

City of Peterborough

Proposed Peterborough Organics Facility

February 2021

1.0 Project Overview

The City of Peterborough (City) is implementing a City-wide organic waste collection and composting program: GROW (Green Resource Organics Works) Peterborough, with support from the federal government's Low Carbon Economy Fund. The program is expected to launch in fall 2023 after consultation; obtaining the necessary approvals; designing and building the centralized composting facility; acquiring the collection equipment including containers, trucks; and, rolling out City-wide collection.

The federal government is contributing \$ 6.1 million toward the \$ 15.3-million project over a 4-year period, ending March 31, 2024.

GROW Peterborough will help the City achieve the goals of the Waste Free Ontario Act, which aims to divert 100% of organic material from landfills with an expected ban on landfilling organics by about 2025.

GROW Peterborough includes the proposed development of a facility to accept and process leaf & yard waste and source separated organic material (proposed Peterborough Organics Facility) from the City and County of Peterborough. The proposed Peterborough Organics Facility will be developed in a phased manner, including the potential to eventually accept materials from other municipalities. The proposed facility will not be open to the public; only collection vehicles will be allowed access.

For the purposes of the Environmental Compliance Approval and municipal planning applications, the proposed Peterborough Organics Facility will be designed to receive a maximum of 45,000 tonnes per year and temporarily store up to 90,000 tonnes of material undergoing composting, immature compost, finished compost and residual waste, at any time.

The proposed Peterborough Organics Facility will be operated by the City and located on a 12 ha property, adjacent to the northern boundary of the existing Peterborough County/City Waste Management Facility (Bensfort Road Landfill Site). The property is owned jointly by the City and County, within the Township of Otonabee-South Monaghan.

2.0 Background

The City has been running a pilot Green Bin program for a number of years and plans to expand this program City-wide. In 2014, the City commissioned a study entitled “Organics Collection and Processing Strategy for the City of Peterborough and Surrounding Area” that identified potential options to process organic wastes from an expanded City-wide Green Bin program.

A site selection process was undertaken by the City to evaluate candidate properties for the Peterborough Organics Facility. The criteria for site selection included: need for three (3) phase power; year-round access road; existing and surrounding land uses; distance to sensitive receptors; railways and overhead utilities; and, environmental constraints such as natural heritage features and existing aggregate resource areas.

The City has selected the Gore® System, including the Gore® Cover and ancillary equipment as the preferred composting technology. The Gore® System is proven technology, accepted by the Ministry of Environment, Conservation and Parks, and is used successfully at several sites in Ontario.

3.0 Site Location

The proposed Peterborough Organics Facility will be located on the southern half of Lot 16, Concession 14 of the Otonabee Ward, within the Township of Otonabee-South Monaghan in the County of Peterborough. The 12 ha property is bordered by the existing Peterborough County/City Waste Management Facility to the south, and agricultural and residential properties to the west, north and east.

Sensitive land uses in proximity to the property include three (3) residences to the north and southeast. The two (2) residences to the north are located approximately 400 m from the proposed facility and the residence to the southeast is located approximately 340 m from the proposed facility.

4.0 Selected Technology

The City has selected the Gore® System, including the Gore® Cover and ancillary equipment. The GORE® System is the most widely distributed composting system in the world with over 200 facilities located in more than 20 countries treating more than 3.5 million tons of organic waste annually. This composting technology is in use at several sites in Ontario, including a site in Thorold operated by Walker Industries.

The Gore® System is proven and equipped with an oxygen controlled; positively aerated process, and an oxygen and temperature monitoring system. This level of monitoring creates ideal composting conditions while efficiently trapping odors and other emissions such as dust and volatile organic compounds.

The Gore® System consists of three (3) main components: aeration, controls, and a membrane cover. The three (3) components interact to produce a unique, economical and reliable composting system. In order to provide the essential basic requirements for the aerobic micro-organisms, medium pressure aerators are connected to in-floor aeration ducts. The aerators are controlled by means of oxygen, for which the necessary operating data is obtained directly from the main body of the heap using stainless steel probes. The data is stored in an on-site computer to document operating parameters during the composting process.

Organics will be delivered to the receiving building, mechanically prepared and homogenized before being placed in the aeration bunkers using wheel loaders. Once in the aeration bunkers, the Gore® Cover is immediately pulled over the material to be composted, and oxygen and temperature probes are inserted into the material. Through this process, the Gore® System controls odours, and the emission of greenhouse gases. As a physical barrier, the Gore® Cover is secured over the compost pile and as the organic material decomposes, a fine film of condensation develops on the inside of the cover. Odours and other gaseous substances dissolve within this film and drop back into the pile, where bacteria continue to break these substances down. Using the Gore® System, a 97% odour reduction can be achieved.

In addition, the Gore® System is designed to minimize the production of leachate by including an impermeable slab to prevent groundwater contamination, as well as, the use of the Gore® Cover to prevent mixing with precipitation. Aeration channels, cast in the impermeable slab, also act as a collection system to prevent any leachate migrating from the concrete pad.

5.0 Project Components

Utilizing the Gore® System will require the construction of several above ground components including concrete aeration bunkers and pads; leachate collection system; receiving, office and maintenance buildings; staging area; and, aeration technology.

The Gore® System combines positive aeration, control and the Gore® Cover to create mature compost through a five-step process, as follows:

1. The organics are delivered to an enclosed, negative pressure receiving building at the composting facility where it will be mixed, shredded and then transferred to an aeration bunker.
2. Once in the bunker, the material is covered with the Gore® membrane fabric, aeration is added and the material is monitored for four (4) weeks.
3. After four (4) weeks, the material volume will be reduced whereby, the material from two bunkers can be added together. The material is then covered, aerated and monitored for an additional two (2) weeks.
4. After two (2) weeks, the material is transferred to the final bunker where it is again aerated and monitored. The material is not covered at this stage as there is very little odour.

5. In the final step of the process, the material is screened to the desired size and the compost is stored on-site and ready for use.

Along with the Gore® System, additional infrastructure will be included in the design of the proposed Peterborough Organics Facility, as follows:

- Site and emergency entrance
- Receiving building and preparation area, including bio-filter to mitigate odours
- Office and maintenance building
- Active composting area (Gore® System)
- Leaf and yard waste open air, windrow composting area
- Compost curing area
- Compost screening area
- Finished compost storage area
- Stormwater management pond
- Compost leachate collection system for conveyance to the existing the Bensfort Road Landfill Site leachate collection system, and treatment by the City of Peterborough Water Pollution Control Plant
- 30 metre buffer area (setback) from property line and natural heritage features
- Visual screening from surrounding properties via berms and plantings

6.0 Project Development Process

GROW Peterborough is expected to launch in fall 2023 after building the proposed Peterborough Organics Facility. The federal government is contributing \$6.1 million toward the \$15.3 million GROW Peterborough program over a four year period, ending March 31, 2024. The development of the proposed Peterborough Organics Facility is described in the following sections.

6.1 Phase 1: Permitting and Approvals

- Preliminary design elements
- Public consultation and Indigenous community engagement
- Completion and submission of the planning applications
- Completion and submission of the Environmental Compliance Approval application(s) and supporting documentation

6.2 Phase 2: Detailed Design and Tendering

- Civil engineering elements, including water supply and sanitary sewage disposal

- Structural engineering elements, including on-site buildings, and concrete slabs and bunkers
- Electrical and mechanical engineering elements, including on-site lighting and the odour control system
- Process engineering elements, including leachate collection and conveyance
- Preparation of the Tender Package, including contract documents, drawings, and specifications

6.3 Phase 3: Construction and Commissioning

- Pre-construction activities
- Facility construction
- Construction administration and inspection
- Facility Commissioning and Close-out Activities

7.0 Project Timing

The Project commenced on May 4, 2019 and the Peterborough Organics Facility is expected to be commissioned by October 27, 2023. The Project Schedule includes the following key milestone dates, generally based on the phase duration presented in the LCEF funding application.

Phase of Work	Start	Completion	Duration
Phase 1: Permitting & Approvals	May - 2019	August - 2022	174 weeks
• Planning Application Review	June - 2021	November - 2021	26 weeks
• MECP Application Review	December - 2021	August - 2022	39 weeks
Phase 2: Detailed Design & Tendering	January - 2022	July - 2022	30 weeks
Phase 3: Construction & Commissioning	August - 2022	October - 2023	64 weeks
Overall Timeframe	May - 2019	October - 2023	234 weeks

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