Public Review

Comment Response Table

Document Reviewed: Regional Biosolids & Biogas Facility Environmental Study Report (August 2024)

Proponent: Utilities Kingston

Date: October 2, 2024

Utilities Kingston completed an Environmental Study Report (ESR) for a Regional Biosolids and Biogas Facility proposed to be located at a City-owned site referred to as the Knox Farm property. The ESR was issued for public review from August 13 to September 11, 2024. During that time, comments were received from members of the general public and interested parties. The following table provides a summary of the main themes that emerged from the comments and responses to the comment themes. All feedback received during the public review period has been reviewed and is included in the consultation record contained in Appendix F of the Final ESR.

Comment Theme	Response
Concerns about the high capital and operating costs proposed for the facility	Anaerobic digestion of green waste and wastewater sludge to produce biogas is a well-established technology. The sale of renewable natural gas (upgraded biogas) and digestate produced from the anaerobic digestion process can be used to offset the overall facility costs. There may be precedent for renewable natural gas to be sold at a substantial premium compared to natural gas rates (e.g., Enbridge prices RNG at $24/GJ or $0.90/m3). Further, should additional tonnages be accepted at the facility from regional sources, this would also result in additional income from tipping fees from customers, along with sale of greater biogas volumes and digestate product. We recognize that the estimated capital and operating expenses for the proposed facility are large, and they are being evaluated further within the context of a separate business case analysis for the project. The results from the business case analysis will be used in conjunction with the Class Environmental Assessment (EA) information to form the 'go / no-go' recommendations to Utilities Kingston management and City Council.
Concerns if the liquid end product from the facility is safe and proven to be land applied on farms. Are there testing requirements?	Digestate is the semi-solid by-product left over from the anaerobic digestion process which contains high nutrient loads that can make it valuable as a fertilizer product, following proper treatment and testing. Ontario's guidelines for the use of biosolids (including digestate) are designed to ensure that they are managed and applied in a manner that protects human health and the environment. The regulatory framework includes stringent requirements for pathogen reduction, contaminant limits, land application rates, and monitoring. The regulation also includes requirements for storage, handling, and record-keeping. As new contaminants are

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	identified and better understood, Ontario continues to update its guidelines and regulations to ensure the safe and beneficial use of biosolids. In Ontario, biosolids and digestate left over from wastewater treatment processes can be used for agricultural land application based on two levels of treatment and testing. The NASM (non-agricultural source materials) standard is the basic standard governing the treatment and testing of bio-solids destined for agricultural land application and is the standard currently in use for biosolids generated by Kingston's wastewater treatment plants. The CFIA (Canadian Food Inspection Agency) standard is the other level to which biosolids and digestate may be subject to for re-use as a fertilizer product that is of a higher quality than NASM and is typically sold to agricultural operators. Digestate quality can be analyzed by an accredited laboratory and is completed by using samples representative of the digestate at the time of application. An accredited laboratory can test for the full list of parameters as specified by federal and provincial legislation. Utilities Kingston manages biosolids in accordance with its Environmental Compliance Approval for each wastewater treatment plant (WWTP). Of note, biosolids from the UK WWTPs are sampled twice monthly for total solids, total phosphorus, total ammonia nitrogen, nitrate as nitrogen and heavy metals to demonstrate compliance. A rolling monthly biosolids quality report is submitted to the company contracted to haul biosolids to licensed agricultural fields during the land application season. As of 2020, over 1.2 million tonnes of digestate are being produced annually by biogas plants across the country (Canadian Digestate Management Guide, March 2023, Canadian Biogas Association). Common uses for digestate are land application and crop fertilizer use. See examples below: • Digestate from Kingston's wastewater treatment plants are treated to NASM requirements and land-applied. • The City of Hamilton upgraded their biosolids management process with thermal drying to produce an end product that could be sold as fertilizer under the Canadian Food Inspection Agency (CFIA). • City of Guelph treats their municipal biosolids to CFIA-regulations and produces a fertilizer for sale. • Many farm-based anaerobic digesters land apply treated biosolids derived from degradation of animal manure.
Concerns that processing the intended waste streams (raw, dewatered biosolids, green bin organics) and	Anaerobic digestion technology has been used in wastewater treatment to process sludges since the early 1900s (Gunnerson and Stuckey, 1986, https://citeseerx.ist.psu.edu/document?repid=rep1&type=pdf&doi=6fb88e3fcc3738ed2fefdb3d0a8b0496aaff0296). Anaerobic digestion involves the use of microorganisms to break down organic matter in the absence of

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producing a renewable natural gas through this technology is proven	oxygen to produce biogas. Biogas can be burned directly with little processing or can be upgraded to renewable natural gas (RNG) quality to be used as an electricity and heat source, or even as a vehicle fuel. In 2021, Canada had nearly 300 active biogas and RNG plants (source: https://biogasassociation.ca/resources/page/2023_canadian_biogas_and_rng_market_report/). RNG injection into the pipeline in Canada began in 2003 (https://www.cer-rec.gc.ca/en/data-analysis/energy-markets/market-snapshots/2023/market-snapshot-two-decades-growth-renewable-natural-gas-canada.html). Anaerobic digestion can also be used to process food waste. For example, Stormfisher is Canada's largest anaerobic digestion facility, located in London, Ontario. This facility can process up to 225,000 tonnes of organic waste and produces enough RNG to heat 2,500 homes. Combining food waste and wastewater sludge for co-digestion has been implemented and scaled up in various parts of the world, demonstrating its viability and effectiveness. Some examples of co-digestion projects are listed below (https://archive.epa.gov/region9/organics/web/pdf/epa-600-r-14-240-food-waste-to-energy.pdf): • Central Marin Sanitation Agency - San Rafael, California • Hill Canyon Wastewater Treatment Plant – California • West Lafayette Wastewater Treatment Utility – Indiana • Janesville Wastewater Treatment Facility - Wisconsin In Canada, many municipalities have or are undertaking feasibility studies to co-digest sewage sludge with food waste (e.g., Petawawa, City of Cornwall, City of Windsor, City of Timmins, City of Penticton, BC). It is noted that wastewater treatment approaches have been in place much longer than green bin programs and with wastewater treatment infrastructure requiring upgrading, these municipalities are now considering the integration of managing the two material streams.
Concern that if this facility takes the City's green bin organics, then the compost created from the City's current green bin organic processor will not be available to residents.	The City's current green bin organics processor creates soil compost from green bin and other waste organics and leaf and yard wastes. The operation may continue to generate a compost product without the addition of the City of Kingston's green bin organics.

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Concern that the proposed facility will generate methane emissions that will be released into the atmosphere.	It is the intention of the proposed project to produce as much biogas (methane) as possible from the anaerobic digestion of the biosolids and SSO wastes received so that it can be used as a biogenic renewable natural gas in place of petroleum derived natural gas. Biogas that is cleaned and converted to renewable natural gas is a valuable product that could be sold to offset the capital and operating costs of the project while providing reductions in greenhouse gas emissions by displacing the use of fossil fuel natural gas. The loss of unburned methane through leakage would be detrimental to the feasibility of the proposed facility and so the design and operations would be undertaken with the intention to avoid such losses. Further, the facility will maintain a standby biogas flaring system to combust the biogas in emergency instances only, as per provincial regulatory requirements.
Concerns that the Knox Farm site is not suitable for the proposed facility	A component of the project was to assess the suitability of the municipally-owned Knox Farm property. This involved assessments from the following technical disciplines: land use, air quality, archaeology, cultural heritage, hydrogeology, natural environment, noise, site servicing, stormwater management and traffic. No major barriers were identified for Knox Farm as a potential location for the proposed facility and the study did not identify any significant risks of impact to neighbouring properties. The Knox Farm Suitability Assessment was completed in April 2023. The findings were discussed at a March 2023 public drop-in event and the display boards and report are available on the project website.
Concern about impacts to trees, woodlands and impact on wildlife	The majority of the Proposed Site Location was found to contain areas of low natural environmental value based on desktop analysis and on-site field investigations completed by biologists in 2022 and 2023; specifically, the centre of the Proposed Site Location is dominated by a disturbed meadow known as the former site of the Cataraqui River Dredged Material Storage and Dewatering Facility. It should be noted that although Schedule 8-B of the City Official Plan identifies the wooded areas within the Proposed Site Location to be significant woodland, on-site Ecological Land Classification (ELC) surveys in 2022 revealed that most of these wooded areas were actually Buckthorn Deciduous Shrub Thicket (THDM2-5) communities which are not considered woodland. Common Buckthorn (*Rhamnus cathartica*) was found to dominate the deciduous thicket communities and is recognized as an invasive shrub in Ontario and can harm the environment, as this invasive plant outcompetes native plants, reduces biodiversity, degrades the quality of wildlife habitat, and impacts a wide range of industries (Invasive Species Centre, 2024). A Landscaping and Planting Plan may be prepared during detailed design of proposed development to protect or off-set vegetation removal and propose enhancements (i.e., net gain of tree cover in the area) to natural areas where possible (e.g., woodland restoration or an ecological offsetting plan). Furthermore, impacts to wildlife in the area are anticipated to be low and will be mitigated by measures outlined in the ESR such as, vegetation and

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	tree removals outside widlife active seasons and the incorporation of landscape plantings along the boundary of the Project footprint to provide a buffer/shield for woodland areas where operational indirect anthropogenic impacts (i.e., noise, light, vibration and human presence) are anticipated. Where impacts to woodlands are proposed based on the preferred Concept Design, they are limited to a small portion (approximately 0.01 ha) of an isolated deciduous woodland identified by ELC as Cottonwood Deciduous Forest (FODM8-3) within the southern extent of the project footprint. Impacts to this woodland and natural vegetation in the area in general will be minimized to the extent practical and may be compensated by native tree and shrub plantings and seeded with native forbs and graminoid that offset removals.
Concern is that Kingston should be focusing on finding solutions to combat climate change. How does this facility support that? Shouldn't we be looking at wind and solar energy sources?	A biosolids management and biogas system offers a multifaceted approach to reducing GHG emissions and transitioning away from fossil fuel-based energy sources. In Ontario, there has been motivation to pursue resource recovery options to manage diverted food and organic waste. Anaerobic digestion of organics is amongst these options and is currently used to treat sludge from the wastewater treatment process. This project supports the City's current goals of creating sufficient capacity to process future wastewater sludge loadings and managing food and organic waste, whilst producing a renewable natural gas to offset use of fossil fuels. The City remains committed, through its Climate Leadership Plan, to exploring and supporting all viable means of reducing our impact on global climate change including significant investments and support for solar PV, geothermal, electrification and other methods of energy and emission reduction and fuel switching.
Is this facility permitted in an EPA zone?	The proposed facility is not within an EPA Zone. The City of Kingston's planning department has confirmed that the area designated as Open Space in the Official Plan (which spans the majority of the Proposed Site Location) was incorrectly zoned as an EPA Zone. The Knox Farm lands were rezoned from EPA to OS2 (General Open Space Zone) and RU (General Rural Area Zone) by By-law 2024-332 on July 9, 2024, as part of a housekeeping amendment. No appeals were received to the amendment and as such, it is in full force and effect. With respect to the OS2 Zone, the proposed facility is not permitted (Section 18 of the Zoning By-law), but may be permitted according to Section 4.9.1 of the Zoning By-law (Uses Permitted in all Zones). With respect to the RU Zone, the proposed facility is not permitted (Section 8 of the Zoning By-law), but may be permitted according to Section 4.9.1 of the Zoning By-law. Therefore, the proposed facility may be permitted in the OS2 and RU Zones.
Odour concerns	The Environmental Study Report concluded that impacts from odour could be managed through the use of standard odour Best Management Practice Plans that, should the project proceed, would be required to support an application to the province for an Environmental Compliance Approval needed to build and operate the

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	Facility. Final design of odour mitigation systems would be assessed to target off-site odour compliance prior to construction. These mitigative measures would be typical of normal operations of a waste management facility, be consistent with industry best practices and conform to existing environmental laws.
Concerns that there was insufficient public consultation completed for the project.	In 2020, Utilities Kingston completed a Master Plan for Enhanced Biosolids Management and Biogas Utilization (the 2020 Master Plan) where the recommendation was to develop an integrated biosolids and source separated organics (i.e., green bin organics) processing facility within the Knox Farm property. The 2020 Master Plan met the requirements for Phases 1 and 2 of the Municipal Class Environmental Assessment (MCEA) process as outlined in the MCEA document, Municipal Class Environmental Assessment (MCEA) October 2000, as amended in 2007, 2011 and 2015, the Municipal Engineers Association (MEA). As part of the 2020 Master Plan, consultation took place with the public and interested parties with website posting and a public information session which was held in January 2020. In 2022, Utilities Kingston proceeded with two additional studies: (1) a reconfirmation study of the previously identified preferred solution (Dillon, 2022; Phase 1 and 2 Reconfirmation: Problem/Opportunity Statement and Screening Process and Results Memo); and (2) a Knox Farm Suitability Assessment, to conduct a detailed assessment of the Knox Farm property to determine if it is a suitable site for the proposed use. The following points of consultation were included as part of the two studies: • Public drop-in session #1: held March 28, 2023 to discuss the project and the results of the Knox Farm Suitability Assessment. Notice of the public drop-in session was distributed to those on the project contact list and in the Kingston Whig Standard two times; and • Public survey #1: open from late March to mid April 2023 to get feedback on the project and the results of the Knox Farm Suitability Assessment. It is noted that consultation on the results of the Knox Farm Suitability Assessment were not required as part of the Class EA consultation process however, Utilities Kingston added this additional consultation point to seek feedback on the proposed site location. Utilities Kingston then proceeded with the next phase of planning to further assess the environmental, technical and financial feasibility of implementing the Master Plan recommendation through the Schedule 'C' Municipal Class EA project which commenced in September 2023 and completed in September 2024. The Class EA followed the Schedule 'C' requirements for consultation and included the following points of consultation:

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	• Class EA Notice of Commencement: the Notice of Commencement was released on September 19th, 2023 and was published on the project website, distributed to those on the project contact list and in the Kingston Whig Standard two times. • Public drop-in session #2: held March 27, 2024 both in-person and a separate virtual event to discuss the alternative design concepts and preliminary preferred alternative. Notice of the public drop-in session was distributed to those on the project contact list and in the Kingston Whig Standard two times. • Public survey #2: open from late March to mid April 2024 to get feedback on the project, the alternative design concepts and the preliminary preferred alternative. • Class EA Notice of Completion: the Notice of Completion was released on August 13, 2024 and was published on the project website, distributed to those on the project contact list and in the Kingston Whig Standard two times. • Public Review Period on the Environmental Study Report: the ESR was posted on the project website and available via hard copy at Kingston City Hall for the 30-day public review. Those on the project contact list were notified via email or mail and a notice was published in the Kingston Whig Standard two times. All consultation efforts are recorded within the Appendix F of the MCEA Environmental Study Report (ESR) and available for review on the Project website at: https://utilitieskingston.com/Projects/Detail/RegionalBiosolidsBiogasFacility
Concerns with damage to water wells in the area and with source water protection	A hydrogeology assessment was completed as part of the Knox Farm Suitability Assessment that included a review of background hydrogeology records and borehole drilling, monitoring well installation, groundwater sample collection and hydrogeological testing. There are 39 well records, based on the Ministry of Environment, Conservation and Parks water well record database, within 500 metres of the Knox Farm property with depths ranging from 3 m to 54. 2 m. A drilling program was completed in 2022 and hydrogeological and environmental investigations were subsequently completed and the groundwater analytical results were compared to the Ministry's Table 6: Generic Site Condition Standards for Shallow Soils in a Potable Ground Water Condition. All samples met the reference MECP Table 6 criterial which would be applicable for the proposed development. According to the Source Protection Atlas by the MECP, the Knox Farm property is located within the Cataraqui Source Protection Area (SPA) and is identified to be within a Significant Groundwater Recharge Area (SGRA) and a Highly Vulnerable Area (HVA); of which, the majority of the Cataraqui SPA is identified. The Official Plan

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	indicates that new developments that constitute a drinking water threat within a SGRA and HVA "may be required to incorporate measures to adequately mitigate and manage any risk to source water" to the satisfaction of the City in consultation with the Cataraqui Source Protection Authority. Potential/inferred karst topography was noted in the City's Official Plan for the Knox Farm property. Karst formations are formed when rock is dissolved in water, creating features that can act as underground drainage systems; creating a pathway for contaminants on the surface to reach groundwater. A preliminary karst assessment was completed in November 2023 and based on the desktop background information review and the field-based visual observations, the likelihood of significant karst features at the proposed site location is low. The majority of the site location is overlain by low permeability soils, which limits the karstification of the underlying limestone. Karstic features (e.g., sinkholes, caves, disappearing streams), were not observed during the field visit and where surface limestone bedrock was found, it was observed to be minimally weathered. If a significant karst feature appears during construction, construction activities would need to be adapted in order to evaluate the risk (environmental, geotechnical, etc.) associated with the newly identified karst feature. Should karst features appear or become visible as a result natural processes, further studies could be required to improve the understanding of the identified karst. Lastly, it is assumed that process wastewater would be hauled offsite with domestic wastewater being accommodated by a small onsite septic system.