrate from the zinc purification process.

Non-volatile ferrous materials and non-volatile metals that do not volatilize during the HTMR process are known as 'slag' or iron/calcium pellets. The slag is high in iron oxide, calcium oxide and contains other non-volatile compounds as well as low levels of residual zinc. The slag is cooled in the cooling section of the rotary tube and exits through the discharge end into a hopper. The slag from the hopper is discharged and stored in the slag storage area. The slag is then shipped off-site for further reuse in still mills or in cement manufacturing as source of iron and calcium. The slag generated at the Site is stored inside the processing building in storage containers or trailers and shipped off-site.

The raw zinc concentrate in the zinc purification process must be washed to remove the soluble impurities. The product collected includes metallic zinc, metal oxides (including zinc oxide) and alkali-metal halides. Due to the insolubility in water, zinc and zinc oxide particles will remain as solids in the tank, while the soluble compounds, such as salts, remain in tank bath. Zinc oxide slurry from the tank is removed by filtration after washing the filter cake. Liquid from the filtration containing soluble salts is fed into reverse osmosis system to produce clean water. The clean water is returned to the zinc purification process, while the liquid concentrate is stored in tanks inside the building and transferred off-site for disposal.

6.4.2 Impact Management and Mitigation Measures

The slag and liquid concentrate are stored in dedicated areas inside the building and transferred offsite by licensed haulers in accordance with the Site's Design and Operations Report.

6.4.3 Monitoring

Monitoring has not been determined to be required as impacts to the environment are not anticipated.

6.4.4 Net Effects

Impacts to the environment from the generated waste requiring offsite disposal are not anticipated. Therefore, negative net effects from the generated waste are not anticipated.

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7 ENVIRONMENTAL EFFECTS ADDRESSED THROUGH OTHER APPROVALS

7.1 ECA for Air and Noise Emissions

In the province of Ontario, air quality and noise from industrial facilities are regulated under the Environmental Protection Act (EPA) and the air pollution regulation, O. Reg. 419/05. The overriding philosophy of the EPA and O. Reg. 419/05 is to ensure that emissions from a facility do not cause an adverse effect, or cause harm to people, the environment, or the loss of enjoyment of normal use of property.

Section 9 of the EPA stipulates that companies must obtain an ECA or complete registration on the Environmental Activity and Sector Registry (EASR) prior to the start of operations at the facility, introduction of a new process, or modification to an existing process that may discharge a contaminant into the natural environment.

The HTMR project at the Site will be required to obtain an ECA from the MECP prior to installation and operation of the equipment. In order to obtain an ECA, an application is required to be submitted to the MECP that includes a detailed assessment of impacts from the equipment.

7.1.1 Air Quality and Odour

For specific substances of concern, maximum concentrations at ground level are governed by O. Reg. 419/05 and identified in the Air Contaminant Benchmarks (ACB) List. For these compounds, companies are required to demonstrate that the emitted concentrations will not exceed the specified regulated levels. In Ontario, air pollution standards are based on the concentration of contaminants off property, referred to as the POI. It should be noted that that the POI is defined as any point at or beyond the property boundary at which the highest concentration of a contaminant is expected as a result of the aggregate emissions of that contaminant originating from the facility. The air quality criteria are based on environmental and health effects, with the health-based air quality standards determined for the most-sensitive demographic of the general population.

Air quality impacts are assessed in the ESDM report, as required by O. Reg. 419/05. The ESDM report provides detailed information on the equipment and process, calculations of emissions generated by the equipment and processes, dispersion modelling to determine the maximum impact of the contaminants at the POIs (i.e., any point at or beyond the property boundary) and a comparison of the modelling results to the air quality criteria.

7.1.2 Noise

MECP defines “sound” in the EPA as a contaminant, and requires ECA applicants, at a minimum, to assess and document the impacts of noise emissions from their facility on sensitive points of reception if they are located within the minimum separation distance of the facility.

Noise limits are presented in MECP noise publication NPC-300.

Noise impacts from a facility are assessed at the surrounding noise sensitive land uses in the AAR. Impacts are assessed at Points of Reception (POR) on noise sensitive land uses which can be:

- a property of a person that accommodates a dwelling and includes a legal nonconforming residential use; or

- a property of a person that accommodates a building used for a noise sensitive commercial purpose; or
- a property of a person that accommodates a building used for a noise sensitive institutional purpose

The AAR provides a detailed identification of all potential sources of noise at the site, sound levels for the significant noise sources, modelling to determine the cumulative impacts at the receptors from all sources of noise at the facility and a comparison to the applicable sound level criteria.

7.2 ECA for Waste Management

Section 27 of the EPA stipulates that companies must obtain an ECA to use, operate, establish, alter, enlarge or extend a waste management system or a waste disposal site.

The Site was granted ECA Number A100143 on May 3, 2022 by the MECP for a waste transfer and processing site for temporary storage of waste paint and coatings. The approved activities of receiving and processing waste paint and coatings will not occur at the Site. An amendment to the existing ECA will be submitted to the MECP to revoke the existing approved operations and to seek approval for the waste transfer and receiving of EAFD.

8 CONSULTATION

8.1 Summary of Public and Government Agency Consultation

GFL created a project webpage in August 2021 to help ensure the public and other interested parties were informed of the proposed facility and associated project developments. The webpage URL is provided below:

GFL Brant Street community page:
https://gflenv.com/brant-street/brant-street-community/

The first document posted on the webpage was the Notice of Commencement, which was also circulated in various Hamilton community newspapers (i.e., Hamilton Spectator, Ancaster News, Dundas Star, Stoney Creek News, Mountain News and Brampton Guardian) for two consecutive weeks.

Notification was directly provided to members of the MECP, Six Nations of the Grand River (email sent to all Councillors listed at About - Six Nations of the Grand River), and the Haudenosaunee Confederacy Chiefs Council (submission through the Home - Haudenosaunee Confederacy) including the Haudenosaunee Development Institute. Furthermore, a separate email was sent to the Councillors of the Six Nations of the Grand River and Haudenosaunee Confederacy Chiefs Council that included the Project Description, completed Screening Criteria Checklist, and a request for them to identify their interest in the project.

In September 2021, GFL posted a Project Description on its project webpage which outlined the current need for an EAFD recycling and zinc manufacturing facility in southern Ontario and the proposed technology. GFL also completed the Screening Criteria Checklist, which identified potential effects in Surface and Groundwater, Air and Noise, Socio-Economic and Other that would be further assessed. In October 2021, GFL posted the Potential Environmental Effects, Concerns and Issues to be Addressed document on its project webpage.

In January 2022, GFL posted a Notice of Consultation on its project webpage and in the same newspapers mentioned above for two consecutive weeks. In February 2022, GFL held the first Public Consultation. Sixteen participants from outside the GFL organization attended, including representation from the MECP, City of Hamilton, Environment Hamilton, and the local steel industry. The consultation was held over Microsoft Teams, including a 30-minute presentation and 30-minute question-and-answer period.

On December 9, 2022, GFL hosted its second public consultation. The second Notice of Consultation was circulated in the same newspapers for two consecutive weeks and was posted on the project webpage. This consultation took place over Microsoft Teams and included a review of steps one through eight of the ESP and a question-and-answer period. 10 participants from outside the GFL organization attended, including members of the public alongside representation from the MECP, City of Hamilton, Environment Hamilton, and the local steel industry. The consultation was held over Microsoft Teams, including a 30-minute presentation and 30-minute question-and-answer period. All public questions were answered by GFL and its consulting team.

8.2 Notice of Commencement and Completion

A Notice of Commencement and Notice of Completion describing the necessary items of the ESP was published and are available for download (with all other project related documents) on the GFL Brant Street Community Page at https://gflenv.com/brant-street/brant-street-community/.

The Completion Notice was further distributed to the MECP, interested persons, Aboriginal communities as required by the ESP and further identified the commencement of the 60-day review period.

The Notice of Completion is also scheduled to be published twice in the same local newspapers with circulation in the vicinity of the project.

8.3 Government Grants and Project Support

On December 1, 2021, it was announced that the project technology developed by Cobric received an investment of $3.8 million from Sustainable Development Technology Canada (SDTC) to advance the technology and install a demonstration site in Ontario. GFL has secured partnerships with key steel mill industry stakeholders to ensure an ongoing waste stream of zinc-based material. GFL has received feedback from steel mill customers that are planning new EAF plants, and others with legacy EAFD that are looking for recycling opportunities.

Overall, the project has generated a great deal of interest about a local Canadian solution.

9 PUBLIC LIAISON AND POTENTIAL COMMITTEE

Main Public Contact for this project is Rich Lagani, EH&S Manager, Regulatory Compliance for GFL Environmental Services Inc.

Rich Lagani, EH&S Manager, Regulatory Compliance
GFL Environmental Services Inc.
(416) 245-2584
rlagani@gflenv.com

GFL is open to the establishment of a *public liaison committee*, should the public be interested. GFL is committed to reaching out to nearby residential neighbours prior to construction and operation of the facility to gauge interest.

The public is also encouraged to visit the GFL Brant Street Community Page at:
https://gflenv.com/brant-street/brant-street-community/

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10 OVERALL ENVIRONMENTAL ADVANTAGES & DISADVANTAGES OF THE PROJECT

The potential environmental effects that were identified in the Screening Criteria Checklist include impacts to groundwater from accidental spills, impacts to air and noise and impacts to socio-economic conditions. Based on the net effects evaluated by the ESP, there are no significant net negative environmental effects, as summarized below:

- A long-term groundwater monitoring plan will be implemented once the facility is operational, and the facility will also be implementing a Spills Contingency and Emergency Response Plan (SCERP) to prevent any impacts from accidental spills. Negative effects are not anticipated to the groundwater from the HTMR project.
- The air quality assessment conducted under the worst-case operating scenario for the HTMR project predicted that all off-property contaminant concentrations will meet the applicable MECP criteria. The HTMR project will not have a negative effect on the local air quality.
- The operation of the Site with the air pollution control equipment and under the BMPP will ensure that minimal dust is generated from the Site. Negative effects from dust are not anticipated.
- Odour impacts from the HTMR project are not anticipated. Negative effects from odour are not anticipated.
- There will be an overall net-reduction in the total release of greenhouse gases by providing local recycling opportunities to the steel industry (avoiding cross-border haulage), reducing primary mining demand, and applying technology that uses less energy than competing alternatives.
- The noise assessment conducted under the worst-case operating scenario for the HTMR project predicted that the operation will meet all applicable MECP noise limits at the surrounding sensitive receptors. The HTMR project will not have a negative effect on noise impact.
- Negative impacts to the neighbourhood or community character are not anticipated.
- Negative impacts to the local traffic are not anticipated.
- Negative impacts to the public health and safety are not anticipated.
- Negative impacts to the environment from the generated waste requiring offsite disposal are not anticipated.

The HTMR project will provide several significant advantages (net positive effects). The HTMR project addresses a current need in southern Ontario, by providing steel mills with a new local Canadian alternative to recycle one of largest waste streams for steel mills. The HTMR project is an alternative to the existing options for EAFD, which are to either dispose the EAFD in landfills or engage in long-distance transport of the EAFD to the U.S. for recycling. Eliminating EAFD from landfills allows for the curtailing of contaminated leachate and extending the lifespans of landfills, while eliminating long-distance transport of EAFD provides a net-decrease in the greenhouse gas emissions of the project.

No significant negative effects to the local environment were identified, while the opportunities provided by the HTMR project were identified as significant advantages. Therefore, the overall net effect of this project is considered to be positive impact at both the local and regional level.

11 NEXT-STEPS

Based on the ESP guidance, the following next-steps are required for this report:

The proponent shall make the Environmental Screening Report available for review for a period of at least 60 calendar days in a convenient location(s) in the project area, such as a public library or community centre or municipal office. The viewing locations selected should provide opportunities for the document to be viewed both during and after normal office hours. The proponent shall make technical reports (unless deemed by the proponent to be proprietary information) and other supporting information, including copies of all key correspondence related to the Environmental Screening Process, available with the Environmental Screening Report.

Following the 60-day review period, GFL Environmental Services Inc. intends to proceed with the proposed HTMR project, subject to the required MECP review and approvals.