Durham York Energy Centre Environmental Screening Report

Draft – December 2019

Executive Summary

The Durham York Energy Centre (DYEC) is located at 1835 Energy Drive in the Municipality of Clarington, Ontario, Canada and has been in commercial operation since 2016. Jointly owned by the Regions of Durham and York, the DYEC is a waste management facility that produces energy from the combustion of residential garbage that remains after maximizing waste diversion programs. The DYEC generates enough electricity from the combustion of garbage to power approximately 10,000 homes a year. It also captures residual metals for recycling and reduces the volume of waste going to landfill by 90 per cent.

The DYEC is currently permitted to process 140,000 tonnes of residential garbage (non-hazardous) per year that remains after all waste diversion efforts have been utilized (reducing, reusing, recycling and composting) in both Durham and York Regions. Durham Region's portion of DYEC processing capacity is 110,000 tonnes (approximately 80per cent) and York Region's is 30,000 tonnes (approximately 20per cent). In 2018, the DYEC processed 140,000 tonnes of garbage, while recovering 3,848 tonnes of metal and generating approximately 85,412 MWh of electricity for sale to the provincial grid. By using state-of-the-art pollution control systems and proven, reliable energy from waste technology, the DYEC meets the stringent environmental standards and reduces greenhouse gas emissions compared to the landfilling option.

Since 2017 residents in the Region of Durham generated more than 110,000 tonnes of garbage for final disposal. The extra garbage is required to by-pass processing at the DYEC and be sent directly to landfill for disposal. Since the Region of Durham has a growing population, it is expected that garbage generation will exceed 110,000 tonnes every year going forward, despite the diversion programs in place.

The DYEC is capable of processing up to 160,000 tonnes of garbage annually without requiring any modifications or additions to the equipment or the building. The Regions of Durham and York (Regions) propose to utilize the additional capacity for waste

processing at the DYEC to use the existing equipment more efficiently and reduce the need to by-pass garbage directly to landfill disposal.

Increasing the capacity of the DYEC to 160,000 tonnes per year requires an amendment to the facility Environmental Compliance Approval (ECA). The existing ECA permits a maximum of 140,000 tonnes per year of waste processing. The Ministry of Environment, Conservation and Parks (MECP) has indicated an Environmental Screening Process is required for the project to evaluate the potential negative environmental effects of the proposed increase and to consult with the public.

The Waste Management Projects Regulation (Ontario Regulation 101/07) outlines the regulatory requirements for an Environmental Assessment (EA) for waste management projects. The requirements for completing an Environmental Screening Process are described in a detailed, step-by-step guide found in Part B of the MECP document: "Guide to Environmental Assessment Requirements for Waste Management Projects" (Guide). The Regions initiated an Environmental Screening Process in July 2019 with a Notice of Commencement announcing the proposal to increase the DYEC waste processing capacity. Key steps undertaken by the Regions include:

- Completion of the Environmental Screening Checklist found in Schedule 1 of the Guide
- Identification of potential negative environmental effects
- Completion of studies and assessment of potential negative environmental effects and impact mitigation measures
- Consultation with the public, agencies, Indigenous communities and other interested parties

Potential Effects

As part of the review of potential negative environmental effects, the Environmental Assessment (EA) completed in 2009, prior to the initial construction of the DYEC, was reviewed. Since there is no new construction or equipment associated with the increase

in processing capacity and the 2009 EA considered the effects of processing up to 400,000 tonnes of waste per year, many of the conclusions reached in the 2009 EA remain valid for a facility operating at a much lower capacity of 160,000 tonnes of waste per year. A discussion of the multiple technical studies completed for the 2009 EA is included in Section 4. Ongoing operating and monitoring data from the DYEC have also been reviewed and incorporated into the Environmental Screening Process.

The screening criteria, outlined in the MECP Guide, was applied to the DYEC waste capacity increase from 140,000 to 160,000 tonnes per year. Potential negative environmental effects were identified in the screening checklist for:

- Air and noise
- Socio-Economic (proximity to aerodrome or airport)

Air Emissions

The local air quality in the vicinity of the DYEC is considered typical of urban areas in southern Ontario. Multiple industrial activities are conducted along the Highway 401 corridor in Clarington that contribute to the local air quality including odour and noise emissions. These include other waste management operations, traffic on Highway 401, construction of the 407 East extension, electricity production and resource industries.

The increase capacity to 160,000 tonnes per year will result in increased total air emissions from the DYEC. To determine the potential impact of the increased air emissions at the DYEC, air emission modelling was completed using approved methodologies, which account for poor operating and weather conditions. An initial assessment was made using the facilities approved Emission Summary and Dispersion Modelling (ESDM) air model, but with the air emissions and stack conditions scaled to 160,000 tonnes and updated to match conditions encountered during recent stack testing. The resulting model identified minimal change to the predicted concentrations (less than 8 per cent). Based on the update of the modelled parameters, Nitrogen Oxides remain the contaminant with the highest predicted concentration relative to the

O. Reg. 419/05 MECP limit. For the 140,000 tonnes per year scenario the Nitrogen Oxides were predicted to reach 7 per cent of the 400µg/m^3 limit, while they reached 8 per cent of the limit during the 160,000 tonnes per year scenario.

As a result of ongoing consultation, the MECP requested that an update be prepared revising the approved CALMET/CALPUFF models for the facility to further confirm the site will remain in compliance with O. Reg. 419/05.

The processing of additional material at the DYEC results in a reduction of emissions associated with the long-haul transportation required to deliver by-passed garbage to a landfill outside of the Region, as well as a reduction in emissions at the destination site.

A review of the ambient air monitoring data for operating scenarios expected at the proposed 160,000 tonnes per year suggests that the conformance to the ambient air quality criteria can be expected for existing and the proposed guidelines.

Total greenhouse gas emissions will also increase with increased capacity at the DYEC. Although total emissions increase, the net effect on greenhouse gases is a decrease in emissions when compared to landfilling the same quantity of garbage. The net emissions of GHGs from thermal treatment of waste compared to disposal at a remote landfill were assessed as part of the original EA. The assessment was reviewed and updated with current operating data as part of the Screening. This assessment indicated that the total GHG emissions from thermal treatment were less than those associated with transportation related emissions and landfill methane generation when garbage is landfilled.

Socio-Economic

Socio-economic effects include community character, aesthetic impacts, negative effects on local businesses or public facilities, increased demands on community services, negative effects on the economic base of the community, negative traffic effects, interference with flight paths and public health and safety. All these areas were considered when completing the Environmental Screening Checklist. Since there is no

construction or change to equipment associated with the capacity increase to 160,000 tonnes per year, the conclusions of the 2009 socio-economic studies remain valid.

One potential effect as outlined in the screening criteria checklist was identified. The facility is within eight kilometers of a helipad located at the Bowmanville Hospital. Although air ambulance service is currently suspended to the hospital, it is anticipated that a relocated helipad will be established in the future. Prior to construction, the DYEC received aeronautical clearance from Navigation Canada. Since there are no additional buildings or structures associated with the increase in capacity to 160,000 tonnes per year, the aeronautical clearance remains valid and there are no negative effects related to the proximity of the helipad.

The proponents' review concluded there are no significant net environmental effects as a result of increasing capacity to 160,000 tonnes per year.

Project Benefits

Increasing the DYEC capacity to 160,000 tonnes per year will increase the efficiency of DYEC operations by allowing for a more efficient use of the existing equipment, maximizing the use of the investment without requiring any additional construction or building modifications. There is no capital cost associated with increasing the DYEC capacity to 160,000 tonnes and the Regions will realize financial savings from reducing by-pass waste and increasing revenue from additional power generation and materials recovery.

The completion of this Environmental Screening Report (ESR) is anticipated in early 2020. The ESR will be posted for a 60-day public review period and provided to the MECP for review. The final step in the Environmental Screening Process is submitting a Statement of Completion to MECP.

Glossary of Terms (Abbreviations)

AAQC – Ambient Air Quality Criteria

Annex E-5 – Supplement to Annex E-5: Comparative Analysis of Thermal Treatment and Remote Landfill on a Lifecycle Basis

B(a)P – benzo(a)pyrene, polycyclic aromatic compound formed as a result of incomplete combustion of organic matter

CAAQS – Canadian Ambient Air Quality Standards

CEBP - Clarington Energy Business Park located south of Highway 401 and north of the CN rail line, bordered by Courtice Road to the west and Crago Road to the east, in the Municipality of Clarington, Region of Durham

CO_2 eq – Carbon Dioxide Equivalent

CoPC – Chemicals of Potential Concern

DYEC – Durham York Energy Centre

EA – Environmental Assessment

ECA – Environmental Compliance Approval

ESDM – Emissions Summary and Dispersion Modelling

ESR – Environmental Screening Report

GHG – Greenhouse Gases

Golder – Golder Associates Limited

Guide – MECP Guide to Environmental Assessment Requirements for Waste Management Projects

HHV – Higher Heating Value

LCA – Lifecycle Assessment

December 2019

MECP – Ministry of Environment, Conservation and Parks

MJ – Mega Joule

MNRF – Ministry of Natural Resources and Forestry

Mt – Megatonnes equivalent to 1,000,000 metric tonnes

NAPS - National Air Pollutant Surveillance

NO_x – Nitrous Oxides, includes nitric oxide (NO) and nitrogen dioxide (NO_2)

OU – Odour Unit

POI – Point of Impingement or area of highest concentration

Regions – Region of Durham and Region of York

Screening – Environmental Screening Process

Site – the Durham York Energy Centre structures and surrounding property

SO_2 – Sulphur dioxide

SWMP – Stormwater Management Ponds

TPA - Tonnes per Annum

WPCP – Water Pollution Control Plant

Table of Contents

Tables

Figures

Appendices

1. Introduction

The Region of Durham and Region of York (Regions) require additional waste disposal capacity for residual garbage generated by the residents of both Regions. Co-owned by the Regions, the DYEC is a waste management facility that produces energy from the combustion of post-diversion residential garbage. Durham Region's portion of DYEC processing capacity is 110,000 tonnes and represents the primary method of post-diversion waste disposal, while York Region's portion is 30,000 tonnes and represents one of multiple disposal facilities used by York Region.

As constructed, the Durham York Energy Centre (DYEC) has the equipment and building capacity to process an additional 20,000 tonnes of waste annually (from 140,000 tonnes to 160,000 tonnes). The Regions have chosen to pursue an amendment to the existing Environmental Compliance Approval (ECA) to allow the facility to receive and process an additional 20,000 tonnes of waste per year. After approval of the ECA amendment, the DYEC will be able to process 160,000 tonnes of waste per year.

1.1 Identification of the Proponents

The Proponents for the Environmental Screening Report (ESR) are The Regional Municipality of Durham (Durham Region) and The Regional Municipality of York (York Region), collectively referred to as the Regions. Covanta Durham York Renewable Energy Limited Partnership, as the design-build-operate-maintain contractor for the DYEC, is also identified in the ECA as a partner. Both Regions have responsibility for the final disposal of residential waste generated within their respective regional borders. The Regions also maintain source separation programs for blue box materials, organic materials including leaf and yard waste, household hazardous wastes, batteries, electronics, tires and bulky items such as appliances and porcelain fixtures.

1.2 Introduction to the DYEC

The DYEC provides a safe and environmentally sustainable method of waste disposal through thermal treatment and generates electrical power through a steam-turbine generator. The net electricity produced by the DYEC is sent to the local grid and distributed by Hydro One Inc. Additionally, the DYEC recovers ferrous and non-ferrous metals from the ash residue stream for recycling.

The DYEC includes two mass-burn thermal treatment units; each with a nominal nameplate capacity of 218 tonnes per day (Maximum Continuous Rating (MCR)). The boilers are designed to process solid waste with a High Heat Value (HHV) of 8.4 MJ/kg to 15 MJ/kg; therefore, the actual waste processing rates will vary based on the waste heating value. The two thermal treatment units are independent and include a combustion grate, boiler and air pollution control equipment, which can process waste independent from the other; either one or both can operate to process waste. Natural gas is used as auxiliary fuel for start-up and shutdown and to promote and ensure good combustion practices for meeting the DYEC ECA limits. Figure 1 outlines the various processing stages related to the DYEC.

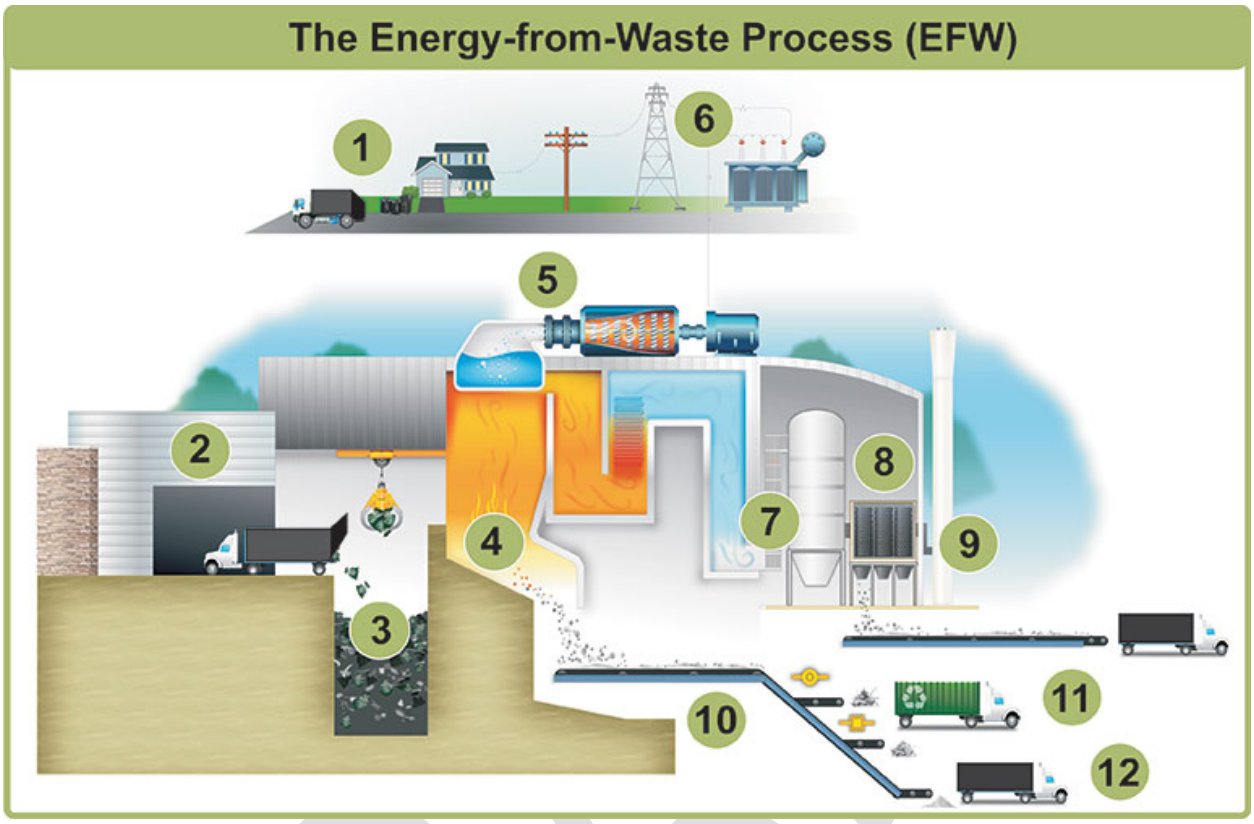


Figure 1 - The Energy from Waste Process (EFW)

1. After resident's sort recyclables and compost from the waste stream, the material is collected and bulked at approved transfer stations and shipped for processing at the DYEC.
2. After being weighed, delivery trucks unload the residential garbage on the tipping floor in an enclosed building which is maintained under negative pressure to control potential odour. One truck per hour is discharged on the tipping floor for a manual visual inspection
3. The waste is stockpiled into a large concrete storage pit and mixed with an overhead grapple crane. Waste is mixed or "fluffed" by a grapple crane in the pit to achieve a consistent mix and moisture content of wastes prior to being placed in the feed chute hoppers. This mixing of waste also aids the combustion process by ensuring consistency of the waste. Once the waste is thoroughly mixed, the grapple crane lifts the waste into one of two feed hoppers.

4. Once fed into the feed chute, the waste is charged into the furnace by a hydraulic ram feeder and then travels across a Martin reverse reciprocating stoker-grate. The grate runs are independently and variably controlled to thoroughly mix the waste and promotes complete combustion over a range of waste characteristics and moisture content. The combustion chamber is maintained at high temperatures (greater than 1,000 °C) in a self-sustaining process.
5. Heat from the combustion process boils water to create high-pressure steam. The steam turns a turbine-driven generator to produce electricity.
6. Electricity is sold to the Provincial grid and used to power homes and businesses.
7. State-of-the-art air pollution control equipment is used to cool, collect, and clean combustion gases. This equipment operates under stringent regulatory standards. Flue gases from the boilers are directed through an air pollution control system consisting of a scrubber and a fabric filter baghouse. An ammonia-based selective non-catalytic reduction (SNCR) system provides further NOx reduction.
8. Particulate matter emissions, "fly ash", are controlled primarily through a baghouse (fabric filter). Fly ash is treated on-site to render it inert and non-toxic. It is tested to ensure that it is safe to dispose of in a similar manner to bottom ash (see #12 below). The fly ash is stabilized with a blend of pozzolanic material, Portland cement and water and discharged into the first of seven fly ash storage bays where it will cure before being removed and transported off-site to a licensed disposal facility.
9. Emissions and other operating criteria are continuously monitored to ensure compliance with regulatory standards. Both air pollution control systems exit a single stack and flue.
10. Residue, including bottom ash is collected in hoppers and quenched in the ash dischargers before being discharged onto a vibrating conveyor bound for the residue building where the bottom ash, ferrous and non-ferrous metals are separated and are recovered for recycling.
11. Remaining residual materials, "bottom ash", are inert and non-toxic. The bottom ash is tested to confirm that it is safe to dispose of in a landfill or for beneficial reuse purposes.

The DYEC building and site layout is shown in Figure **Error! Reference source not found.**2.

Figure 2: DYEC Site Layout indicating locations of key site features

1.3 Study Area

The DYEC is in the Municipality of Clarington which was selected as the preferred site during the 2009 Environmental Assessment (EA) process. Identified as the Clarington 01 site in the 2009 EA, the DYEC property consists of approximately 12.1 hectares of land located in the Clarington Energy Business Park (CEBP). As shown in Figure 3, the CEBP is located south of Highway 401 and north of the CN rail line, bordered by Courtice Road to the west and Crago Road to the east, in the Municipality of Clarington, Region of Durham. The Energy Park has been identified as an appropriate location for prestige employment and light industrial use benefitting from the surrounding employers

in the energy and environment sectors. In addition to the DYEC the CEBP currently contains, office space, agricultural lands, as well as an automotive yard.

The property is jointly owned by the Regions and remains unchanged from the time of the completion of the EA. The closest natural area to the Site is the locally significant Tooley Creek Coastal Wetland, 0.87 kilometres from the Site. The closest hazard land to the Site is at 100 metres. Lake Ontario lies approximately 400 metres south of the Site. No significant forested areas or permanent watercourses exist on the Site. The flat, open terrain and lack of cover offer few opportunities for specialized habitat or species.

The Courtice Water Pollution Control Plant (WPCP) is located directly south of the DYEC lands and the Darlington Nuclear Generating Station is located approximately 1.8 kilometres to the east. The nearest major intersection is Highway 401 and Courtice Road, which is approximately 1.7 kilometres from the DYEC. The construction of the Highway 407 East extension interchange with Highway 401 north of the site is expected to be completed in 2020.

The nearest residential area to the DYEC is designated as future urban residential and is located 3.2 kilometres from the DYEC. At the time of the 2009 EA there were three residences within one kilometre of the DYEC. In 2019, only two residences remain located east of the DYEC, east of the Copart auto auction site and North of the 401.

The DYEC is located within the Tooley Creek watershed and is in the Central Lake Ontario Conservation Authority (CLOCA) jurisdiction. On-Site surface water features include storm water management ponds in the southwest and southeast corners of the property. The nearest natural surface water body is a tributary of Tooley Creek, located approximately 150 metres northwest of the DYEC. At its nearest point, Tooley Creek is located approximately 700 metres southwest of the DYEC.

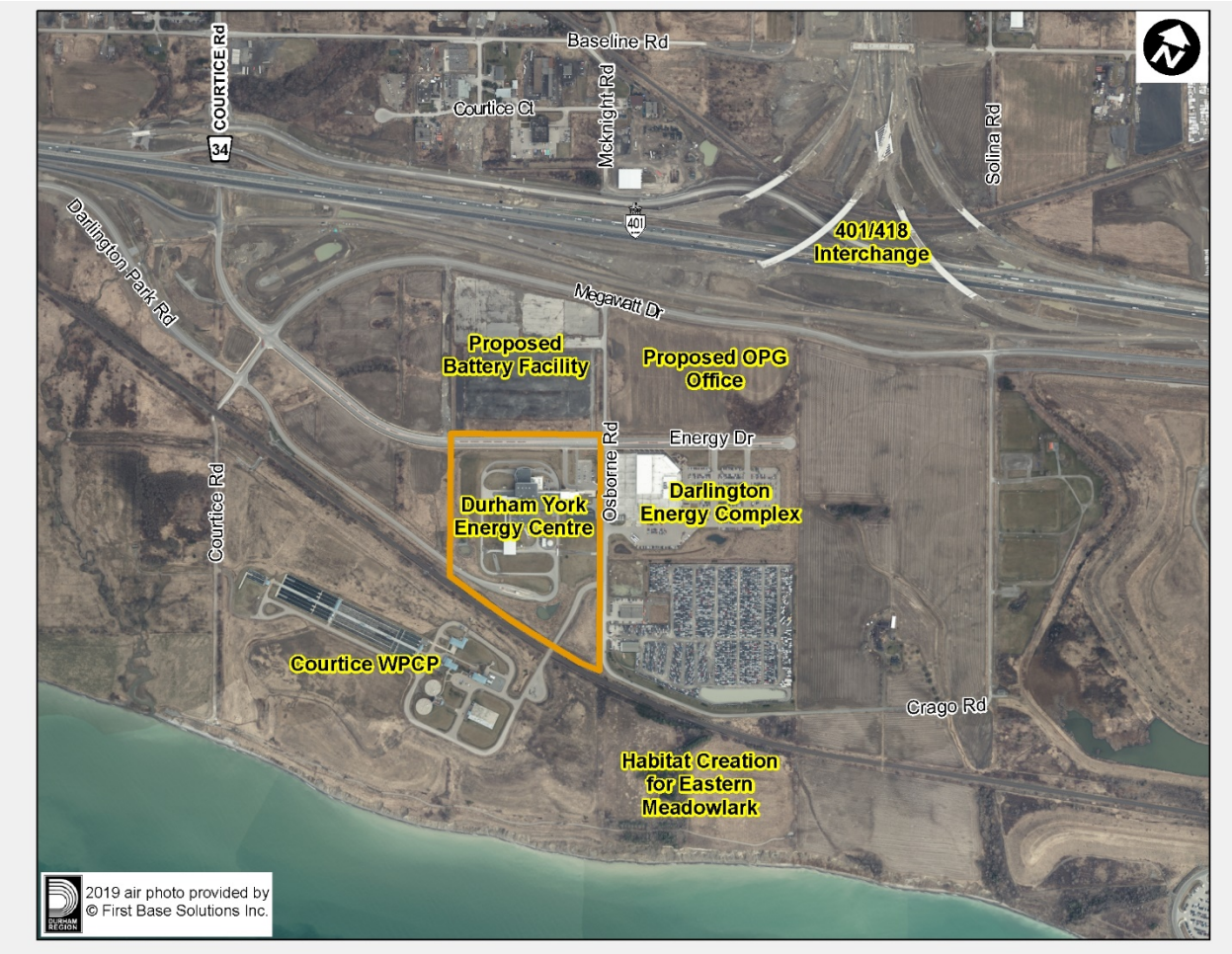


Figure 3: DYEC and Surrounding Area

2. Environmental Screening Process

The Environmental Screening Process (Screening) is a proponent driven, self-assessment process whereby proponents are responsible for determining if the process applies to the project. Part III of the Waste Management Projects Regulation (Ontario Regulation 101/07), enacted under the Environmental Assessment Act, identifies the waste management projects eligible to undertake a Screening. The requirements for completing a Screening are described in a detailed, step-by-step guide found in Part B of the MECP document: "Guide to Environmental Assessment Requirements for Waste Management Projects" (Guide). In accordance with the Guide, a screening criteria checklist was completed for the additional 20,000 tonnes per year capacity increase for the DYEC.

As part of the Screening every proponent must apply screening criteria to the project to identify potential environmental effects. Proponents must consider potential environmental effects on groundwater and surface water, land, air and noise, natural environment, impact to resources, as well as socio-economic, heritage and cultural effects and effects on Indigenous communities.

The proponent must also conduct the Screening with sufficient consultation. The Guide provides a 14-step process for completing an environmental screening. A copy of the Guide is available from the MECP website: https://www.ontario.ca/page/guide-environmental-assessment-requirements-waste-management-projects#section-3. The screening report will be reviewed by government agencies and interested persons, including Indigenous communities. The Environmental Screening Process is outlined below:

1. 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 potential environmental effects and concerns/issues to be addressed

5. Consult with interested persons to identify any issues or concerns
6. Conduct studies and assessment of potential environmental effects
7. Develop impact management measures (including mitigation)
8. Consult with interested persons to identify any issues or concerns
9. Significant net effects and resolution of concerns
10. Conduct additional studies/assessment of effects and mitigation measures
11. Prepare Environmental Screening Report
12. Publish Notice of Completion of Environmental Screening Report
13. Elevation Requests (if applicable)
14. Submission of Statement of Completion to the MECP

2.1 Purpose of the Environmental Screening Report

The purpose of the Environmental Screening Report (ESR) is to document steps 1 to 14 as described above. The ESR incorporates all questions, comments and suggestions received during the Screening up to the issuance of Notice of Completion, step 12, which marks the commencement of the 60-day mandatory review period.

2.2 Study Timeframe

Since the capacity increase to 160,000 tonnes per year does not require any construction or alterations to the building footprint, the Screening evaluates potential environmental effects only during the operational phase of the DYEC.

2.3 Report Organization

The ESR documents and summarizes the Screening process. Information on Step 12-14 is also included. Table 1 below indicates where each step of the process is documented in the report.

Table 1: Environmental Screening Process Index

Environmental Screening Process Requirement	Section of ESR where addressed
Notice of Commencement (Step 1)	Appendix E
Problem and Opportunity Statement and Project Description (Step 2)	Section 3
Environmental Screening Checklist (Step 3)	Section 4, Appendix A
Potential Environmental Effects (Step 4)	Section 4
Consultation with interested agencies, stakeholders, Indigenous communities (Step 5)	Appendix E
Conduct studies and assessment of potential environmental effects (Step 6)	Section 5
Develop impact management measures (Step 7)	Section 5
Additional consultation with interested agencies, stakeholders, Indigenous communities (Step 8)	Appendix E
Significant net effects discussion (Step 9)	Section 6
Additional studies and assessment of effects (Step 10)	Appendix B, C, D
Prepare Environmental Screening Report (Step 11)	All sections and Appendices of this report
Publish Notice of Completion of Environmental Screening Report (Step 12) ESR, Elevation Request (if applicable) (Step 13) Submission of Requests and Statement of Completion to the MECP (step submission (Steps 12 – 14)	Section 8

3. The Problem to be Addressed

The Regional Municipality of Durham and the Regional Municipality of York (the Regions) are proposing to increase the permitted annual waste capacity of the DYEC by 20,000 tonnes per year, from 140,000 tonnes to 160,000 tonnes. This additional capacity is needed to accommodate population growth within the two Regions while continuing to maintain and increase diversion rates. The proposed capacity increase will also allow the DYEC to operate more efficiently and produce more energy with no modifications or additions to existing infrastructure. If approved, the additional capacity will reduce reliance on alternate waste disposal facilities outside the Regions' borders.

The DYEC is subject to regulatory approvals under the Environmental Assessment Act (the EA Notice of Approval) and the Environmental Protection Act (the Environmental Compliance Approval, or ECA). The EA Notice of Approval was issued in November 2010 followed by the ECA in June 2011. Facility construction commenced after the ECA was received, and the facility achieved commercial operation in late January 2016.

The DYEC is designed to accept materials with a Higher Heating Value (HHV) of 11.0 MJ/kg to 15.0 MJ/kg and produce a Gross Electrical Output between 712 and 1030 kWh/tonne. The DYEC is capable of processing 160,000 tonnes of waste per year with the existing equipment and is currently being underutilized despite demand for additional waste disposal capacity for residential waste within the Regions.

3.1 Problem Background

Nearly a decade ago, the EA and the ECA for the DYEC set the processing capacity to 140,000 tonnes per year. This capacity was divided between the Regions with Durham Region having 110,000 tonnes per year and York Region having 30,000 tonnes per year. Since then, population growth in Durham Region has led to recent garbage tonnages exceeding 110,000 tonnes per year while York Region has relied more heavily on other energy from waste disposal facilities. As a result of increasing waste generation, some residential garbage is being by-passed to other disposal facilities

including landfill. As an interim remedy to the shortage of processing capacity, an amendment to the current ECA for an additional 20,000 tonnes of capacity is being pursued by the Regions. As constructed, the DYEC can process up to 160,000 tonnes per year (nameplate capacity) without any modifications to infrastructure, processes or services. The MECP has advised that Durham and York Regions will need to initiate concurrent planning for both the interim solution (ECA amendment to 160,000 tonnes per year) and long-term solution (DYEC expansion) for solid waste processing capacity at the DYEC. Therefore, Durham Region Council approved drafting a Terms of Reference for a focused EA for the DYEC long-term capacity expansion. Work on the Terms of Reference will also commence in 2019.

In 2018 and 2019, the Regions had to by-pass residential garbage to landfill and to other energy from waste facilities. By-passing otherwise processible residential garbage from the DYEC is not a sustainable or economical long-term solution with increasing cost risks associated with long-term landfill capacity, availability and price.

3.2 Current Waste Diversion

3.2.1 Durham Region

Durham Region manages curbside collection of recyclables, organics, leaf and yard waste, residual and bulky garbage, metal goods, waste electrical and electronic equipment, battery and porcelain collection in six of eight area municipalities: the Town of Ajax, Township of Brock, Municipality of Clarington, City of Pickering, Township of Scugog and Township of Uxbridge. The Region only collects blue box recycling in the Town of Whitby and City of Oshawa, but partners with both local municipalities to ensure uniform collection programs Region-wide. Almost 400 multi-residential buildings and townhouses are also serviced by Durham Region's weekly waste collection programs. Onsite collection services offered in the buildings include recyclables, battery and e-waste collection.

In addition to curbside collection services, the Region, in partnership with local municipalities, offers local waste reduction initiatives such as:

- Spring compost events; one in each local municipality
- Special Waste Electrical and Electronic Equipment drop-off events and household hazardous waste drop-off events
- Reuse drop-off events held from March to October, in partnership with local charities

Following collection, the processing of recyclables, organics, yard waste and garbage is overseen by Durham Region. This is accomplished through a combination of blue box processing by a third party at the Durham Region's Material Recovery Facility, external contracts for composting organics and yard waste at third party facilities and energy-from-waste recovery for residual waste.

Durham Region submits an annual datacall to the province through the Resource Productivity and Recovery Authority (RPRA) to receive funding from producers to assist with costs of operating the Blue Box Program. The datacall is the source of data used to confirm municipal diversion rates across the province.

RPRA Annual Waste Diversion

2014 – 55 per cent

2015 –1st for Urban Regional Municipalities (54 per cent)

2016 – 1st for Urban Regional Municipalities (55 per cent)

2017 – 1st for Urban Regional Municipalities, 3rd Overall in the Province (65 per cent*)

2018 – Pending verification (63 per cent*)

* RPRA modified the diversion calculation starting in 2017 to reflect energy recovery

3.2.2 York Region

York Region provides waste management services to nine cities and towns: the Towns of Aurora, East Gwillimbury, Georgina, Newmarket, Richmond Hill, Whitchurch-Stouffville, the Township of King and the Cities of Markham and Vaughan. As the upper-

tier municipality, York Region provides waste processing and disposal while the lower-tier cities and towns provide waste collection services.

The comprehensive waste reduction, reuse and recycling initiatives provided jointly by York Region and its cities and towns include curbside collection for residual waste, blue box recycling, source separated organics, leaf and yard waste, white goods and bulky items.

York Region provides a network of drop-off facilities for residential use. These facilities include various Household Hazardous Waste and/or recycling depots and two Community Environmental Centres to provide convenient locations for residents and small businesses to drop off a variety of diversion materials. Accepted items vary by location and include bulky recyclables, construction and demolition materials, electronics, household hazardous materials, metals and blue box recyclables. Wastes that cannot be diverted are disposed as residual garbage. York Region uses three energy-from-waste disposal options for residual waste: Covanta Niagara in New York State, Emerald Energy in Brampton and the DYEC in the Municipality of Clarington.

York Region also participates in the annual datacall administered by RPRA. York Region is larger than Durham Region and is classified as a Large Urban Municipality.

RPRA Annual Waste Diversion

2014 – 1st for Large Urban Municipalities (63 per cent)

2015 – 1st for Large Urban Municipalities (63 per cent)

2016 – 1st Overall in Province (66 per cent)

2017 – 1st for Large Urban Municipalities, 2nd Overall in Province (68 per cent*)

2018 – Pending verification (68 per cent*)

* RPRA modified the diversion calculation starting in 2017 to reflect energy recovery

3.3 Problem / Opportunity Statement

The ECA and EA Notice of Approval for the DYEC both limit the annual tonnes processed to 140,000 tonnes per year. As a result of these approval limits on DYEC processing capacity, the Regions were required to by-pass waste to other disposal facilities that could have otherwise been processed at the DYEC (Table 2). With growth continuing in Durham and York Regions, additional disposal capacity is needed to meet current system demands and to account for long term growth. The table below shows the DYEC by-passed waste tonnages from the previous three years and projections for 2026 and 2029. The tonnage projections were presented to Durham Regional Council on February 27, 2019. The 2019 projection has been updated to reflect conditions encountered during 2019.

Table 2: Durham By-pass Waste Tonnes

Year	Tonnes By-passed to Other EFW Facilities	Tonnes By-passed to Landfill	Tonnes By-passed to Waste Composition Study	Total Tonnes By-passed
2017	10,170	3,487	0	13,657
2018	370	6,280	3,657	10,307
2019 (thru Oct)	0	13,675	0	13,675
2020 projected	*	*	0	10,786
2026 projected	*	*	0	33,850**
2029 projected	*	*	0	**45,766**

* Covanta contracts disposal of by-pass waste to landfill or other EFW facilities based on available capacity and cost for disposal
**By-pass tonnage projections assume Durham's planned Anaerobic Digestion and waste pre-sort is not operational; this project is discussed in Section 3.4.

If the annual approval limit of 140,000 tonnes per year was increased, some of the additional demand for disposal capacity could be satisfied using the existing equipment at the DYEC. The maximum annual waste tonnage that an energy-from-waste facility can process when operating at full design load varies from year to year and is

influenced by several factors. This maximum annual tonnage can be calculated using the following equation:

$$T_{max} = \frac{365 \times Q \times A}{HHV}$$

Where:

T_{max} = The maximum waste tonnage that can be processed in one year if the boilers operate at 100 per cent design load whenever they are operating.

Q = The design rate of fuel energy input. For the DYEC, this value is equal to 5,668,000 megajoules per day (MJ/d) with both boilers operating at full design load.

HHV = The average Higher Heating Value of the fuel. This parameter measures the average energy content per unit of fuel mass and varies over time based on waste composition. The DYEC is designed to accept fuel with HHV ranging from 11 to 15 megajoules per kilogram (MJ/kg) which is equivalent to 11,000 to 15,000 megajoules per tonne (MJ/T).

A = The number of hours that the boilers are available to process waste expressed as a percentage of total hours in a year, referred to "boiler availability"

For example, in a year in which the DYEC achieves boiler availability of 94 per cent using fuel with an average HHV of 12,000 MJ/tonne, the maximum number of tonnes that could be processed with the boilers operating at full design load would be:

$$\frac{(365\ days/year) \times (5{,}668{,}000\ MJ/day) \times 94\%}{(12{,}000\ MJ/tonne)} = 162{,}058\ tonnes/year$$

However, if the HHV increases to 14,000 MJ/tonne while boiler availability is reduced to 90 per cent, the maximum number of tonnes that could be processed in one year would be:

$$\frac{(365\ days/year) \times (5{,}668{,}000\ MJ/day) \times 90\%}{(14{,}000\ MJ/tonne)} = 132{,}996\ tonnes/year$$

During the original Environmental Assessment, the DYEC's nominal annual processing capacity was set at 140,000 tonnes per year based on expected normal HHV values and conservative boiler availability estimates to allow for planned and unplanned facility maintenance. However, as illustrated by the examples above, it is possible for the facility to process more than 140,000 tonnes per year in years of higher boiler availability or lower average HHV. The proposed amendment to the maximum annual processing limit would provide the Regions with the flexibility to use this additional processing capacity when available. This in turn would reduce the quantity of waste requiring alternate disposal at facilities outside the Regions' borders.

The proposed processing limit amendment provides an opportunity to achieve significant environmental and social benefits using existing infrastructure, such as:

- Reduced reliance on disposal capacity outside the Regions' borders and subject to market fluctuations for price;
- Reduced highway traffic and emissions associated with long-haul transportation to remote disposal sites;
- Reduced methane emissions from landfill disposal;
- Increased energy recovery and displacement of fossil fuel electricity generation; and
- Reduced cost to Regional taxpayers.

Through the Screening process, the Regions will review studies, and where necessary, update modelling completed during the original EA or prepare new models where required to demonstrate that these benefits can be realized with no unacceptable environmental impacts. Several of the studies undertaken during the original process included consideration of impacts of a larger facility, with a processing capacity of up to 400,000 tonnes per year, which remain a conservative estimate for the facility operating under the proposed capacity increase to 160,000 tonnes per year.

3.4 Other Long-Term Solutions

As part of its longer-term efforts to manage its waste within its borders, Durham Region intends to construct an anaerobic digestion facility with a mixed waste transfer and pre-sort component. The proposed facility operation is to remove a portion of the organic fraction of the wastes which are not currently being captured by the Durham Region Green Bin program for processing in an anaerobic digestor. Additionally, Durham Region intends to recover portions of the stream as recyclables, as well as remove identified inert or non-combustible materials from the waste. This is intended to reduce the amount of waste that must be sent for disposal at the DYEC from Durham Region. If the Anaerobic Digestion facility was currently operational, it is estimated that waste generation would not exceed DYEC capacity until 2027.

Removing additional materials from the waste stream upstream of the DYEC will delay the need for further DYEC expansion. Funding for development of the Mixed Waste Transfer/Pre-sort with Anaerobic Digestion project was approved by Durham Regional Council in June 2019, and Durham Region is now undertaking a siting assessment. Durham Region intends to have the facility in service within three to five years, subject to approval, procurement and construction.

The Regions are also commencing consultation on a draft Terms of Reference for an individual EA to expand the DYEC to manage larger quantities of waste. Assuming both the 160,000 tonnes per year capacity increase as well as the anaerobic digestion with mixed waste presort projects are successful, Durham Region is expected to require additional disposal capacity after 2032. In June 2019, Durham Region Council also approved staff to proceed with the drafting of a Terms of Reference for an EA for the DYEC expansion.

4. Screening Criteria and Potential Environmental Effects

As part of the Screening, the MECP requires the completion of an Environmental Screening Checklist. The checklist is an evaluation of potential environmental effects that could result from the project. The checklist was completed to evaluate the potential effects from increasing the annual capacity of the DYEC by 20,000 tonnes to a maximum of 160,000 tonnes per year. The draft checklist was presented at the first Public Information Centre for the project and the completed checklist is attached as **Appendix A**. The checklist identified two areas where negative potential effects could exist as a result of the change in the facility:

- Air and Noise
- Socio Economic (proximity to airport or heliport)

The rationale for the checklist results are presented below.

Prior to the construction of the DYEC, an individual EA was completed to evaluate the potential environmental effects of the facility and determine mitigating actions for those effects. The 2009 EA report and associated technical studies can be viewed on the DYEC website at the following location: https://www.durhamyorkwaste.ca/Archive/pdfs/study/Complete-Amende-EA-Doc-Nov-27-2009.pdf Numerous Technical Study Reports were completed to evaluate potential effects on the natural environment, socio-cultural conditions of the community and air, water, noise or vibration impacts. The 2009 EA was completed for two tonnage scenarios, the approved 140,000 tonnes per year and a future expansion to 400,000 tonnes per year.

As part of this Screening, the 2009 Technical Study Reports were reviewed to determine if the initial studies can be applied to the 160,000 tonnes per year scenario to identify potential concerns and determine if the monitoring and mitigation measures already in place at the DYEC facility are sufficient to mitigate any additional impacts from the 20,000 tonnes per year waste capacity increase. The report review included a

summary of the initial findings, any mitigating efforts included as part of the initial design and construction of the facility and an evaluation of anticipated changes due to the additional 20,000 tonne per year capacity.

4.1 Groundwater and Surface Water

The DYEC is located within the Tooley Creek watershed and is in the Central Lake Ontario Conservation Authority (CLOCA) jurisdiction. On-Site surface water features include storm water management ponds in the southwest and southeast corners of the property. The nearest natural surface water body is a tributary of Tooley Creek, located approximately 150 metres northwest of the DYEC. At its nearest point, Tooley Creek is located approximately 700 metres southwest of the DYEC. The Tooley Creek watershed has an approximate length of five kilometres from its headwaters near Highway 2 to its discharge point at Lake Ontario (Stantec, 2011).

Generally, ground surface elevations in the area of the DYEC gradually decrease from northeast to southwest toward Lake Ontario, which is located approximately 450 metres south of the Site. Near the Site, ground surface elevations generally range from approximately 95 metres to 102 metres above sea level.

Regionally, shallow groundwater flow near the DYEC is anticipated to reflect surface topography and generally flow in a northeast to southwest direction toward Lake Ontario. Shallow groundwater flow may be influenced by local features including, but not limited to, Tooley Creek and its tributaries, surface water ponds and ditches, and underground utilities. Deep groundwater flow near the DYEC is anticipated to reflect bedrock topography and flow in a southerly direction toward Lake Ontario.

The following 2009 studies and reports that were undertaken during the initial Environmental Assessment were reviewed to determine any anticipated adverse effects or additional impacts to groundwater or surface water that will result from the 20,000 tonnes per year capacity increase as outlined in the screening criteria checklist:

- Surface Water and Groundwater Technical Study Report (Jacques Whitford, 2009, Appendix C-2)
- Natural Environment Assessment (Jacques Whitford, 2009, Appendix C-7)
- Geotechnical Investigation Technical Study Report (Jacques Whitford, 2009, Appendix C-4)
- Environmental Compliance Approval Application Submission Stormwater (Golder Associates, 2011)

The following legislation, as amended, was reviewed, and it was determined that the DYEC continues to be compliant as there have been no legislative changes which would impact the groundwater and surface water monitoring program.

- Ontario Drinking Water Standards (ODWS) (2006)
- Provincial Water Quality Objectives (PWQO) (1994)
- Canadian Water Quality Guidelines (CWQG) (2011)
- Clean Water Act (2006)
- Environmental Compliance Approval Application for Stormwater (Golder Associates, 2011)

4.1.1 Surface Water

The DYEC is a Zero Process Water Discharge Facility. DYEC is designed such that there is no discharge of water from inside the facility buildings other than sanitary sewer discharge from the washrooms and kitchenettes. Stormwater drainage from outdoor surfaces, such as rooftops, driveways and landscaped areas, is collected in two stormwater management ponds. (SWMPs). Discharge from the on-site SWMPs is conveyed westward via an existing swale within the CN Rail right-of-way prior to discharging into a small tributary of Tooley Creek, approximately 700 meters southwest of the DYEC. The primary purpose of the surface water monitoring program is to monitor the effectiveness of stormwater management controls in mitigating adverse impacts to Tooley Creek receiving waters. A significant amount of construction activity has occurred upstream of the DYEC as result of the ongoing road network

improvements in the area, which has disrupted the surface water monitoring program. Once construction is complete the Regions in consultation with the MECP are anticipating revision of the program to evaluate the impacts of construction which could include relocation of established sampling points.

In 2011, Sigma Engineering analyzed the site design for the stormwater based on the 2009 Surface Water and Groundwater Assessment Technical Study Report, and stated the original design included a conservative assumption that the 100-year storm is contained in the stormwater pond design and that the ponds are sized to meet governing erosion and sediment control requirements. The stormwater management design is currently oversized, as it was designed to accommodate the additional runoff associated with infrastructure to process 400,000 tonnes per year. Sigma Engineering reviewed and revised the original analysis completed for the Surface Water and Groundwater Assessment Technical Study Report, to address design changes that occurred after the initial Environmental Assessment was completed in 2009. The revised report was submitted to the MECP as part of the Environmental Compliance Approval application and maintains the 100-year stormwater capacity along with erosion and sediment control requirements.

The initial EA proposed one on-site stormwater management pond, however, with the development of the CEBP, stormwater plan modifications were made to the site stormwater design. The drainage area contributing to the stormwater ponds was reduced from 12.4 hectares to 10.1 hectares due to the construction of a new right-of-way along Energy Drive which has its own drainage system including a wider swale, providing more capacity to the onsite storage ponds. As a result of these off-site changes, the design provides a better level of stormwater management than what was proposed in the initial EA documents.

In accordance with the ECA Condition 5, Inspections and Maintenance of the Works, (7), the Owner shall inspect the Works at least once a year and, if necessary, clean and maintain the Works to prevent the excessive build-up of sediments and/or vegetation.

As a result of the inspection performed in the fall of 2015, after the completion of the DYEC construction, maintenance was performed on both the east and west ponds between February and April 2016. Both ponds were dewatered using silt control discharge bags placed on vegetated areas. The design grades were reestablished, and all silt was transported to a designated area on site for draining before analysis. Approximately 560 m^3 of stockpiled silt was sampled by GHD Environmental and removed to an approved disposal location. This level of maintenance is not expected in the future now that site construction is complete, and the property is fully landscaped. No deficiencies have been found in the annual sewage works inspections since the time of the above-mentioned maintenance.

The addition of 20,000 tonnes of waste capacity per year will not result in any changes to draining areas and will not require the addition of any impervious surfaces or construction of any new buildings. No additional surface water will be directed into the stormwater management ponds that currently exist onsite or result in additional discharge into the Tooley Creek wetland.

Based on the review of the initial EA and final design of the stormwater management system, no significant negative effects to stormwater will result from the 20,000 tonnes per year capacity increase.

4.1.2 Groundwater

A Groundwater Impact Study was completed during the initial EA study concluded that development of the DYEC would not have any noticeable effects on the surrounding groundwater resources during normal operations.

Several design features were incorporated into the DYEC to protect groundwater including:

- A zero-process water discharge facility. The DYEC is designed such that there is no discharge of water from inside the facility buildings other than sanitary sewer discharge from the washrooms and kitchenettes.

- The waste storage pit is constructed using one metre thick concrete conforming to Canadian Standards Association A23.1 Class C-1 performance standards which applies to structurally reinforced concrete that is exposed to chlorides at a wide range of temperature conditions.
- The waste storage pit is lined on the exterior with a sodium bentonite waterproofing membrane to prevent leakage of water into or out of the pit, therefore preventing any contact between leachate from the waste and the local groundwater.
- The waste storage pit was oversized during the original construction and has the capacity to store waste for up to four days when operating at a 250,000 tonnes per year waste processing rate.
- The waste storage pit construction includes PVC plastic water stops in the construction joints which form a continuous, watertight barrier that prevents the passage of fluid, therefore preventing any contact between leachate from the waste and the local groundwater.
- Diesel tanks are of double-walled construction with a leak detection system and are checked daily per the DYEC Containment Protocol.
- A containment dyke surrounds the ammonia tank. Daily general inspection of the ammonia tank for leaks and annual calibrations of the ammonia alarm are safeguards that are included in the DYEC Containment Protocol.

In addition, ash is transported to a dedicated storage building with concrete floors using fully enclosed conveyors, and subsequently removed for off-site disposal. The primary means by which groundwater could potentially become affected would be through an upset condition at the facility. The existing groundwater monitoring program would provide an early warning if a potential affect were to occur.

Groundwater sampling commenced in December 2011, prior to the start of facility construction, and has continued through facility construction and throughout the three

years of DYEC operations. Groundwater is monitored at eight monitoring wells installed in five locations. From 2011 to 2018, groundwater samples were collected annually in the spring, summer and fall. The DYEC Monitoring Plan was amended to reduce the required groundwater monitoring frequency from three times per year to once per year in the fall, commencing in 2019. The groundwater sampling parameters are noted in Table 3 below.

Table 3: Durham York Energy Centre Sampling Parameters

Durham York Energy Centre Sampling	Field Measurements	Major Anions	Major Cations	Metals
Groundwater Parameters	Water level Temperature pH Conductivity Oxidation Reduction Potential	Carbonate Bicarbonate Chloride Sulphate	Calcium Magnesium Potassium Sodium	Boron Cadmium Cobalt Lead Mercury

Groundwater monitoring results to date confirm that groundwater analytical results for the DYEC have consistently satisfied their respective Ontario Drinking Water Standard (ODWS) since monitoring began at each monitoring well, except for an instance of high chloride levels at one location which is potentially as a result of deicing salt influence and is under investigation by the Region's monitoring consultants. Overall, the groundwater analytical results suggest that DYEC operations have not had an adverse effect on groundwater quality at the DYEC.

There will be no changes to the waste storage pit to accommodate the proposed waste capacity increase, as the waste storage pit was sized to support the operations up to 250,000 tonnes per year. The volume of waste stored in the pit will not increase with the capacity increase and the waste retention time will decrease. With no modification or

construction planned for the waste storage pit, there will be no risk of altering the integrity of the pit walls.

In the unlikely event that a groundwater contamination issue was to develop at the site, the low rate of groundwater flow would limit the rate of contaminant dispersion and provide the Regions with sufficient time to undertake remediation. Borehole logs for the monitoring wells confirm that the facility is constructed on silty glacial till soils. Based on the hydraulic conductivities and the horizontal hydraulic gradients observed on the site, it is anticipated that surface water will infiltrate into the ground and travel at a low rate of approximately one metre per year or less.

Based on the review of the initial EA, groundwater impact mitigation design features of the DYEC and current groundwater monitoring results, the monitoring and mitigation plans currently in place are adequate to protect groundwater at a waste processing capacity of 160,000 tonnes per year. No significant negative effects to groundwater will result from the 20,000 tonnes per year capacity increase.

4.2 Land

A review was completed of the following 2009 study that was undertaken during the initial Environmental Assessment that shows there are no anticipated potential effects to land as outlined in the screening criteria checklist.

- The Social/Culture Assessment - Technical Study Report (Jacques Whitford, 2009, Appendix C-8)

The following social/cultural indicators were considered in the Technical Study to determine the site's compatibility with existing and proposed land uses:

- Potential for disruption to use and enjoyment of residential properties
- Potential for changes in community character
- Potential for disruption to use and enjoyment of public facilities and institutions
- Potential for disruption to use and enjoyment of cultural and recreational resources

- Compatibility with existing land use designations and proposed land use designations

For the completion of the Environmental Screening Checklist part 2.0 Land, the conclusions related to potential for disruption to use and enjoyment of residential properties and compatibility with existing land use designations and proposed land use designations were reviewed.

At the time of the 2009 EA, the area surrounding the proposed location for the DYEC included the Courtice WPCP immediately south of the site, auto auction sites immediately east and north of the site and agricultural lands west and further east of the site; on-farm residences were identified with the agricultural property use on the east and west sides of the site. An uninhabitable residence was also located northwest of the site. Further north of the site, north of Highway 401 are light industrial businesses and a few residences. The waterfront trail runs south and east of the site.

The DYEC is located on employment lands/business park as designated in both the Regional and Clarington Official Plans. The DYEC is located on a portion of land that has been designated the CEBP.

The Technical Study concluded that the DYEC would have minimal overall potential effects on residential properties, public facilities or institutions and is compatible with the development of the future CEBP.

Since the 2009 Environmental Assessment Technical Studies were completed, the following changes occurred to the DYEC surrounding land use:

- Ontario Power Generation completed construction of a training centre, the Darlington Energy Complex, located at the southeast corner of Energy Drive and Osbourne Road, directly east of the DYEC
- Manheim Oshawa Auctions is no longer located north of the DYEC
- The uninhabitable residence northwest of the site and the residence located west of the DYEC have been demolished

- Extensive work has been completed on the new 418 interchange and connector highway between the 401 and 407 East extension

The lands are zoned employment/light industrial areas which is compatible with the DYEC activity:

- Zoned: Business Park Map A2 Land Use Courtice Urban Area (June 2018)
- Clarington Zoning By-law 84-63 Sections 23C – Energy Park Light Industrial and 23D Energy Park General Industrial (2015)

The DYEC continues to be in a designated employment/ light industrial area as indicated in both the Region of Durham and Municipality of Clarington Official Plans. These municipal plans are consistent with the 2014 Provincial Policy Statement Sections notably 1.2.6 and 1.6.10. As no construction or alterations to the site are required for the increase in capacity to 160,000 tonnes per year, there will be no additional land-use impacts to nearby properties.

Based on the review of the initial EA and current municipal zoning for the DYEC and surrounding property, no significant negative effects to land use will result from the 20,000 tonnes per year capacity increase.

4.3 Air, Noise and Odours

Review of the 2009 studies that were undertaken during the initial Environmental Assessment was undertaken to identify potential changes to air, noise and odour emissions associated with the DYEC. The likely potential changes are attributed to the larger quantities of air and combustion gases being released through the stack as a result of processing an additional 20,000 tonnes per year. The following reports, legislation, standards and guidelines were reviewed to determine the implications to the DYEC capacity increase including:

- Air Quality Assessment - Technical Study Report (Jacques Whitford, 2009, Appendix C-1)

- Acoustic Assessment - Technical Study Report (Jacques Whitford, 2009, Appendix C-5)
- Guideline A-7: Air Pollution Control, Design and Operations Guidelines for Municipal Waste Thermal Treatment Facilities (2010)
- O. Reg. 419/05: Air Pollution - Local Air Quality (as amended)
- Canadian Ambient Air Quality Standards (CAAQS) (2013)
- Ontario's Ambient Air Quality Criteria (AAQC) (2012 as amended)
- MECP Publication NPC-300 Environmental Noise Guideline – Stationary and Transportation Sources (2013)
- Publication NPC-233 Information to be submitted for approval of stationary sources of sound (1995)
- DYEC Environmental Compliance Approval Application for Air and Noise (2011)

The results of this review are summarized in the sub-sections by area below.

4.3.1 Odour

The waste processed at the DYEC is a heterogeneous mixture of residential waste materials and may include odorous substances. Potential odour emission sources associated with the processing of the waste include:

- Truck transportation of waste onto the site
- Waste handling and storage onsite
- Thermal treatment of waste onsite

As described in section 1.2 the waste delivery trucks are fully enclosed to reduce the potential for odour emissions while transporting waste. The tipping building and storage pit were designed with several features to minimize the potential for odour generation. Both the tipping building and storage pit were designed during facility development to support a third boiler train. The following were features included during the initial design to minimize the potential for odour generation.

- The tipping building is equipped with multiple bays to minimize waste truck queuing outside the tipping building during peak truck arrival periods.
- The tipping building is equipped with motor operated entrance/exit doors. The doors remain closed except when vehicles are entering or exiting the tipping building. In addition, the louvers on the north outside wall of the tipping building are closed during truck deliveries.
- The air from the tipping building and storage pit area is drawn in through inlet ducts above the waste storage pit for use as combustion air and maintains negative pressure in the tipping building which prevents the escape of dust and odour.
- Drawing air from the waste storage pit eliminates ambient odour problems as the temperature in the combustion chamber ranges from 1000 to 1400ºC, which is sufficient to complete the combustion of all organic vapours.

Potential odour emissions were assessed as part of the initial ECA application for Air and Noise, following the MECP Technical Bulletin Methodology for Modelling Assessments of Contaminants with 10-minute Average Standards and Guidelines under O. Reg. 419/05 (2008). The odour was modelled during a potential outage situation when all combustion equipment is off-line. Draft induced fans would continue to operate and draw air from the tipping building, through the system and vented out of the stack. The worst case odour concentration was 0.11 Odour Unit (OU) per cubic metre (ou/m^3) which is well below the MECP POI limit of 1 ou/m^3 (10-minute average) at all off property receptors. The modelling assumed a full storage pit, as the size of the pit, and the maximum waste storage amount are not being revised during the increase to a 160,000 tonne per year facility, the modelled scenario remains applicable.

To verify the initial modelling, a one-time odour sampling was undertaken in October 2015 by Zorix Consultants Inc., in accordance with the Ontario Source Testing Code Method ON-6. As the tipping building was identified as the principal source of fugitive odours, triplicate samples were collected from the area. The air samples were analyzed

by an 8-member odour panel to determine the typical odour source concentration. Dispersion of worst case potential odours through the stack during a 2-hr outage was modelled using the CALPUFF dispersion model as approved under Schedule B of the DYEC ECA. According to the model, the maximum, 10-minute odour concentration at a sensitive receptor was 0.28 OU and occurred at a former house to the west of the facility. This result was well below the compliance limit of 1.0 OU. Odour sampling was undertaken in 2015 which verified the 2011 modelling. No changes to the amount of waste which is permissible to be stored at the facility are required as a result of the increase in the facility capacity. All received waste on site will continue to be stored within the existing storage pit and will operate as per the existing operations. As described above the DYEC has numerous measures in place to mitigate the risk of odours. The tipping building and waste storage pit are and will continue to be maintained under negative pressure and air drawn in from the tipping floor and waste storage pit areas is be used for combustion air, meaning that odourous air is drawn into the furnace and destroyed though high temperature oxidation. The truck entrance and exit doors and louvers will continue to be closed when there are no deliveries of waste to the facility. The facility has an Aqua Fog® odour control unit that can be deployed as needed. The misting unit uses a diluted solution of a plant based organic micronutrient (SciCorp BIOLOGIC® SRC3) which neutralizes odour by stimulating both aerobic and anaerobic non-odour producing bacteria while competitively inhibiting sulphur-reducing and ammonia forming bacteria and enzymes. The system is commonly deployed during periods when both boilers will be offline for several days such as when work is occurring around the turbine unit.

The facility operations staff complete regular inspections (daily/weekly/monthly) which include inspection of equipment, as well as general observations of odour. Additionally, Regional staff routinely review the conditions at the perimeter of the facility to determine if detectable odours are present at the property boundary. The DYEC procedures and odour mitigation measures are reviewed annually and an updated Odour Management

& Mitigation Monitoring Report is submitted to the MECP. To date the facility has not had any odour complaints which were attributed to the DYEC.

No changes to the amount of waste being stored at the facility at any time are being considered as part of the proposed increase in capacity to 160,000 tonnes per year, furthermore no changes to the waste storage location, or any other component of the facility are proposed. As a result, the previously completed models, as validated during facility operations, are still representative of the proposed operations. As demonstrated during the DYEC operations, the in-place mitigation measures are anticipated to remain effective at controlling any generated odours.

4.3.2 Noise

Acoustic Assessment Reports were completed for the 2009 EA and for the initial Environmental Compliance Approval application:

- The Acoustic Assessment –Technical Study Report (Jacques Whitford, 2009, Appendix C-5)
- Acoustic Assessment Report (Golder, 2011 Durham York Energy Centre ECA Application, Air and Noise) https://www.durhamyorkwaste.ca/Archive/pdfs/project/certApproval/DurhamYorkEnergyCentreAirandNoiseCofA.pdf
- Annual Noise Monitoring of the Durham York Energy Centre Operations (Valcoustics Canada Limited, 2017) https://www.durhamyorkwaste.ca/Assets/Documents/MonitoringPlansReports/Noise/2016/Reports/2016_Acoustic_Audit_Report.pdf

During the development of the DYEC evaluations were completed for two design capacity scenarios. These are the initial design capacity of 140,000 tonnes per year and a maximum design capacity of 400,000 tonnes per year. The report includes consideration of:

- Existing ambient acoustical environment
- Sound from the facility construction

- Sound from the facility operations
- Potential impacts of sound on wildlife in addition to human receptors
- Mitigation measures to limit and manage potential effects

The noise assessment was designed to assess the potential effects of the DYEC relative to the applicable regulatory requirements. In 2009, MECP Noise Pollution Control (NPC) documents 205/232/233 were in effect. Evaluations of potential noise effects during the initial construction and operations were conducted which considered both the 140,000 tonnes per year and 400,000 tonnes per year scenarios.

The technical study assessed the noise class of the area containing the DYEC. The classes are defined in the NPC guideline and concluded that the DYEC is in a Class 2 (suburban) area with acoustical qualities representative of both Class 1 (urban) and Class 3 (rural) areas. Class 2 sound levels are characteristic of Class 1 areas during the daytime with background sound levels dominated by an urban hum. At nighttime, Class 2 areas have a low sound level dominated by natural environment and infrequent human activity noises. Nighttime sound levels in a Class 2 area can start as early as 1900 hours. Table 205-1 from the NPC 205 guideline set out the Minimum Values of One Hour $L_{eq,}$ or L_{LM} for class 2 areas as 50 dBA/dBAI from 0700 – 1900, and 45 dBA/dBAI from 1900 – 0700.

The technical study was conducted in July 2009 and the DYEC was predicted to meet all NPC-205 noise limits when operating at both the 140,000 tonnes per year and 400,000 tonnes per year scenarios. The technical study predicted noise mitigation might be required for the emergency generators and fire pumps but not for the regularly operating equipment.

In 2011, an additional acoustic assessment was completed in support of the ECA application for the DYEC. This acoustic assessment incorporated changes and refinements which were not initially known during the 2009 acoustic assessment undertaken in support of the EA. Proposed DYEC equipment assessed in this study included roof ventilation units on the main building and residue building, the closed-loop

cooling water cooler, silo filling, silo dust collector, loader operations, bay doors and process louvers.

The worst case daytime operating scenario has all sources and both boiler trains operating simultaneously. This included ten trucks entering and exiting the DYEC per hour. Standby equipment was tested in a separate hour during the day. The worst-case night time /evening operating scenario had all sources and both boiler trains operating simultaneously, but did not include silo filling, dust collection operations, on-site traffic, tipping hall bay doors remained closed and no standby equipment operating.

Three locations were identified as the most sensitive points of reception near the DYEC:

- Two-storey single family dwelling located approximately 480 metres from the property line west of the facility. (This dwelling has since been demolished).
- Two-storey single family dwelling approximately 690 metres from the property line east of the facility.
- One-storey single family dwelling approximately 870 metres from the property line north of the facility.

Sound levels from the DYEC at these identified sensitive points of reception were predicted to be at or below the applicable sound level limits as specified in NPC-205 during the predictable worst-case hour of the DYEC normal operation and during the testing of the standby diesel generator or diesel fire pumps.

Given the nature of the activities at the DYEC, noise impacts were anticipated to be minimal. There is no grinding, shredding or other pre-processing of the waste and noise mitigation measures were installed for the emergency generator and fire water pumps. An emergency generator is located outside, west of the tipping building and is equipped with an acoustic enclosure including air intake/discharge silencers and an engine exhaust muffler. The fire water pumps are housed in a building near the southeast corner of the site and are fitted with exhaust mufflers. The DYEC operating procedures require that weekly testing of the emergency generator and fire pumps only occurs during business hours (0700 to 1900) and only for a thirty-minute duration. The

equipment is not tested at the same time to further reduce noise impacts. Since site activities are not changing, sound emissions from the DYEC are not expected to increase with an increase in waste processing capacity to 160,000 tonnes per year.

In 2013, MECP released new noise guidelines in the publication NPC-300 Environmental Noise Guideline, Stationary and Transportation Sources – Approval and Planning. NPC-300 was designed to limit the conflicts between NPC-205/232 and land use planning requirements. NPC-300 introduces new sound level limits, a new protocol for assessing impulse sounds and a requirement to consider hypothetical, potential points of reception on vacant lands that might permit a sound-sensitive land use in the future.

The ECA for the facility required an acoustic audit after construction and during normal operations. An Acoustic Audit Report was prepared in January 2017 by Valcoustics Canada Limited (Valcoustics) based on field work completed in 2016. The Acoustic Audit provided a determination of facility sound levels during peak facility activity with both boilers operating at full thermal load. The acoustic audit also provided an assessment of the DYEC sound classification based on the surrounding site activity in 2016. Noise was assessed at three receptor locations. Audit measurements were also completed in the vicinity of these receptors. One two-storey receptor dwelling was demolished as part of the 401/418 interchange and road realignment project. However, a two-storey farmhouse, identified as POR001rev, approximately 1100 metres to the west of the DYEC property line was assessed to maintain consistency with the report. Another receptor, a two-storey family dwelling, identified as POR002, is located 690 metres east of the DYEC property line. And a third receptor, identified as POR003, is 860 metres north of the DYEC. The results of the acoustic assessment found that the DYEC facility was not audible in the vicinity of POR001rev, POR002 and POR003 in September 2016 which is consistent with previous post-operational monitoring periods. These observations were made during the daytime period (0700 to 1900 hours). Additionally, during lulls in road traffic on Highway 401 (the dominant noise source at all locations), the DYEC was not audible.

Based on sound measurements and subjective observations, Valcoustics determined that the DYEC area should be considered a Class 1 (urban) area that is dominated by “urban hum”. The key difference between criteria for Class 1 (urban) compared to Class 2 (suburban) areas is the sound level limits applicable in the evening between 1900 and 2300 hours. Class 2 (suburban) areas have lower sound level limits after 1900 hours. Despite the determination that the DYEC area is now a Class 1 (urban) area, the 2016 audit compared the sound levels to Class 2 (suburban) limits to be consistent with the 2009 EA and the ECA application.

Off-site sound levels from the DYEC are continuous with short-term or transient activities such as truck movements or fire water pump testing not discernable off-site. The 2016 acoustic audit demonstrated that the sound levels from the facility were not audible during the September 2016 post-operational measurement period.

Valcoustics determined that the DYEC activities are within the sound level limits stated in the MECP Publication NPC-205 and concluded that the DYEC remains in compliance with NPC-205, the updated NPC-300 and the ECA. In 2016, the MECP revoked the requirement to conduct further acoustic audit measurements.

No construction or additional equipment is necessary to increase the capacity to 160,000 tonnes per year. It is anticipated that two to three additional trucks will access the site daily. However, since truck traffic is not discernible at off-site sensitive receptors, the change in truck numbers is not expected to increase the DYEC sound levels. Further, waste deliveries are and will continued to be restricted in the ECA to 0700 to 1900 hours meaning there will be no truck traffic after 1900 hours when the sound level limits for Class 2 (suburban) areas are lowered. The DYEC is in the CEBP which is designated for employment and light industrial land use and it is unlikely that new sensitive noise receptors would be constructed with this land use designation. The area surrounding the business park consists of a mixture of light and general industrial lands as well as designated greenspace and waterfront greenway as per the Courtice Urban Area as identified in the Municipality of Clarington’s official plan. The official plan

identifies the closest planned residential area as being roughly 2.3 km north of the DYEC. The Municipality is currently undertaking a review of the CEBP secondary plan.

As part of consultation, the MECP has identified that the 2011 Golder Acoustic Assessment Report (AAR) should be revised to address the following:

1. New noise guidelines in Publication NPC-300 vs old noise guidelines in Publications NPC-205 / NPC-232
2. Changes in points of reception including existing houses and vacant lots
3. Changes in operations / equipment since 2011

The Regions are currently undertaking the updated assessment which is/will be included as Appendix C. However, based on conclusions made in the 2016 Acoustic Audit Report expected sound levels are anticipated to be consistent with previous measurements. The 2016 report identified that the DYEC was not audible at the PORs over the ambient noise levels, it is expected that at these locations, the sound contribution from DYEC would be at least 10 dBA lower than the average minimum (October 2015) L_{90} sound levels measured. The average minimum L_{90} sound levels were such that sound levels from DYEC are well within the sound level limits. This is a conservative assessment since the measurement locations are closer to DYEC than the actual noise receptors and any additional distance attenuation has not been considered. Although the report was prepared in accordance with NPC-205 it also identified that based on the circumstances surrounding the DYEC, it would remain in compliance with the updated NPC-300 requirements.

To date the facility has received one complaint associated with noise, related to the venting of steam which occurred during the facility suddenly losing the turbine.

Based on the acoustic assessment for the ECA application and subsequent acoustic audits completed for the DYEC, in combination with no equipment changes proposed as a result of the capacity increase, no significant negative effects from noise are anticipated from the 20,000 tonnes per year capacity increase. However, as a result of consultation with the MECP a need for an updated 2019 acoustic assessment was

identified and will be completed. The results of the 2019 acoustic assessment will be included in Section 5 and included as Appendix C.

4.3.3 Stack Emissions

The Environmental Screening Criteria Checklist indicates that the waste capacity increase to 160,000 tonnes per year could result in potential impacts to air. Air emissions are a primary concern of most stakeholders. In 2011, in support of the Environmental Compliance Approval, an Emissions Summary Dispersion Modelling (ESDM) report was completed to determine the potential for impacts at several receptors surrounding the DYEC. This was also a supporting component of a Human Health and Environmental Risk Assessment completed for the DYEC. The ESDM is updated annually following stack testing.

The Air Quality Assessment Technical Study report undertaken in 2009 during the initial EA predicted the contaminant emissions from the DYEC at both the 140,000 tonnes per year and 400,000 tonnes per year scenarios. The assessments were carried out using the approved (CALMET/CALPUFF) air quality modelling system.

The assessment predicted that of all the contaminants of potential concern, the highest ground level concentration relative to the regulatory criteria due to the DYEC was nitrogen dioxide at 11 per cent (1-hour average) of the limit for the 140,000 tonnes per year scenario and 24 per cent (1-hour average) of the limit for the 400,000 tonnes per year scenario. O. Reg. 419/05 Schedule 3 sets the regulatory limit for Nitrogen Oxides at 400 µg/m^3 for a one hour averaging period.

To assess the impacts of the change in emissions from the proposed capacity increase, an air quality dispersion modelling assessment for a 160,000 tonnes per year scenario was developed and compared to the original 140,000 tonnes per year scenario as found in the 2011 Emission Summary and Dispersion Modelling Report dated March 2011. This is documented in Appendix B:

- Technical Memorandum - Air Quality Impact of 160,000 tonnes of waste per year at Durham York Energy Centre (Golder Associates, 2019)

This initial assessment was made using the facilities approved ESDM air model, however, the stack exhaust conditions were updated to match the recently measured data (i.e., mass emission rates, flow and temperature data). These datasets were used to simulate exhaust conditions for the 160,000 tonnes per year scenario. The resulting model identified minimal change to the predicted concentrations (less than eight per cent). The results of the modelling for the 160,000 tonnes per year scenario demonstrated compliance with O. Reg. 419/05 standards. In each scenario, predicted Point of Impingement (POI) concentrations of all contaminants were significantly lower than the corresponding O. Reg. 419/05 standards. Based on the update, of the modelled parameters Nitrogen Oxides remain the contaminant with the highest predicted concentration relative to the O. Reg. 419/05 MECP limit. For the 140,000 tonnes per year scenario the Nitrogen Oxides were predicted to reach 7 per cent of the 400µg/m^3 limit, while they reached 8 per cent of the limit during the 160,000 tonnes per year scenario.

Background air quality concentrations from the ESDM were also added to the predicted concentrations from the DYEC to estimate cumulative concentrations. The cumulative concentrations of all contaminants were compared to the MECP limits and are still below the relevant MECP limits for both modelled scenarios, except for Benzo(a)pyrene over an annual averaging period. The background concentration of Benzo(a)pyrene is greater than the MECP limit before any contribution from the DYEC is included and emissions from the DYEC contribute less than one per cent to the total ambient Benzo(a)pyrene concentration. O. Reg. 419/05 standards are not typically applied to cumulative concentration, they are compliance points for predicted concentrations from individual facilities only. Cumulative concentrations are typically compared to the MECP ambient air quality criteria (AAQC) to provide an indicator of good air quality. The cumulative concentration of Benzo(a)pyrene is below the relevant AAQC for both scenarios, over an annual averaging period. Overall, the air quality modelling results for the two scenarios result in predicted concentrations that vary by less than eight per cent, with some contaminants showing a decrease in predicted concentration and some

contaminants showing a slight increase in concentration, depending on the averaging period. This result is caused by the combination of higher emission rates with increased flow rate and temperature, which would result in improved dispersion characteristics for some meteor logical conditions and reduce the concentration of some contaminants.

In summary, the report found that the results of the 160,000 TPA scenario demonstrated that the DYEC would remain in compliance with O. Reg. 419/05 and the step change of the 20,000 TPA resulting in only minor changes to the theoretical maximum, with 102 of the modelled concentrations decreasing and 19 of the modelled concentrations increasing, depending on the averaging time period. Only the one hour averaged NO_x and SO_2 contributed an increased level of concentration (two per cent) at the POI concentration with background. From an operations perspective the DYEC typically operates well below its permitted limits. This results in the model being conservative in terms of the POI concentration at the critical receptors.

As a result of consultation, the MECP requested that an update be prepared revising the approved CALMET/CALPUFF models for the DYEC to further confirm the site will remain in compliance with O. Reg. 419/05. The updated model will utilize a more current version of the modelling software and an updated meteorological data set in order to reflect any improvement to the modelling process or observed changes to weather patterns. An Air Quality Impact Assessment (AQIA) and updated standalone ESDM are being prepared as part of the Screening Process. These studies are to be discussed in Section 5.

In addition to the O. Reg. 419/05 requirements, which model concentrations at the point of reception, the facility also is required to comply with contaminant emission limits placed on municipal waste incinerators via the MECP document Guideline A-7 Air Pollution Control, Design and Operation Guidelines for Municipal Waste Thermal Treatment Facilities, 2004 (Guideline A-7). Guideline A-7 was updated in 2010 and was considered in the DYEC ECA application. The A-7 guidelines set out requirements for in-stack limits at the DYEC (the source). Confirmation of the DYEC ability to comply with

the A-7 guideline (or in the DYEC's case lower ECA limits) is accomplished through the Continuous Emissions Monitoring System (CEMS) as well as source testing, which is currently conducted twice annually in the spring and fall.

The DYEC uses Continuous Emissions Monitoring Systems (CEMS) to monitor operational and compliance parameters. CEMS is equipment which continuously analyzes and measures air emissions and provides a permanent record of emissions using a computer program to produce results in units of the applicable emission guideline. The use of CEMS assists to ensure compliance with air quality guidelines.

Error! Reference source not found. The DYEC average CEMS results from 2018 demonstrate the DYEC typically operates well below the permit limits as shown in Table 4below.

Table 4: 2018 Average CEMS Readings

Parameter (units)	ECA Limit	Boiler #1	Boiler #2
Opacity (%)	5	0	0
Opacity (%)	10	0	1
Hydrochloric Acid (mg/Rm^3)	9	2	3
Sulphur Dioxide (mg/Rm^3)	35	0	1
Nitrogen Oxides (mg/Rm^3)	121	111	111
Carbon Monoxide (mg/Rm^3)	40	14	13
Oxygen (%)	Minimum 6	8	8
Furnace Temperature (ºC)	Minimum 1000	1247	1272
Baghouse Inlet Temperature (ºC)	>120 <185	143	143

As well,**Error! Reference source not found.** Table 5 below shows the results of the fall 2018 and spring 2019 source test results compared to the in-stack contaminant concentration limits set in DYEC's ECA, as well as those outlined in Ontario's A-7 Guideline and the European Union (EU) standards. The Regions proposed the prescribed ECA guidelines and included them as part of the DYEC Request for Proposal to demonstrate commitment to meet or exceed current regulatory guidelines. The MECP adopted those guidelines and included them in the ECA. The DYEC ECA

limits either met or exceeded the legislative emission guidelines in both the EU and Ontario. An additional level of safety is applied with the more stringent ECA limits. Additionally, the results of the most recent source test demonstrate that the DYEC normally operates well below the ECA limits.

Since the DYEC commenced commercial operation in 2016 there have been four exceedances of the in-stack limits. Most notably, the May 2016 Dioxins and Furans exceedance in Boiler #1, which resulted in the development and execution of an abatement plan for the DYEC. Since that instance all stack testing results have remained in compliance with the DYEC's ECA.

In addition, there have been three, 1-hour exceedances of the DYEC's carbon monoxide (CO) limit, one following the startup of a Unit in March 2018, one as the result of a fuel overfeed in May 2019 and one as a unit was being taken offline following an external power trip to the DYEC in July 2019. Elevated CO levels generally reflect problems with combustion of material, such as when wet waste is fed into the system or when the system is starting up or shutting down.

In all cases where exceedances occur, the MECP is notified, and an assessment of potential impacts at receptors is undertaken. Following the exceedance, the DYEC operator is required to complete a root cause analysis of the events leading up to the exceedance, which includes identifying and implementing measures to prevent recurrence.

Table 5: 2019 Comparative In-Stack Contaminant Concentration Limits

Parameter (units)	European Union (EU) Limits	Ontario A-7 Guideline (2010)	ECA Limits	Boiler #1 Source Test Results		Boiler #2 Source Test Results	
				Fall 2018	Spring 2019	Fall 2018	Spring 2019
Particulate Matter (mg/Rm^3)	9	14	9	0.34	0.62	0.32	0.38
Cadmium (µg/Rm^3)	N/A	7	7	0.14	0.10	0.04	0.08
Lead (µg/Rm^3)	N/A	60	50	0.18	0.59	0.22	0.46
Mercury (µg/Rm^3)	46	20	15	0.30	0.35	0.13	0.10
Dioxins and Furans (pg/Rm^3)	92	80	60	5.05	4.55	3.22	4.58
Hydrochloric Acid (mg/Rm^3)	9	27	9 – (24 hr avg.)	2.9	1.9	4.10	4.2
Sulphur Dioxide (mg/Rm^3)	46	56	35– (24 hr avg.)	0	0.03	0.10	0.02
Nitrogen Oxides (mg/Rm^3)	183	198	121– (24 hr avg.)	109	110	111	110
Organic matter - methane (ppmdv)	N/A	50	50	0.7	1.8	1.0	0.5
Carbon Monoxide (mg/Rm^3)	N/A	40	40 – (4 hr avg.)	13.0	13.1	13.4	12.2

Based on the results of the air dispersion modelling of predicted emissions when operating at 160,000 tonnes per year, the current CEMS data and stack test results; the increase in capacity is not expected to have a significant negative effect on the air emissions from the stack.

The above assessment completed by Golder demonstrates that DYEC emissions are anticipated to remain in compliance with O. Reg. 419 for the increase tonnage scenario. Additionally, based on the results of stack testing and result from the DYEC's CEMS system, the DYEC demonstrates that it is generally capable of meeting the requirements of the in stack ECA requirements as well as the air contaminant emission limits placed on municipal waste incinerators via the MECPs document Guideline A-7 Air Pollution Control, Design and Operation Guidelines for Municipal Waste Thermal Treatment Facilities, 2004/2010 (Guideline A-7). As no changes to equipment or the DYEC's operating window are proposed the DYEC is anticipated to continue to meet its ECA requirements. The Regions, as part of the consultation process, have committed to completing a full ESDM update with an associated AQIA as part of the screening process.

4.3.4 Ambient Air

As required by the DYEC ECA, the Regions have implemented an ambient air monitoring and reporting program which commenced in 2013 prior to DYEC operation. The Ambient Air Quality Monitoring Plan was established as part of the Durham York Residual Waste Study (Stantec, 2012), was developed based on Durham Regional Council's mandate to provide ambient air quality monitoring in the area of the DYEC for a three-year period. An ambient air quality monitoring and reporting program was also a requirement in the EA Notice to Proceed with the Undertaking (EA Notice) as detailed in Condition 11. The plan is maintained on the project website:
Ambient Air Monitoring Plan -
https://www.durhamyorkwaste.ca/Assets/Documents/MonitoringPlansReports/AmbientAir/Plan/Ambient_Air_Monitoring_Plan.pdf

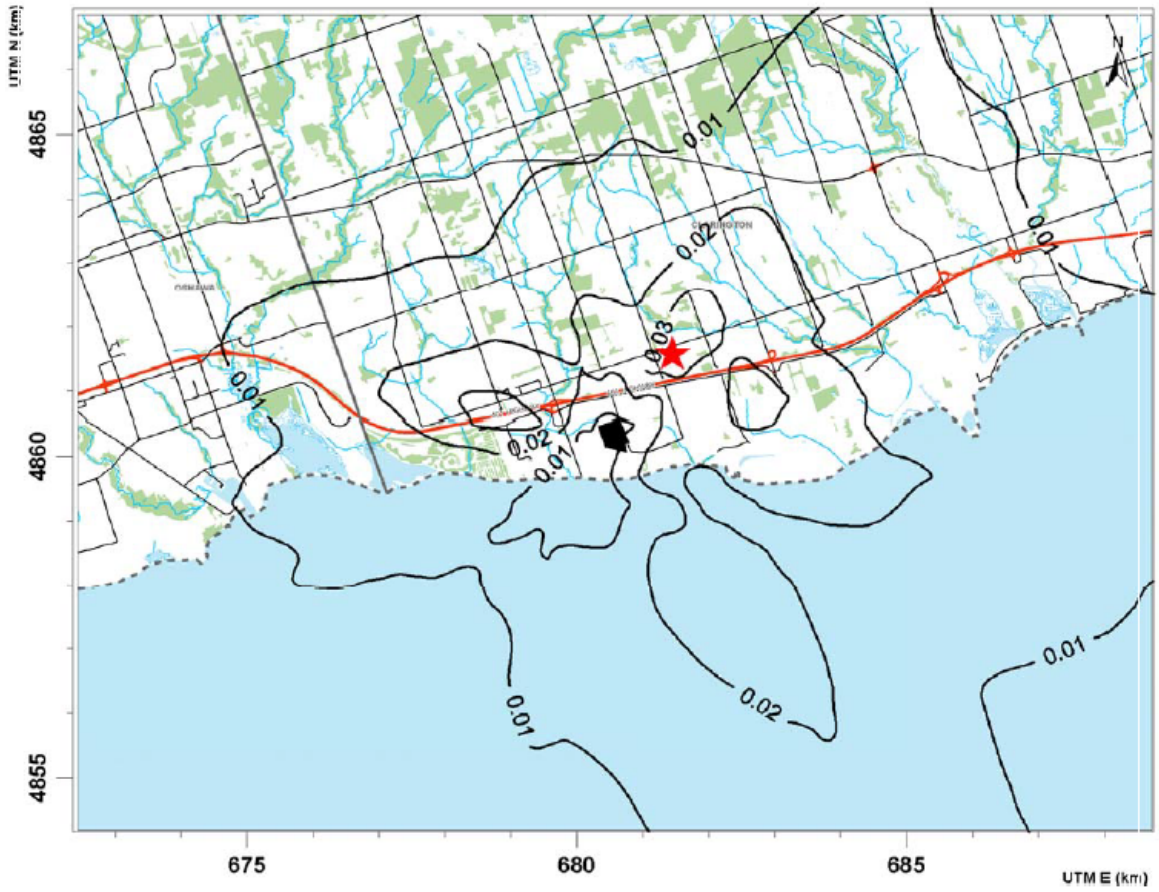
The air monitoring plan was also developed to satisfy the conditions of the ECA, and the environmental mitigation commitments set out in the EA (Jacques Whitford, 2009). The plan identified proposed monitoring locations based on several conditions including:

- The dispersion modelling predicted the highest concentrations over longer-term periods would occur within a one to two kilometre radius measured from the DYEC location, with the highest predicted area of influence located to the northeast
- The land use immediately adjacent to the DYEC is current or future industrial
- Most residential areas are located north of the DYEC
- There are no residential receptors located between the DYEC and Highway 401 in the predominant wind direction (winds blowing from southwesterly directions towards the northeast)
- Predicted particulate and gaseous deposition is larger at receptors further away from the DYEC as opposed to the receptors immediately adjacent to the DYEC as depicted in Figure 4, additional contour plots can be found as part of the facilities ambient air monitoring plan

Approval of the plan and monitoring locations was provided by the MECP in May/June 2012 a copy of the letter is available online.

https://www.durhamyorkwaste.ca/Assets/Documents/MonitoringPlansReports/AmbientAir/Correspondence/MOECC_Approval_Ambient_Air_Plan.pdf

https://www.durhamyorkwaste.ca/Assets/Documents/MonitoringPlansReports/AmbientAir/Correspondence/MOECC_Approval_Monitoring_Station_Location.pdf



Legend

★ Maximum GLC

■ Facility

FIGURE 2-4

Plot of Maximum Predicted Annual-Average Ground Level Concentrations for Normalized Facility-Wide Emission Rate

Scenario 1A (MCR, 140,000 tonnes/yr Facility)

Predicted Statistical Maximum GLC = 0.035 (µg/m^3)/(g/s)

Map Parameters
Projection: UTM
Datum: NAD 83
Zone: 17
Map Units: m
DATE: 8/30/2011
PROJECT: 160930024

Figure 4 – Ambient Air Monitoring Plan Predicting Annual-Average Ground Level Concentrations for Normalized Facility – Wide Emission Rate

Ambient air programs when established, provide information from all potential sources within the area, as opposed to site specific stack monitoring programs which are intended to monitor the emissions from a single source including industry, transportation, agriculture and construction related activities.

There are two monitoring stations in the program. The predominantly downwind station is located along Rundle Road, south of Baseline Road. The predominantly upwind station is sited at the Courtice WPCP. Measurements of the following air contaminants are made at the two stations:

Continuously monitored

- Sulphur Dioxide (SO2)
- Nitrogen Oxides (NOX)
- Particulate Matter smaller than 2.5 microns (PM2.5)

Non-continuously monitored

- Metals in Total Suspended Particulate (TSP) matter
- Polycyclic Aromatic Hydrocarbons (PAHs)
- Dioxins and Furans

Meteorological data is also measured at the Courtice WPCP and Rundle Road Stations. The predominantly downwind Rundle Road Station measures horizontal wind speed, wind direction, atmospheric temperature, relative humidity, and rainfall. The predominantly upwind Courtice WPCP Station measures horizontal wind speed, wind direction, atmospheric temperature, relative humidity, rainfall, and barometric pressure.

Ambient Air reports are provided to the MECP on a quarterly basis for validation and summarized in an annual report. All previous reports are available on the DYEC website. To date, most air contaminant measured concentrations have been below their applicable MECP Standards since the inception of the monitoring program except for total suspended particulate (TSP), benzo(a)pyrene (B(a)P) and dioxins and furans. In

2018, the Rundle Road station measured four TSP elevated concentrations and seven B(a)P elevated concentrations above the 24-hour Ambient Air Quality Criteria (AAQC) standard. The Courtice Road station measured five B(a)P elevated concentrations and one dioxin and furan elevated concentration above the 24-hour AAQC standard. In all instances except one, the DYEC was determined by the ambient air consultant to not be a contributor to the exceedance based on weather conditions at the time. One B(a)P exceedance occurred downwind of the DYEC at the Rundle station also occurred at the upwind Courtice WPCP monitoring station indicating the exceedance was a regional event and not attributable solely to DYEC operations.

The current Ontario 24-hour B(a)P AAQC was introduced in 2011 and levels above this recently enacted AAQC are commonly measured throughout Ontario. B(a)P measurement data available from the National Air Pollutant Surveillance (NAPS) network for Ontario in 2013 (for Simcoe, Toronto, and Hamilton), all had maximum levels above the AAQC (varying between 136 per cent - 6,220 per cent of the criteria). Available NAPS data for Ontario in 2012 (for Windsor, Toronto, and Hamilton) showed maximum B(a)P levels at these stations varied between 716 per cent - 2,920 per cent of the Ontario AAQCs. In 2011, NAPS data available for seven Ontario stations (Windsor, Toronto, Etobicoke, Hamilton, Simcoe, Pt. Petrie, and Burnt Island) showed exceedances at six of the seven stations, with only the remote Burnt Island Ontario station reporting a maximum level below the MECP AAQC. In 2010, all these stations, including the Burnt Island station, measured B(a)P levels above the AAQC.

B(a)P is a byproduct of a wide variety of natural and man-made combustion processes (including motor vehicles, natural gas, wood, refuse, oil, forest fires, etc.) and is widely present in the environment (including being present in soil and water).

Based on the air quality assessments completed during the EA Study and the ECA application for the DYEC, the DYEC will not be a significant contributor of B(a)P. Therefore, ambient B(a)P levels are not expected to be substantially impacted by the operation of the DYEC.

The ambient air data is also evaluated against the Canadian Ambient Air Quality Standards (CAAQS). The table below shows data from the DYEC ambient air monitoring stations as well as the Oshawa ambient air monitoring station relative to the 2020 CAAQS standards. Based on current monitoring results the ambient air stations are anticipated to meet the revised standards. Ambient air measurements at the DYEC monitoring stations are consistent with the measurements at the Oshawa ambient air monitoring stations indicating the local air quality around the DYEC is similar to that of Durham Region as a whole.

Table 6: Ambient Air Monitoring Station Results

Pollutant	Averaging Time	Courtice CAAQS (2016-2018)	Rundle CAAQS (2016-2018)	Oshawa CAAQS (2015-2017)[1]	2020 CAAQS
$PM_{2.5}$ ($\mu g/m^3$)	24 hour[2]	20.1	24.1	17	27
	Annual	6.4	7.3	6.5	8.8
SO_2 (ppb)	1 hour	61.6	28.5	N/A	70
	Annual	2.7	1.3	N/A	5
NO_2 (ppb)	1 hour	39.8	31.9	N/A[3]	60
	Annual	6.1	5.5	6.4	17

[1] https://www.ontario.ca/document/air-quality-ontario-2017-report/appendix#section-5
[2] The CAAQS for 24h PM2.5 is 28 µg/m3 based on the 98th percentile measurement annually, averaged over three consecutive years.
[3]Number not yet in effect, MECP has not presented results of calculations
[4] Calculations for CAAQS not in effect have not yet been verified by the MECP.

4.3.5 Process Upset Conditions

The Air Quality Assessment Technical Study Report (Jacques Whitford, 2009, Appendix C-1) undertaken in 2009 for the initial EA predicted the potential effects to ambient air. The assessment compared the maximum model-predicted concentrations to ambient air

criteria for both the 140,000 tonnes per year and 400,000 tonnes per year scenarios. The assessment was conservative as it assumed the worst-case operating scenario with the highest potential to cause environmental effects. It is possible for emissions levels to be higher than those during normal operation due to various operating conditions such as start-ups, shut-downs and malfunctions of the combustion units or the APC equipment. These events are expected to occur infrequently and last a short period of time.

To examine the potential changes in air quality due to process upsets, the U.S. EPA Guidance Document on Human Health Risk Assessment Protocol for Hazardous Waste Combustion Facilities (U.S. EPA, 2005b) recommends that when site specific data are not available or are inappropriate for deriving an upset factor, that upset emissions be estimated by using a procedure based on work by the California Air Resources Board (1990). In the absence of a comparable document for Ontario or Canada, the U.S. EPA document was and is proposed to continue to be used as the basis for assumptions. The document was developed to assist in the development of risk assessments for facilities that burn hazardous waste and the version referenced reflected comments put forth by public and external scientific peer reviewers.

Based on this guidance document, the following approach was used to estimate emissions from a 140,000 tonne per year facility during process upsets:

- For determining short-term (1-hour to 24-hour average) ground level Chemicals of Potential Concern (CoPC) concentrations, the emission rates for the facility under normal operation were conservatively increased by a factor of ten. This factor was applied to all CoPCs except for sulphur dioxide (SO_2) and nitrogen dioxide (NO_x) for which manufacturer data on uncontrolled flue gas concentrations were available. SO_2 and NO_x emissions were increased by factors of 16 and 1.63 respectively, as specified in the data received from the manufacturer.

- For calculating annual average concentrations, the emission rates of metals and criteria air contaminants were increased by the EPA recommended factor of 1.45 except for SO_2 and NO_x. For these contaminants the emission rates were increased by factors of 1.75 and 1.03 respectively, based the increased flue gas concentrations noted above and operating under upset conditions five per cent of the year.
- For calculating annual average concentrations of all other CoPCs, the emission rates were increased by the EPA recommended factor of 2.8.

The process upset emission rates will provide a very conservative estimate of worst-case emission rates, particularly for hazardous air pollutants, that could be expected to be encountered over the course of an operating year.

To predict maximum short-term (1-hour to 24-hour average) ground level concentrations from the 400,000 tonne per year facility, emissions during process upsets were estimated by conservatively assuming a process upset occurring simultaneously in two out of three air pollution control (APC) systems and associated processing trains. Emissions from the units assumed to be experiencing process upsets were calculated using the same methodology applied for the 140,000 tonne per year facility. To predict maximum long-term (annual average) concentrations during process upsets at the 400,000 tonne per year facility, it was conservatively assumed that each stack would be under process upset conditions the same amount of the time on an annual basis. Emissions were increased for all three exhaust streams on an annual basis using the same methodology applied for process upsets from the 140,000 tonne per year facility.

Section 7.2 of The Air Quality Assessment - Technical Study Report (Jacques Whitford, 2009, Appendix C-1), assessed the results of the impacts of the above process upsets

Of all the modelled contaminants hydrogen fluoride was identified as having the highest concentration relative to its O. Reg. 419/05 standard due to the facility alone under process upset conditions was hydrogen fluoride at 52 per cent for the 140,000 tonne per year facility and 78 per cent for the 400,000 tonne per year facility. The report continued

to assess cumulative environmental in tables 7-11 and 7-12 by adding background levels to the statistical maximum predicted concentration for each contaminant under both the 140,000 and 400,000 tonne per year facility during process upsets, the concentrations were still below the applicable criteria. While the proposed modelling updates will confirm the reported values, the previously presented results indicated that a much larger facility 400,000 was still likely to remain in compliance during process upsets.

4.3.6 Existing Operations at Elevated Throughput

As part of the DYEC design, the boilers have the capacity to be operated at different steaming rates and tonnage throughput rates to allow the facility to adjust to variations in waste heat content and delivery rates. Between 2017 and the first half of 2019, the facility operated at rates greater than 33.6 tonnes of steam per hour with one or both boilers for at least one hour on a total of 387 days (234 in 2017, 124 in 2018, and 29 in the first half of 2019). A review of CEMs and ambient air monitoring data demonstrates that the DYEC was capable at these elevated throughputs of maintaining compliance with the CEMS in stack limits and ambient air criteria. Any instances of ambient air elevated concentrations detected during these periods were assessed to be not related to plant operations.

4.3.7 Greenhouse Gas Emissions

The DYEC waste capacity increase to 160,000 tonnes per year will result in an increase in the total amount of greenhouse gases (GHG) generated by the facility due to the increase in the total mass of waste processed. However, this will be offset by the reduction of GHG emissions that has been associated with the transportation and disposal of waste to landfills outside the Regions (including landfill methane generation). Consequently, the DYEC waste capacity increase is anticipated to result in a net benefit to the environment in the form of an overall reduction of GHG emissions to atmosphere. Greenhouse gas emissions are a growing concern given their contribution to climate change. The net emissions of GHGs from thermal treatment of waste versus landfill

disposal were assessed as part of the initial Evaluation of "Alternatives To" and Identification of the Preferred Residuals Processing System EA for the DYEC as per the documents Annex E-5: Supporting Technical Document on Environmental Lifecycle Analysis[1] and Supplement to Annex E-5: Comparative Analysis of Thermal Treatment and Remote Landfill on a Lifecycle Basis[2]. (Annex E-5). This initial assessment indicated that the total GHG emissions from thermal treatment were less than those associated with landfilling and transportation related emissions and landfill methane generation. This assessment incorporated a full lifecycle analysis related to the facility, including the incorporation of transportation emissions as well as GHG offsets related to material recovery and energy generation.

The Air Quality Technical Assessment (Jacques Whitford, 2009, Appendix C-1) undertaken for the initial EA in 2009, predicted the DYEC contribution to the total Ontario and Canadian annual GHG contributions. Table 7 below shows the 2009 values for the 140,000 and 400,000 tonnes per year capacities based on the predicted 2010 GHG emission levels.

Table 7: Projected Annual GHG Contribution from DYEC based on 2010 projections

Projected Annual GHG Contribution from DYEC	140,000 tonnes	400,000 tonnes
Ontario annual GHG contribution	0.06%	0.18%
Canada annual GHG contribution	0.018%	0.052%

The DYEC reported non-biomass CO_2 equivalent emissions of 69,949 tonnes in 2017 under Ontario Regulation 390/18: Greenhouse Gas Emissions Quantification, Reporting and Verification (https://www.ontario.ca/data/greenhouse-gas-emissions-reporting-facility). Emissions from the combustion of biomass are not a net contributor to global GHG emissions and are excluded. The 2017 Ontario province-wide GHG emissions were reported on the Government of Canada website: https://www.canada.ca/en/environment-climate-change/services/environmental-

[1] https://durhamyorkwaste.ca/Archive/pdfs/processing/Annex-E-5-Envtl_Life-Cycle-Analysis.pdf
[2] https://durhamyorkwaste.ca/Archive/pdfs/processing/Annex-E-5-Supplemental_Report.pdf

indicators/greenhouse-gas-emissions.html. The Canadian total was reported as 716 megatonnes (Mt) of carbon dioxide equivalent (CO_2eq) and the Province of Ontario GHG total was reported as 159Mt of CO_2eq. An updated assessment using reported GHG values from 2017, is included as Table 8 below. Table 8 also includes a projection illustrating the additional contribution of the facility to the provincial and reported values based on the additional 20,000 tonnes per year.

Table 8: Annual GHG Contribution from DYEC Based on 2017 Reporting and Projected to 160,000 tonne Operations

Projected Annual GHG contribution from DYEC	**140,000 tonnes**	**20,000 tonnes**	**160,000 tonnes**
Ontario annual GHG contribution	0.044%	0.006%	0.050%
Canada annual GHG contribution	0.010%	0.001%	0.011%

These 2017 actual percentage contributions are less than the values used in Annex E-5 and use the 2017 Canadian and Provincial totals. Reflecting a level of conservatism employed during the development of the original EA. In this instance the additional 20,000 tonnes of waste is still anticipated to result in GHG contributions below what was initially predicted in 2009 for the 140,000 tonne facility.

While the DYEC itself will release additional GHG's as the result of the processing expansion, emissions will be reduced in other sectors including energy, transportation, and generation associated with landfills. To account for this during the preparation of the "Preferred Residuals Processing System for the Regions" an Integrated Waste Management (IWM) University of Waterloo and the ICF model developed for Environment Canada to model greenhouse gas emissions in CO2 equivalents (eCO_2).

https://www.durhamyorkwaste.ca/Archive/processing_system.htm

https://www.durhamyorkwaste.ca/Archive/pdfs/processing/Annex-E-5-Envtl_Life-Cycle-Analysis.pdf

Following the completion of the IWM the Municipal Solid Waste Decision Support Tool (MSW-DST), was used to develop lifecycle implications of the management of residual waste by remote landfill versus the DYEC.

https://www.durhamyorkwaste.ca/Archive/pdfs/processing/Annex-E-5-Supplemental_Report.pdf

The MSW-DST utilized average default data from existing waste management facilities across North America supplemented with data provided by Covanta based on facility development. The MSW-DST was developed by RTI International in cooperation with the U.S. Environmental Protection Agency (EPA) Office of Research and Development. RTI International offers research and technical solutions to governments and businesses worldwide in the areas of economic and social development, energy, and the environment. The MSW-DST has undergone extensive stakeholder input and peer review (including a separate review by the U.S. EPA). The models reflected average data supplemented with project assumptions in order to make comparative assessments on the various disposal options. The prepared study indicated a reduction in $CO_{2\text{-}e}$ from a thermal treatment facility of 104 kg $CO_{2\text{-}e}$/tonne waste.

A full review and validation of the models used in the decision-making is outside the scope of this report. However, the key aspects of the calculation as presented in Annex E-5 is that the DYEC can achieve a reduced overall GHG contribution as a result of increased energy production, and the avoidance of emissions associated with the recovery of materials from the ash stream. A discussion of key aspects of GHG production is included below.

An additional 20,000 tonnes per year of waste processed at the DYEC from Durham and York Regions, will remove or shorten the distance travelled by trucks transporting waste for landfill disposal. Trucks arrive at the DYEC with loads averaging 34 tonnes per load meaning that 588 trucks would be required to haul the additional 20,000 tonnes. Processing of the material reduced the mass and volume of the material, based on 2018 ash production and truck counts, the additional 20,000 tonnes of waste would

result in the generation of 5,877 tonnes of ash, requiring 163 trucks to transport the material for disposal. This results in a net reduction of 425 trucks required for hauling the material.

The majority of recent DYEC by-passed waste has been shipped as far as the Twin Creeks Landfill, over 300 kilometres from the DYEC. Based on the calculations in Table 9 assuming all materials were to be transported from the DYEC to a remote landfill approximately 268 tonnes of CO_2 would be avoided.

Table 9: Transportation Emissions of 20,000 tonnes of Waste

Factor	Value
Number of Trucks	425
Distance per trip	600 km
Fuel Economy	39.5 L/100km
Fuel Required per Year	**100,725 L**
Fuel Emission Rate	2.66 kg CO_2/L diesel fuel
Resulting Emissions	**268 tonnes CO_2**

[1] Natural Resources Canada: https://www.nrcan.gc.ca/energy/efficiency/transportation/commercial-vehicles/reports/7607

[2] Natural Resources Canada: https://www.nrcan.gc.ca/sites/www.nrcan.gc.ca/files/oee/pdf/transportation/fuel-efficient-technologies/autosmart_factsheet_6_e.pdf

Other transportation related emissions include nitrous oxides and sulphur dioxide. The Heavy-duty Vehicle and Engine Greenhouse Gas Emission Regulations made under the Canadian Environmental Protection Act, 1999 sets out a requirement that Class 2B and class 3 heavy-duty vehicles must have CH_4 and N_2O emission values that do not to exceed 0.05 g/mile for N_2O, and 0.05 g/mile for CH_4 for the applicable useful life of the

vehicles.[3] Similarly, per SOR/2002-254 of the Canadian Environmental protection act diesel fuel is permitted to contain 15 mg/kg Sulphur, which translates to an approximate emission rate of 12.5 mg/L of sulphur, or 24.9 mg/L SO_2.

In addition to the transportation emissions methane (CH_4) is generated from the landfilling of waste and according to the Intergovernmental Panel on Climate Change (IPCC) has twenty-eight times the global warming potential of CO_2 over a 100-year time horizon as identified by the IPCC https://www.ipcc.ch/site/assets/uploads/2018/02/WG1AR5_Chapter08_FINAL.pdf. Lifetimes, Radiative Efficiencies and Metric Values Appendix 8.A. One tonne of waste landfilled generates approximately 170 m^3 of landfill gas which is typically 50 per cent methane, although this value can vary between sites and climate regions[4]. If the 20,000 tonnes per year were landfilled without methane gas capture systems in place, approximately 1,700,000 cubic metres or 942 tonnes of methane would be generated equivalent to over 26,300 tonnes of CO_2 in addition to the CO_2 in the remainder of the landfill gas. While modern landfills capture and either flare or use the methane to produce electricity, landfill gas capture systems are not capable of intercepting all produced methane. Annex E-5 assumed a 60 per cent recovery from landfill using gas capture which is consistent with the U.S. EPA's 2011 document Available and Emerging Technologies for Reducing Greenhouse Gas Emissions from Municipal Solid Waste Landfills for areas with daily soil cover and active gas collection. With this assumption approximately 565 tonnes of methane would be captured and converted to CO_2 through flaring or combustion while the remaining 377 tonnes of methane would be released to the atmosphere, equivalent to 10,550 tonnes of CO_2. The combination of these CO_2 emissions would be avoided by processing the additional 20,000 tonnes of waste at the DYEC instead of landfilling.

[3] https://www.canada.ca/en/environment-climate-change/services/canadian-environmental-protection-act-registry/publications/vehicle-emission-regulations-guidance-document/chapter-f.html#c_f5_1
[4] U.S. EPA. 2005. Landfill Gas Emissions Model (LandGEM) Version 3.02 User's Guide. EPA-60/R-05/047.

An additional benefit of thermal treatment over the remote landfill scenario is that it provides a local source of energy, which generates a greater quantity of energy than a remote landfill, further landfills such as Twin Creeks do not capture methane for energy generation, and instead utilize flares for destruction of the landfill gas without energy recovery. Residual waste managed by an energy from waste facility was better than remote landfill with respect to energy consumption, emissions to air of greenhouse gases, acid gases, smog precursors and emissions to water. Annex E-5 reviewed the energy offset from landfill and energy from waste scenarios for 250,000 tonnes of waste. The energy offset for landfill with 60 per cent gas recovery was estimated at negative 137,070 gigajoules per year (GJ/year) which is energy recovered. An energy-from-waste facility resulted in an energy offset of negative 1,478,313 GJ/year, ten times more energy generation. The negative values represent a reduction in energy requirements. Net energy refers to energy that is offset from the grid resulting from the energy produced by the facility, either via combustion in an energy-from-waste facility, or via landfill gas capture and combustion, and the recycling of metals recovered from an energy-from-waste facility (also referred to as a virgin material displacement credit). The DYEC in 2018 exported 85,452 MWh of electricity, and recovered 3,440 tonnes of ferrous metals, and 408 tonnes of non-ferrous metals.

Using the model and assumptions from Annex E-5 the emissions from processing an additional 20,000 tonnes per year were estimated and compared between the remote landfill and energy-from-waste disposal options in Table 10. Values which display a negative result are represented as having a positive impact on the environment relative to their comparison. As detailed in the table below, the DYEC results in a net improvement of air emissions compared to landfill on a life-cycle basis. Use of the DYEC will result in greater energy generation, less GHG emissions and lower emissions of acid gases and smog precursors.

Based on the review of the LCA completed for the DYEC and the contribution of the DYEC to overall GHG emissions, no significant negative effects to GHGs will result from

the 20,000 tonnes per year capacity increase. Additional discussion of the LCA impact of the 20,000 tonne per year increase is found in Section 5.

Table 10: Emissions to Air for the Management of 20,000 tonnes per year of Residual Waste by Remote Landfill and Energy-from-Waste (DYEC)

	20,000 tonne scenario					
	Remote Landfill		EFW by (DYEC)		Difference	
Energy Consumption	**(GJ/yr)**	**(GJ/tonne)**	**(GJ/yr)**	**(GJ/tonne)**	**(GJ/yr)**	**(GJ/tonne)**
	4640	19	-230480	-922	-235120	-941
Emissions to Air GHG's	**(tonnes/yr)**	**(kg/tonne)**	**(tonnes/yr)**	**(kg/tonne)**	**(tonnes/yr)**	**(kg/tonne)**
CO2e	4720	19	2640	11	-2080	-8
Acid gases	**(tonnes/yr)**	**(kg/tonne)**	**(tonnes/yr)**	**(kg/tonne)**	**(tonnes/yr)**	**(kg/tonne)**
NOx	4	0.02	2.4	0.001	-1.6	-0.019
SOx	-2.3	-0.01	-47.6	-0.2	-45.3	-0.19
HCl	0.16	0.0008	0.96	0.004	0.8	0.0032
Smog precursors	**(tonnes/yr)**	**(kg/tonne)**	**(tonnes/yr)**	**(kg/tonne)**	**(tonnes/yr)**	**(kg/tonne)**
NOx	4	0.02	2.4	0.001	-1.6	-0.019
PM	0.72	0.003	-5.5	-0.02	-6.22	-0.023
VOCs	0.72	0	-5	-0.02	-5.72	-0.02
Heavy Metals	**(kg/yr)**	**(g/tonne)**	**(kg/yr)**	**(g/tonne)**	**(kg/yr)**	**(g/tonne)**
Pb	0	0	0.7	0.002	0.7	0.002
Hg	0	0	0.7	0.002	0.7	0.002
Cd	0	0	0.06	0	0.06	0
Dioxins	**g/yr**	**(µg/tonne)**	**g/yr**	**(µg/tonne)**	**g/yr**	**(µg/tonne)**
	0.000002	0.000008	0.001	0.004	0.000998	0.003992

Chart is adapted from Table 2 of Annex E-5 scaled to 20,000 tonnes. Emissions to water are omitted.

Note – negative values reflect the reduction in emissions associated with the activity as identified in the LCA. Instances of negative generation are as the result of a lower emission rate for energy production when compared with a grid consisting of 45 per cent nuclear; 31 per cent natural gas; 24 per cent hydro.

4.4 Natural Environment

The Regional Municipality of Durham completed the development of a 12.1 hectare parcel immediately north of the CN rail line on the west side of Osborne Road for the DYEC. The *Natural Environment Assessment – Technical Study Report*, (Jacques Whitford, 2009, Appendix C-7) was prepared to confirm: (a) the potential aquatic and terrestrial impacts associated with the development of a Proposed Thermal Treatment Facility (the Facility) on the Facility Site (the Site), Clarington 01; (b) potential mitigation required; and, (c) potential net effects and impact management measures.

The 2009 Natural Environment Assessment was undertaken assuming a disturbed area or "footprint" equal to a design capacity of 400,000 tonnes per year and listed the following study conclusions:

- No rare or threatened species were present on the site. This determination will not change with an increase in waste capacity to 160,000 tonnes per year.
- No significant natural areas were present. This determination will not change with an increase in waste capacity to 160,000 tonnes per year.
- Tooley Creek Coastal Wetland was identified as the closest Natural Area. The DYEC and haul routes are located at a minimum 0.87 km from any natural area and should not be directly impacted by the development of the facility. Given there will not be any new construction or site alterations for the waste capacity increase, Tooley Creek will not be impacted.
- No permanent watercourses were found onsite and no significant net effects on aquatic species were anticipated. This assessment continues to be valid for the increased capacity to 160,000 tonnes per year.
- No significant ecosystems or vegetation were present on site. Native shrubs and trees were incorporated into the landscape plan for the facility to mitigate any potential minor impact. This approach will continue for the increase to 160,000 tonnes per year.

- No significant avian species were present, and no net effects were anticipated. A follow up Site Reconnaissance Study was undertaken in 2011 and observed ten species of birds onsite. All the observed species were common and widespread in Ontario and none were listed under the federal Species at Risk Act or the provincial Endangered Species Act. These same bird species were noted in the Natural Environment Technical Study Report (2009).

No additional construction, structures or landscape alternations are required for the capacity increase to 160,000 tonnes per year at the DYEC. No significant forested areas or permanent watercourses exist on the Site. The flat, open terrain and lack of cover offer few opportunities for specialized habitat or species. No species of conservation concern were documented during the 2007 field surveys. Subsequent supplementary field surveys in 2009 targeted seasonally sensitive species and features that might not have been present or evident during previous field visits. All plants and animals identified were common and widespread in Ontario.

As a result of the above findings, there were no negative effects to the natural environment anticipated with the original facility construction with the implementation of mitigation measures, and there are no anticipated negative effects to the natural environment with the proposed capacity increase to 160,000 tonnes of waste per year.

In addition to work complete on the Site, Durham Region completed work within the CEBP. The work involved the realignment of Courtice Road, realignment of Darlington Park Road, and the new construction of Energy Drive, truck access road to the DYEC, stormwater conveyance channels and waterfront trail.

The CEBP is located south of Highway 401 and north of the CN rail line, bordered by Courtice Road to the west and Crago Road to the east, in the Municipality of Clarington, Region of Durham. The Energy Park has been identified as an appropriate location for prestige employment use benefitting from the surrounding employers in the energy and environment sectors. As part of the Host Community Agreement established with the

Municipality of Clarington, the Region was required to assist Clarington in their development of the Business Park area by way of installing infrastructure for sewer and water, and the development of an arterial road (Energy Park Drive). The site servicing of the nearby properties would boost the economic development in Clarington by enticing corporations in the energy field to build in Clarington.

Eastern Meadowlark and their habitat were identified at the CEBP and the works that were completed to construct these facilities contravened the protection and recovery of Eastern Meadowlark and its habitat pursuant to Section10(1)(a) of the Endangered Species Act, 2007. In a letter dated April 16, 2013, the Ministry of Natural Resources and Forestry (MNRF) informed the Regional Municipality of Durham (the Region) that they were eligible to submit a Development Plan under Section 23.2 of O. Reg. 242/08 of the Endangered Species Act, 2007. In accordance with the direction provided by the MNRF, a Development Plan was prepared and submitted to address activities for both the CEBP and EFW facility (Durham Region 2013).

In accordance with the CEBP and EFW facility Development Plan (Durham Region 2013):

> *The Region of Durham or its agent agrees to maintain an ongoing log book of actions in an annual report which will be submitted to the MNR by January 31st of each monitoring year for 5 years, beginning January 31, 2014 up to and including January 31, 2018. To be included are the details of information collected from the annual monitoring of Eastern Meadowlark, associated bird species, and habitat creation and maintenance activities (vegetation monitoring).*

Following the construction of the DYEC, a specialized firm, LGL Limited, was retained by the Regions to monitor and make recommendations to improve grassland habitats for select avian species of concern, notably the Eastern Meadowlark.

As part of the Region's commitment to carrying out restoration and monitoring in accordance with the requirements of the Development Plan under Section 23.2 of O. Reg. 242/08 of the Endangered Species Act, 2007, adaptive management was

undertaken in 2014 to combat the presence of non-native and invasive herbaceous broadleaf species within the Restoration Area. However, additional management efforts were necessary in 2015 which included the use of herbicide to aid in reducing populations of herbaceous, broadleaf species which negatively impacted the establishment of preferred, sown grasses. Habitat conditions in 2015 were observed as grass dominated meadow with an approximate grass cover of 60 per cent to 70 per cent, which included more than three grass species, as well as grasses that grew to heights greater than 50 centimeters. Consequently, no adaptive management was recommended for the 2016 growing season.

Vegetation monitoring in 2016 and in 2017 continued to conclude that the community within the Restoration Area was dominated by preferred grass species (70 per cent), thus community attributes continued to satisfy O. Reg. 242/08 (ESA 2007). Mowing and biomass removal was conducted in September 2017 based on wildlife observations made in 2017. Mowing in 2017 resulted in improved vegetation conditions and mitigated the establishment of woody species in 2018. The grass dominated habitat in 2018 continues to meet conditions set out for Eastern Meadowlark in the ESA 2007.

Despite site conditions and restoration efforts considered favourable for the Eastern Meadowlarks, none were identified within the restoration area during the 2018 breeding bird surveys. However, Bobolink, a species which has been identified as endangered, with relatively distinct grassland habitat requirements was noted in the restoration area during the 2018 breeding bird surveys. Bobolinks were recorded during two of three surveys, indicating probable breeding status within the restoration area. The presence of this species during 2016, 2017 and 2018 suggests that restoration goals have been achieved and that functional grassland bird habitat has been created. It is expected that the established vegetation composition will increase the likelihood of Eastern Meadowlark using habitats within the Restoration Area in the future.

Monitoring conducted by our consultant in 2018 was the 5th and final year of monitoring as per Development Plan (#AU-DP-004-13). LGL did not recommend any additional

vegetation restoration or maintenance under Region contract as they reported that grassland creation objectives have been met. The established restoration area will not be impacted by the capacity increase. As a result, no significant negative effects are anticipated to the natural environment as a result of the 20,000 tonnes per year capacity increase.

4.5 Resources

Review of the following documents show the measures in place to prevent negative effects to Resources as outlined in the screening criteria checklist:

- Environmental Compliance Approval Application Design and Operations Report (Golder Associates, 2011)
- EA Notice of Approval to Proceed with the Undertaking (MECP, 2010)
- Reducing Litter and Waste in Our Communities: Discussion Paper (MECP, 2019)

The Resources portion of the Screening Checklist evaluates waste practices, energy generation, infrastructure needs, land use and existing agricultural production that could be impacted by the proposed waste capacity increase. The documents above describe the existing measures in place to address waste impacts.

The Regions are required by the EA Notice to Proceed with the DYEC project to maintain residential waste diversion programs, evaluate the progress of the diversion programs and to provide annual reports to MECP on the diversion programs in each Region. The ECA for the DYEC prohibits receipt of waste that has been source separated for the purposes of diversion. Both measures will remain in place with the proposed waste capacity increase.

The DYEC is designed to generate electricity from the thermal treatment of waste. Electricity is provided to the local power grid based on an agreement with Ontario Hydro. Increasing the DYEC waste capacity to 160,000 tonnes per year will not impact the existing business relationship for electricity sales.

The infrastructure required for the DYEC operation is already constructed and additional infrastructure is not required to accommodate the proposed capacity increase. Also, as

discussed in Section 4.2 above, the DYEC is in a designated employment and light industrial area. Agricultural land use in the area will continue to decrease as the land use transitions to employment and light industrial uses as identified in the Region of Durham and Municipality of Clarington Official Plans.

Positive effects on Resources were identified through the study review. Approval for additional waste processing capacity is in keeping with the recent MECP discussion paper: “Reducing Litter and Waste in Our Communities” (2019) which states the following benefits to support increasing waste processing capacity at DYEC:

- Ontario needs to find innovative ways to reduce waste sent to landfill.
- Thermal treatment in the form of energy from waste is a potential opportunity to recover the value of resources in waste.
- Sending waste to landfill is economically inefficient and unsustainable. It puts a strain on our environment by taking up valuable land resources that could be used more productively.
- By reducing and diverting waste from landfill we can make our economy more productive through job creation.
- Reducing our reliance on landfills is an important part of meeting the greenhouse gas emission target outlined in the Made-in-Ontario Environment Plan.
- Sending waste to landfill also impacts local communities. Municipalities, often in rural areas, are hosting landfills that accept waste from locations far beyond their communities, often with limited say in their approvals.
- Residents, businesses, institutions and governments alike are moving towards viewing waste as a resource that has value and can be integrated back into the economy.
- Moving Ontario to where we produce less waste, maximize the resources from waste through reuse, recycling, or other means such as thermal treatment, and ultimately send less of our waste to landfill.

Based on the review of the initial EA and MECP policy direction, no significant negative effects to resources will result from the 20,000 tonnes per year capacity increase.

4.6 Socio-Economic

Review of the following studies that were prepared in 2009 during the initial Environmental Assessment were undertaken.

- Economic Assessment - Technical Study Report (Jacques Whitford, 2009 Appendix C-11)
- Socio-Cultural Assessment - Technical Study Report (Jacques Whitford, 2009 Appendix C-8)
- Traffic Assessment - Technical Study Report (Jacques Whitford, 2009 Appendix C-10)
- Visual Assessment - Technical Study Report (Jacques Whitford, 2009 Appendix C-6)
- Record of Consultation from initial EA

One potential effect as outlined in the screening criteria checklist was identified. The DYEC is within 8 kilometers of a helipad located at the Bowmanville Hospital. Although air ambulance service is currently suspended to the hospital, it is anticipated that a relocated helipad will be established in the future. The DYEC already has aeronautical clearance from Navigation Canada as constructed. With no new construction or increase in stack height, there are no negative effects related to the proximity of a helipad in the Bowmanville area.

4.6.1 Economic Assessment

The Economic Assessment – Technical Study Report was completed in 2009 to support the Environmental Assessment for the DYEC. The report was prepared to assess the potential economic related effects associated with the development of the DYEC, potential mitigation required and net effects. Evaluations were completed for the 140,000 tonnes per year and 400,000 tonnes per year design scenarios. Since the

increase in capacity to 160,000 tonnes per year does not require any new construction, the economic effects during construction do not need to be re-evaluated in this summary.

The objectives of the economic assessment are to summarize the existing economic conditions and assess the economic effects of the project during construction, operations and post closure based on the following socio-economic measures:

- Employment levels;
- Aggregate wages and salaries;
- Effects on property value;
- Municipal revenues and expenditures;
- Effects on existing businesses; and
- Business opportunities.

Employment Levels/Aggregate Wages and Salaries

The economic conditions in Durham Region have changed since the original assessment was completed in 2009. The economic downturn in 2009 and loss of manufacturing throughout Ontario impacted Durham and York Region manufacturing industry as well. In Durham Region the health sciences, retail, education and energy sectors continue to be primary employers.

In June 2019, Ontario Power Generation (OPG) announced the construction of a new consolidated headquarters building to be in the CEBP, north of the DYEC. The OPG office consolidation will increase the energy sector employment in the Region.

In October 2019, East Penn Canada Power Battery Sales Ltd requested amendments to Energy Park Prestige Exception (MO2-1) Zone regulations to permit a warehousing facility and office space. The proposed facility would be located North of the DYEC.

The continued operation of the DYEC and increase in capacity to 160,000 tonnes per year will have minimal effect on the overall employment conditions, wages and salaries in the Region. No new employment is anticipated to support this capacity increase.

Effects on Property Value and Existing Businesses

Industrial property values are anticipated to increase with the district heating potential and road infrastructure provided as part of the DYEC construction. All property in the Durham Energy Business Park is zoned for light industrial usage however it is expected that agricultural uses will continue until industrial activities expand further in the area. Residential and agricultural property values are not expected to be adversely affected by the DYEC capacity increase.

Potential disruption to the use and enjoyment of businesses and agricultural farms due to odour, noise, dust, traffic and visual aesthetics were evaluated as part of the technical study. Mitigation measures were put in place during the initial facility construction to minimize off-property impacts. Odour control measures include off-loading waste in an enclosed building under negative pressure and all operations take place indoors. Dust impacts are also mitigated by paved surfaces and indoor off-loading of waste. Visual impacts of the DYEC are mitigated by the neutral colour choices for the exterior, extensive landscaping and unobtrusive exterior lighting. Several architectural enhancements were identified and incorporated during the DYEC's initial construction to minimize any potential negative effects. The emissions stack is the most significant visual impact of the facility and its impact will continue to be minimized as the Highway 407 East construction is completed and as additional multi-level buildings are constructed in the CEBP. Noise assessments completed since the facility has been operational indicate all noise levels are well below MECP regulated limits.

Municipal Revenues and Expenditures

The DYEC has an overall positive impact on municipal revenues. Based on the host community agreement with the Municipality of Clarington, payment in lieu of taxes are approximately $650,000 per year. There was also significant investment in developing the infrastructure of the CEBP during the DYEC construction. The Municipality of Clarington will benefit further as industry continues to move into the CEBP.

Changes to demands on local services has been minimal since most DYEC employees were already living in the Region of Durham.

The capacity increase to 160,000 tonnes per year from the current 140,000 tonnes per year waste processing will result in cost savings for the Region of Durham. Reduced Covanta operating fees for waste tonnages greater than 140,000 tonnes per year, increased revenue for electricity and metals recovery and prevent the need to by-pass waste to other disposal options will result in up to $1.3 million in annual savings in 2020 rising to $2.1 million by 2023. DYEC capacity growth along with other Regional programs and initiatives in waste management is critical to ensure that sufficient infrastructure and waste processing capacity exists to support Regional population growth projections.

Business Opportunities

The potential for district heating within the CEBP and the enhanced road infrastructure, provide an incentive for businesses to locate in the area. OPG has recently announced the construction of a consolidated headquarters building that will be adjacent to the Darlington Energy Complex, which is home to Ontario Power Generation and used for office space, warehousing and training mock-up areas, as well, East Penn Canada Power Battery Sales Ltd is considering office and warehousing operations for the area.

Overall the DYEC has had a net positive impact on the economics of the local municipality and minimal impact at the regional level.

Based on the review of the initial EA and recent announcements of investment in the CEBP, no significant negative effects to the local economy will result from the 20,000 tonnes per year capacity increase.

4.6.2 Socio-Cultural Assessment

The Social-Cultural Assessment Technical Study Report that was completed in 2009, assessed the effects of the facility on the people and community within the areas surrounding the DYEC site for both the 140,000 tonnes per year and 400,000 tonnes

per year scenarios. Since the site is primarily surrounded by industrial and agricultural land uses and the nearest designated residential development land use is approximately three kilometres away, the impact of the DYEC on local community character is considered minor. The site is designated employment/ light industrial land use in both the Durham Region and Clarington Official Plans and the DYEC is in lands that are further designated as the CEBP. New development in the CEBP was recently announced by Ontario Power Generation and East Penn Power Battery Sales Ltd.

Only two public facilities are in the vicinity of the DYEC. The Courtice WPCP is located directly south of the DYEC and the Durham Regional Police Service unit to the north of Highway 401. Neither facility is considered a sensitive community use. The DYEC is located 1 km west from the nearest recreational facility the Darlington (Hydro) Sport Fields. Darlington Provincial Park is located approximately 2 km to the west. The Waterfront Trail runs west to east along the shore of Lake Ontario, and loops around the Site to the north and east, with the trail head located to the east of the Site. All waste management at DYEC is conducted in enclosed building areas which minimizes the odour, dust and visual impacts of the site activities. The DYEC operations are not considered to have a negative effect on the local community character or the use of public facilities.

The Social-Cultural Assessment also considered the effect of the DYEC on the enjoyment of cultural and recreational resources. Four recreational uses are located within the study area including the Waterfront Trail, the Darlington Sports Fields, the Lake Ontario waterfront and Darlington Provincial Park. Negative effects on the use of these recreational areas has been and will continue to be minimal given the indoor operations of the facility. There are minor visual impacts of the facility since it is visible within a one kilometre radius. During construction, a $9 million cash allowance was included to incorporate visually pleasing design features to minimize the negative visual effect of the DYEC.

Changes to Land Use

Since the 2009 Environmental Assessment Technical Studies were completed, the following changes have occurred to the DYEC surrounding land use.

- The Darlington Energy Complex was completed, located at the southeast corner of Energy Drive and Osbourne Road, directly east of the DYEC
- Manheim Oshawa Auctions is no longer located north of the DYEC
- Two former residences located near the DYEC have been demolished
- Extensive work has been completed on the new 418 interchange and connector highway between Highway 401 and the 407 East extension, as well as the 401 interchange for Courtice Road

The Social-Cultural Assessment reached the following conclusions based on the review of 2009 Technical Studies completed for Air Quality, Visual Impacts, Traffic Impacts, the Acoustic Assessment, litter and vermin evaluations, and the design proposal submitted by Covanta. There are little to no differences between the potential effects at the 140,000 tonnes per year scenario versus the 400,000 tonnes per year scenario. Therefore, the conclusions presented below are considered valid for both scenarios and apply to the 160,000 tonnes per year scenario:

- Considering no residential receptors are located within 500 metres, the DYEC is anticipated to have minimal overall net effects regarding the “Potential for Disruption to use and enjoyment of residential properties”.
- Considering the significant distance from the DYEC to the nearest existing and planned communities and the characteristics of the current landscape, the DYEC is anticipated to have minimal to no overall net effects regarding the “Potential for changes in Community Character”. The DYEC will be one contributor to the transition of the immediate area to commercial/light industrial land use in accordance with the planned development of the CEBP.
- Considering that there are only two Public Facilities or Institutions within one kilometre, the DYEC is anticipated to have minimal overall net effects regarding

the “Potential for Disruption to Use and Enjoyment of Public Facilities or Institutions”.

- Considering the limited number and type of recreational land uses in proximity, the DYEC is anticipated to have minimal overall net effects regarding the “Potential for Disruption to Use and Enjoyment of Cultural and Recreational Resources”.
- Considering the existing and proposed land use designations, the DYEC is anticipated to have minimal overall net effects regarding the “Compatibility with Existing Land Use Designations and Proposed Land Use Changes”.

The DYEC is and will continue to be compatible with the existing landscape character and zoning of the CEBP. The increased processing capacity, if approved, will occur within the existing structure onsite, no changes to land, or new construction will be undertaken for the project therefore no impacts are anticipated.

The Durham-York Energy from Waste Facility Business Case (May 15, 2008), prepared for the Region of Durham by Deloitte and Touche LLP, noted that the inclusion of district heating and site works associated with the development of the DYEC within the CEBP would result in a positive effect for enterprises looking to locate their businesses in Clarington. This would essentially increase the compatibility of the DYEC with the current and future land uses in the vicinity which are likely to include commercial and light industrial uses that could benefit from the availability of district heating and potentially district cooling provided.

Based on the review of the initial EA and recent announcements of investment in the CEBP, no significant negative effects to the local social and cultural environment will result from the 20,000 tonnes per year capacity increase.

4.6.3 Traffic Assessment

The Traffic Assessment Technical Study from the 2009 EA was reviewed. The purpose of the study was to identify and address potential traffic effects that could result from the construction of the DYEC including:

- Assess existing traffic conditions at the study area intersections
- Forecast future traffic demands as a result of the DYEC construction
- Forecast future planned roadway network improvements and background travel demands, specifically generated by the future CEBP
- Identify operational concerns and recommend required mitigation measures to address potential deficiencies and meet the future traffic demand generated by the DYEC
- Assess truck queuing for on and off-site scenarios

Three waste capacity scenarios for the DYEC were reviewed (140,000, 250,000, and 400,000 tonnes per year) and analyzed in terms of traffic operations and effects on adjacent roads.

The initial traffic assessment was based on the morning and evening road peak hours on a weekday, as this is generally the simultaneous peak for both commuter and site traffic. Traffic effects were based on the observed and forecast traffic volumes for both the weekday morning and evening peak hours. A traffic assessment study of this nature is usually based on the forecasted traffic effects associated with the usual or typical traffic conditions that are to be experienced on a day-to-day basis at the DYEC during the morning and evening peak hours.

A ten-year horizon period was selected to assess future traffic conditions. The study anticipated the facility would be operational in 2013 thus the 2023 horizon period. The facility went operational in 2016. The study assumed up to 34 trucks per day at a design capacity of 140,000 tonnes per year; 51 daily truck trips at 250,000 tonnes per year; and 77 daily truck trips at 400,000 tonnes per year. The study assumed 18 trucks (inbound and outbound combined) and 22 cars during the peak hour operating at 140,000 tonnes per year. At 250,000 tonnes per year, peak hour traffic is anticipated to be 26 trucks and 22 cars, and at 400,000 tonnes per year, peak hour traffic is anticipated to be 40 trucks and 22 cars. In all three scenarios, no traffic control measures were required on the adjacent road network to accommodate traffic during operations of the DYEC. Traffic

operations at the study area intersection were assessed with HCS software for unsignalized intersections. The signal warrant analysis did not require traffic signals at any of the intersections and traffic queues were not expected to extend to the Darlington Park Road and Courtice Road intersection. Overall, the studied intersections were found to operate acceptably in the morning and evening peak periods beyond the 2023 horizon year. The alternate truck access road to the DYEC removed truck traffic from Energy Drive, which increases safety along this corridor.

On average, approximately two trucks are queuing on site at any given time during hours of operation. The Site is designed with a significant amount of roadway to accommodate up to 25 (12-foot tractors with 53-foot trailers). Given the capacity increase from 140,000 tonnes to 160,000 tonnes will generate on average three additional trucks per day; on-site and off-site queuing will not be an issue.

A 20,000 tonnes per year capacity increase at DYEC will result in approximately three additional trucks per day including waste delivery, residuals removal and reagent delivery trucks accessing the facility. As a result of conservative assumptions made in the Traffic Assessment Study for the initial EA regarding the number of trucks required to enter the facility on a daily basis, the total number of trucks, including the additional trips required for the 20,000 tonnes per year increase, is anticipated to remain below the initial study numbers from 2009 as currently, approximately 24 trucks and 15 cars enter the facility daily. With the approved increase in throughput capacity, the facility will not require any additional staff to operate. There are no concerns related to increase in vehicle traffic to the site as a result of processing an additional 20,000 tonnes per year. Operationally, the arrival of staff and deliveries to the facility frequently occurs outside of normal peak periods. Since the construction of the DYEC, OPG has announced an intention to develop an office campus northeast of the DYEC, for approximately 2,000 staff. The impacts of the proposed OPG offices on the local network are outside of the scope of this assessment.

Based on the review of the initial EA and the actual truck traffic associated with the operational DYEC, no significant negative effects to local traffic will result from the 20,000 tonnes per year capacity increase.

4.6.4 Visual Assessment

The 2009 Visual Assessment Technical Study Report (Jacques Whitford, 2009, Appendix C-6) outlines the scope of the visual assessment that has been completed for use in the initial Environmental Assessment and includes an assessment of the following:

- The sensitivity of the landscape and the identified receptors to the potential change in the visual aesthetics that could result from the development of the DYEC
- The magnitude of the potential effects on the landscape and the identified receptors resulting from the development of the DYEC
- The anticipated overall level of effect on each identified receptor.

The initial phase of the visual impact assessment is a baseline study which describes the existing environment potentially affected within approximately one kilometre of the DYEC and within five kilometres of the DYEC.

The visual impact assessment focuses on:

- Visibility of the DYEC structures
- Effects on receptors
- Local community viewshed analysis

The visual effects associated with the DYEC and specific facility structures that were considered during operation include the buildings and stack(s). Both the initial design capacity of 140,000 tonnes per year and potential future expansion to 400,000 tonnes per year were assessed. The 400,000 tonnes per year scenario would result in the addition of several facility buildings and an additional stack. This larger operation would be contained within the same facility footprint and the additional structures would remain

adjacent to the existing structures. Overall, the visual differences between the 400,000 tonnes per year facility compared to the existing 140,000 tonnes per year facility would be minimal.

In response to a request from the Municipality of Clarington at the time of the study, potential visual effects associated with the DYEC were also assessed with regards to the planned future build-out of the CEBP. These future facilities and infrastructure include the proposed Ontario Power Generation Building and Visitors Centre (identified to be situated on 61 acres of currently vacant land, northeast of the DYEC), Energy Drive (an east-west thoroughfare traversing the CEBP), and the then proposed Highway 407 East extension interchange ramps to connect with Highway 401. The cumulative effects of a 400,000 tonne per year facility, in addition to other planned and future building and construction projects surrounding the DYEC, would result in a decrease in visual impacts as the character of the area changes.

Negative visual effects are minimal based on the DYEC location in the CEBP between the Courtice WPCP to the south and commercial properties to the north. The completion of the Darlington Energy Complex and construction of the 407 East interchange ramps will further reduce the overall visual impact of the DYEC. With no new construction, the capacity increase to 160,000 tonnes per year will not alter the site visually from existing conditions, therefore no further visual assessments are required.

The Host Community Agreement included investment by the Region of Durham in infrastructure including roadways to support the CEBP and surrounding area to serve existing and future businesses and residents.

Based on the review of the initial EA and recent announcements of investment in the CEBP, no significant negative visual effects will result from the 20,000 tonnes per year capacity increase.

4.7 Heritage and Culture

Review of the following 2009 studies that were undertaken during the initial Environmental Assessment show there are no effects to Heritage and Culture as outlined in the screening criteria checklist:

- Stage 2 Archeological Assessment and Built Heritage - Technical Study Report (Jacques Whitford, 2009, Appendix C-9)

The Stage 2 Archaeological Assessment and Built Heritage Technical Study Report was prepared to assess the potential archaeological and heritage resource related impacts associated with the development of the DYEC, potential mitigation required and net effects. The assumed 400,000 tonnes per year building footprint was used to carry out the investigation. Since the capacity increase to 160,000 tonnes per year does not require any construction, the 400,000 tonnes per year building footprint evaluation continues to address all potential concerns associated with a capacity increase.

The Technical Study reviewed the previous archaeological assessment completed for the Courtice WPCP. That assessment recorded three sites which have been documented and registered with the Ministry of Culture, although these sites have not yet been entered into the database (ASI, 2004). One of these sites, the Robishaw site, is located to the south-west of the DYEC, in Lot 28, Broken Front Concession. A second site, the Trull site (AlGq 67) is located at the south edge of Lot 27, just above the Lake Ontario shoreline. The third site, the Osborne site (AlGq 69) is located within the limits of the DYEC study area. The Osborne site corresponds to a house indicated on the Belden Historical Atlas of the Counties of Northumberland and Durham (Belden,1878). Air photos suggest that the home was occupied as late as 1973 (NAPL, 1973). The Osborne site was deemed to have no archaeological interest in the archaeological assessment completed for the Courtice WPCP project and no further work was undertaken at this location. There is no longer a house located within the DYEC property boundaries.

A Stage 2, below-grade survey was completed based on the determination that there was an elevated potential for the presence of archaeological resources. A Stage 1 Archaeological Assessment was completed for the construction of the Courtice WPCP located south of the DYEC. The Stage 1 assessment indicated no historic period archaeological resources in or near the site of the DYEC. The walking survey completed during the Stage 2 assessment revealed only a few small, non-diagnostic and modern artifacts as well no pre-historic artifacts or significant features were noted. Shovel test pits were completed in less accessible areas of the DYEC facility location. These investigations also indicated no artifacts, anthropogenically altered soils or other items of archaeological significance.

The Stage 2 Archaeological Assessment Technical Study Report concluded that there were no archaeological artifacts or significant sites at the DYEC. Although the location and physical characteristics of the site should have made it an attractive settlement location for Late Woodland horticulturalists, there would have been hundreds or thousands of artifacts readily identifiable at the site during the survey if it had been the site of a native village.

The Ministry of Culture issued a letter dated February 3, 2012, (Appendix F) accepting the Stage 2 Archaeological Assessment - Technical Study Report dated May 25, 2009 and two addendums to the report that detail additional shovel testing completed after the original study. The technical study is listed in the Provincial register of archaeological reports and no archaeological sites were documented. The Ministry of Culture agreed with the recommendation of no further concerns for alterations to archaeological sites for the study area.

The DYEC capacity increase to 160,000 tonnes per year does not require any new construction or changes to the existing building footprint. The capacity increase will not disturb any soils or expand the site beyond the previously assessed boundaries. No additional archaeological assessment is required.

Based on the review of the initial EA, Ministry of Culture and Tourism correspondence, and no required construction, no significant negative effects to heritage or culture will result from the 20,000 tonnes per year capacity increase.

4.8 Indigenous Communities

Consultation and engagement with Indigenous communities will continue to determine if any concerns related to the increase in capacity at the DYEC exist as part of our legal obligation Duty to Consult with First Nations and Métis communities where decisions or actions that may adversely impact asserted or established Aboriginal or treaty rights. A summary of the consultation efforts is included as part of the Record of Consultation.

Review of the following 2009 studies that were undertaken for the initial Environmental Assessment for any assumptions, estimates and updates are provided with known/current information where applicable:

- Review of the Record of Consultation to determine the concerns of Indigenous Communities during the initial EA. This review indicated several common themes of concern relating largely to the protection of the natural environment, and the emissions from the facility. The review of the studies completed above, and the air emissions study undertaken as part of the study as listed below review the potential impacts to the environments of concern which include:
    - Groundwater and Surface Water Technical Study Report
    - Archaeological Assessment and Built Heritage Technical Study Report
    - Natural Environment Technical Study Report
    - Updated Emissions Summary Dispersion Model (ESDM) to 160,000 tonnes per year by Golder Associates

As described above, a review of groundwater and surface water, and the natural environment shows no additional negative environmental effects are likely to occur as a result of the waste capacity increase to 160,000 tonnes per year and effective mitigation and monitoring plans are in place. Current mitigation measures in place for the 140,000

tonnes per year facility are sufficient to manage an additional 20,000 tonnes of capacity with no anticipated additional impacts to the natural environment or groundwater and surface water.

The air quality dispersion modelling assessment by Golder Associates simulating a 160,000 tonne per year facility indicated that the predicted Point of Impingement (POI) concentrations of all contaminants were significantly lower than the corresponding regulatory limits. This will be confirmed via an updated ESDM model.

Based on the results of two separate Stage 2 archaeological assessments conducted in 2009 during the original development of the facility, the likelihood of significant, intact archaeological resources on the site is low. No archaeological evidence or items of historical significance were found on the site during construction. The Archaeological Assessment Technical Study Report was provided to the Ministry of Tourism, Culture and Sport and no archaeological sites were documented. Given construction is not required as part of this capacity increase, further archaeological assessments are not planned as part of the project.

With no construction required for the capacity increase to 160,000 tonnes per year and a review of previous and current emissions assessments showing no significant impacts to land and resources, there are no impacts to Indigenous communities. The Regions will continue to consult on any project updates to potentially impacted communities.

Based on the review of the initial EA, the historical consultation with Indigenous communities prior to DYEC construction and no new construction associated with the capacity increase, no significant negative effects result from the 20,000 tonnes per year capacity increase.

4.9 Other

Increasing the waste capacity of the DYEC to 160,000 tonnes per year will result in additional ash generation. As illustrated in the Table below, an additional 20,000 tonnes of waste per year is estimated to result in a 14 per cent increase in ash generation. This ash will continue to be shipped to a landfill for use as daily cover. It is expected that

an additional 163 truck trips per year will be necessary to dispose of the additional ash. The additional ash trucks were considered when completing the GHG analysis in Section 4.3.6.

Table 11: Anticipated Increase in Ash Generation

Tonnage of Waste Processed	Fly Ash Generated	Bottom Ash Generated
140,000	14,004	27,134
160,000	16,005	31,010
Tonnage Ash Increase	2,001	3,876
Additional Disposal Trucks	57	107

The DYEC conducts an Ash Sampling and Testing Protocol that is approved by the MECP under ECA condition 7(7)(d). The sampling protocol objectives are to ensure the bottom ash contains less than 10 per cent by weight combustible material and that conditioned fly ash is not leachate toxic. Since both bottom ash and fly ash are used as landfill cover, there is no hazardous waste disposal associated with the current DYEC operations.

Processing waste in the DYEC results is a reduction in the total volume of waste for disposal and the sampling results under Ash Sampling and Testing Protocol confirm that the fly ash conditioning process is effective. Based on the review of current ash generation rates and analysis no significant negative effects result from the 20,000 tonnes per year capacity increase.

5. Environmental Effects Assessment and Impact Management Plan

5.1 Environmental Effects Assessment

As described in Section 4, the Environmental Screening Checklist was completed to identify potential negative effects from the DYEC capacity increase to 160,000 tonnes per year. Additional studies were undertaken where necessary for areas identified with a potential negative environmental effect. These include an Air Quality Impact Assessment (AQIA) is being completed that evaluates the predicted impact of the 20,000 tonne per year capacity increase on air emissions from the DYEC stack, local ambient air and noise. The evaluation is based on the updated ESDM and conducted by Golder. An updated acoustic assessment was also undertaken to identify changes in noise sources and confirm compliance with the updated NPC-300.

5.1.1 Air Emissions

The ECA for the DYEC establishes air requirements for the site. Emission limits in the ECA are established for the stack that are based on Guideline A-7 and Ontario Regulation 419/05 Air Pollution - Local Air Quality. Under the ECA there are specific stack emission limits that are not to be exceeded.

The MECP also required the Regions to establish an ambient air monitoring program to assess ambient air in the vicinity of the DYEC the current ambient air program consist of two Region owned stations. Ambient air measurements from these stations are compared to Ontario AAQC or CAAQS. Unlike stack emissions, measurements of ambient air contaminants are reflective of air quality in the surrounding area is influenced by/representative of multiple sources and as a result is not used for compliance for point source emissions.

5.1.2 Stack Emissions

As discussion in Section 4 above as a result of consultation with the MECP during the development of the ESR, the MECP requested an updated ESDM report be prepared for the DYEC. The model will utilize a more current version of the modelling software and an updated meteorological data set in order to reflect any improvement to the modelling process or observed changes to weather patterns. An Air Quality Impact Assessment (AQIA) considering the overall impacts to the impact of the current operation at the DYEC and the resulting changes associated with the capacity expansion.

Once the updated ESDM has been received this section will be updated to include the results of the modelling assessment. The Model will be attached as an Appendix.

5.1.3 Ambient Air

Unlike stack emissions, measurements of ambient air contaminants cannot be attributed to a specific source but are reflective of air quality in the surrounding area. The POI concentrations determined by Golder in the updated 2019 ESDM were used to estimate impacts of the 20,000 tonne per year waste capacity increase on local ambient air quality.

Once the updated ESDM has been received this section will be updated to include the results of the Air Quality Impact Assessment including discussion of cumulative effects.

5.1.4 Noise

In November 2019, Golder completed an additional acoustic assessment of the DYEC to determine the impact of processing an additional 20,000 tonnes per year and to support the ECA amendment application. As summarized in the 2019 Acoustic Assessment, updated noise readings were obtained from the facility in November 2019 and assessed against local points of reception.

Once the updated Noise Assessment has been received this section will be updated to include the results of the modelling assessment.

5.1.5 Proximity to Aerodome/Airport

Bowmanville Hospital is located at 47 Liberty Street South in Bowmanville and maintains a helipad for air ambulance service. Although air ambulance service is currently suspended to the hospital, it is anticipated to resume with a re-located helipad in the near future.

The DYEC received aeronautical clearance from Navigation Canada as constructed. Since there are no new construction, building or stack alterations required for the increase in capacity to 160,000 tonnes per year, the aeronautical clearance remains valid and there is no negative impact due to the proximity of the helipad at Bowmanville Hospital.

5.2 Impact Management and Monitoring

The DYEC currently conducts air emissions monitoring to ensure the operations do not result in a negative environmental effect. CEMS monitoring of operational and regulatory parameters provides initial indication of facility performance as it provides real-time data continuously. CEMS monitoring provides immediate detection of facility conditions which enable the operator to implement immediate measures to mitigate any potential negative impacts to air quality. Source testing is conducted annually over a period of three to five days and provides the current stack emissions data for a full suite

of parameters (dioxins and furans, particulate, metals, acid gases and volatile organic carbons). Ambient air monitoring provides an indication of air quality in the vicinity of the facility. Although the ambient air data is not used to identify a single emissions source, it can be used as a tool to determine changes to air quality near the DYEC. All three air monitoring methods: CEMS, stack tests and ambient air monitoring, are used to monitor air quality near the DYEC so potential impacts can be mitigated or managed quickly and effectively. Results of these testing and monitoring programs are provided to the MECP and posted on the DYEC website for public information.

5.2.1 Air Pollution Control

The DYEC uses air pollution control technology which assists in meeting very stringent air emissions regulatory limits. All air pollution control processes are integrated with the facility Distributed Control System (DCS). The DCS includes alarms to inform control room operators if a system is not achieving a specific setpoint. The following air pollution control systems are utilized to ensure compliance with emissions limits:

- The NO_x reduction process consists of two systems that are integrated through the DCS:
    - The Very Low NO_x (VLN ™) system
    - Selective Non-Catalytic Reduction (SNCR) system
- Combustion processes including carbon monoxide are monitored using the Martin Infrared Combustion Control (MICC) System
- Dioxin and Furan mitigation is accomplished using:
    - Furnace temperature is maintained at a minimum 1000º C, 1 second residence for dioxin and furan mitigation
    - Powdered activated carbon injection
- Mercury is mitigated through the use of powder activated carbon.
- Acid gases, including hydrogen chloride and sulphur dioxide, are mitigated using dry hydrated lime injection with fly ash recirculation

- A fabric filter bag house comprised of over 3000 individual bags (1,560 bags per baghouse/boiler) is used for particulate matter and heavy metals (lead and cadmium) control

5.2.2 Air Emissions Monitoring

The DYEC is subject to emissions monitoring requirements that are detailed in the EA Notice to Proceed and in the facility ECA, available on the DYEC website. Stack emissions and ambient air emissions are monitored with the monitoring results provided to the MECP and the public.

Stack emissions are monitored by Continuous Emissions Monitoring and annual stack tests. Key combustion parameters are monitored continuously when the boilers are in operation and the emission levels are available to the public in real time on the DYEC website and on an external display board on the building. The CEMs system is equipped with alarms to notify the operators when there is a potential deviation above a performance requirement in the ECA. The ECA also requires the boilers to be shut down if the performance requirements are exceeded for a continuous three-hour period.

The ECA requires an annual source test on the DYEC. Prior to completing the source test, the MECP must review and accept the testing plan and has the option to attend the source test to observe the sample collection and operating conditions. Results of the annual source test are provided to the MECP for review and are posted on the DYEC website for public information.

5.2.3 Ambient Air Monitoring

As discussed in Section 4.3.4 the DYEC maintains an Ambient Air Monitoring Program to monitor ambient air quality around the DYEC. The program has been operational since 2013 and will continue under the requirements of the ECA. The program is described in section 4.3.4. This plan has been amended in consultation with the MECP to reflect the completion of construction of the facility. The two remaining existing stations were sited with input from the MECP. These stations monitor a number of parameters including: NO_x, SO_2, $PM_{2.5}$, total suspended particulate, metals, dioxins and

furans, and polycyclic aromatic hydrocarbons (PAHs), from all sources in the vicinity of the DYEC and are not points of compliance for facility operations. As part of the operation program quarterly reports are produced for the MECP, as well as when elevated concentrations are detected when compared to the MECP's AAQCs. When elevated concentrations are detected, an assessment is completed by Regional staff, the facility operator, and the retained ambient air consultant. This assessment reviews plant operations and meteorological conditions during the event to determine if the facility may have been a contributor, and if an increased level of risk to human health or the environment occurred due to the elevated concentration.

Federal ambient air standards CAAQS, have not fully been adopted by the MECP in terms of emissions limits. However, per MECP guidelines, starting in 2021 the annual ambient air reporting will also report against CAAQS for NO_2 and SO_2 based on data values from 2018, 2019 and 2020. The DYEC will continue to operate the ambient air monitoring stations and report against all parameters required by the MECP.

6. Significant Net Effects

The emission rates for the 160,000 tonnes per year operating scenario were calculated using the same emission factors as the current 140,000 tonnes per year scenario but the emission rate was adjusted based on recent source test data. The results of the modelling indicate that the change in predicted air emission concentrations is minor and remain well under the regulated limits. At the 160,000 tonnes per year scenario, approximately 85 per cent of the modelled concentrations show lower levels at the maximum POI than from the 140,000 tonne per year scenario as presented in the impact assessment evaluation the effects of the increase on the approved model, as presented in Appendix B as well as described in the updated ESDM report as presented in Appendix D. The modelled contaminants indicated that the facility would be in compliance with O. Reg. 419/05.

In addition to the stack emissions modelling, cumulative concentrations were also calculated by adding background ambient air quality monitoring data to the POI concentrations. The maximum potential change, which assumes the worst meteorological conditions and the facility operating at the ECA emission limit, would result in a two per cent increase in the POI for SO_2 and NO_x when assessing the cumulative concentration per the Golder assessment of the 160,000 tonne per year scenario. All other contaminants show a decrease or zero percentage change in the cumulative concentration. An assessment of the cumulative concentrations against the AAQC indicate that the DYEC will be in compliance with the exception of B(a)P which is indicated as exceeding based on the background data alone. The ESDM results indicate that the DYEC will contribute less than 1 per cent of the B(a)P concentration. Therefore, the capacity increase to 160,000 tonnes per year will not have a significant negative effect on ambient air quality. In each scenario, predicted POI concentrations of all contaminants were significantly lower than the corresponding air quality standard.

No significant negative net effects are anticipated from this project.

7. Project Benefits and Disadvantages

The proposed processing limit amendment provides an opportunity to achieve significant environmental and social benefits using existing infrastructure, such as:

- Reduced reliance on disposal capacity outside the Regions' borders and subject to market fluctuations for price (Economic Benefits)
- Reduced highway traffic and emissions associated with long-haul transportation to remote disposal sites (GHG Benefits)
- Reduced methane emissions from landfill disposal (GHG Benefits)
- Increased energy recovery and displacement of fossil fuel electricity generation (GHG Benefits)
- Reduced cost to Regional taxpayers (Economic Benefits)

Processing 160,000 tonnes of waste per year results in increased operation efficiency for the DYEC. Operating each boiler at 218 tonnes per day results in the plant reaching 140,000 tonnes processed in approximately 321 days. While each boiler does have periods of downtime throughout the year to allow for cleaning and maintenance activities, these periods are typically less than 44 days per year (365 days – 321 days = 44 days) resulting in a reduction of efficiency of the plant's operations due to periods of operations which occur at less than full boiler load, or periods where boilers are idled as a result of reaching the annual waste capacity limit. Increasing the DYEC waste processing capacity allows for full use of the existing equipment maximizing the use of the investment without requiring any additional construction or building modifications. The use of an existing facility, to address wastes already being generated in a community, without requiring modification to the equipment used or the structure of the facility, means that the facility avoids many of the common temporary disadvantages associated with construction.

7.1 GHG Assessment

As discussed in Section 4.3.6, managing waste locally results in a net reduction in greenhouse gas emissions. Waste that cannot be processed at the DYEC must be transported in highway haulers to alternate disposal locations and managing an additional 20,000 tonnes of waste annually at the DYEC will reduce the distance travelled and the fuel consumption for the trucks used to transport that waste. Waste processed at the DYEC does not generated methane gas in a landfill. While the DYEC does increase to 160,000 tonnes per year of capacity will involve the generation of additional GHG emissions which is a disadvantage, the net impact of the facility on a per tonne basis as presented in Section 4.3.6 is a reduction in emissions overall. Further the assessment of the facility contribution shows that the increase in CO_2 eq from the thermal treatment of waste at the DYEC is an extremely small contribution to the overall CO_2 eq emissions for Ontario and Canada.

The additional waste processed at the DYEC will result in increased electricity generation from the facility.

7.2 Economic Benefits

There is no cost associated with the increase in waste processing capacity since no additional or modified equipment is required. The Regions will realize cost savings from reduced contracted processing fees for waste tonnage in excess of 140,000 tonnes per year (110,000 tonnes for Durham Region) and additional power and materials revenue recoveries due to the additional waste tonnage processed. The 2019 preliminary financial forecast for Durham Region estimated net cost savings related to the DYEC capacity increase to 160,000 tonnes per year. Table 12 below outlines the status quo costs for Durham Region and the anticipated annual savings through 2023.

Increasing capacity at the DYEC will also allow York Region to manage more waste at a facility co-owned by the Region. York Region waste is processed at three different energy-from-waste facilities, two are privately owned. York Region is vulnerable to contract pricing fluctuations for waste sent to third party facilities.

Table 12: Estimated Durham Disposal Costs 2019 - 2023 ($ Millions)

	2019	2020	2021	2022	2023
Covanta Operating Fee	**13.2**	**13.5**	**13.7**	**14.0**	**14.2**
Property Taxes	0.5	0.5	0.6	0.6	0.6
Non-Covanta Operating Costs (gross costs)	0.9	0.9	0.9	1.0	1.0
Non-Covanta costs	**1.4**	**1.4**	**1.5**	**1.6**	**1.6**
Total Gross Costs	**14.6**	**14.9**	**15.2**	**15.6**	**15.8**
Revenues					
Electricity Revenues (IESO)	(7.0)	(7.1)	(7.1)	(7.2)	(7.2)
Materials Recovery Revenues	(0.5)	(0.5)	(0.5)	(0.5)	(0.5)
sub-total Revenues	**(7.5)**	**(7.6)**	**(7.6)**	**(7.7)**	**(7.7)**
Net Durham DYEC Cost	**7.1**	**7.3**	**7.6**	**7.9**	**8.1**
Covanta landfill disposal (beyond DYEC capacity)	**0.9**	**0.9**	**1.2**	**1.6**	**2.0**
Status Quo Cost of Disposal	**8.0**	**8.2**	**8.8**	**9.5**	**10.1**
With DYEC ECA Administrative Amendment:					
Reduced Covanta Operations Fee > 140,000 tonnes	0.0	(0.4)	(0.6)	(0.9)	(1.3)
Additional Revenues (IESO and material recovery)	0.0	(0.9)	(1.1)	(1.3)	(1.3)
Covanta landfill disposal (beyond 125,720 tonnes)	0.0	0.0	0.0	0.1	0.5
Sub-total Amendment Savings	**0.0**	**(1.3)**	**(1.7)**	**(2.1)**	**(2.1)**
Total Cost of Disposal	**8.0**	**6.9**	**7.1**	**7.4**	**8.0**

Notes to the Table:

1. Reduced Covanta fee based on deduction of landfill charge and reduced processing fee for tonnages beyond 140,000 tonnes processed (estimated at $35.45 per tonne in 2019, increasing to an estimated $38.03 per tonne by 2023). It is assumed York Region uses its full 21.4 per cent share of amended capacity.
2. Excludes materials recovery facility (MRF) residue tonnes, which are the cost responsibility of the MRF contractor.
3. Landfill fees are assumed to escalate from $90.00 per tonne in 2019 to $98.21 per tonne in 2023.
4. Power revenues escalation estimates are based on 35 per cent CPI per the IESO Power Purchase Agreement. Conservatively, revenues for ferrous and non-ferrous metals recoveries are not assumed to escalate.

Additionally, the existing DYEC is an important part of the waste management infrastructure to both Regions. By ensuring the existing infrastructure is utilized to its

fullest extent, the Regions continue to ensure high quality services can be delivered to their residents. Having sufficient infrastructure in place is also an important aspect to attracting and maintaining residents to the Regions.

7.3 Waste Generation

As a result of the capacity increase to 160,000 tonnes per year. The facility is anticipated to generate approximately 5,877 tonnes of ash materials requiring disposal per year. This material will require transportation to a landfill outside of the Region for disposal. While generation of waste is a disadvantage of any project, in this instance the disadvantage if offset by two factors. Firstly, the ash generated is a result of the combustion of 20,000 of waste, meaning that a net reduction of 14,123 tonnes of material is required when compared with the alternative of the materials moving directly to landfill. Secondly, this material is able to be handled differently at the receiving sites. Landfills are required to place a layer of cover material over the wastes at the end of each day. The soil like nature of the processed ash, has resulted in the material being accepted as an alternative to daily cover at the current receiving sites. As such it is incorporated into the landfill as ‘cover’ as opposed to ‘waste’ which results in a more efficient use of airspace and reduces the amount of soil materials consumed by that site. As such there is projected to be a net benefit as a whole from the perspective of waste generation to the project.

8. Public Consultation

The Regions released the Notice of Commencement on July 3, 2019 using a variety of mediums to ensure a wide distribution of information to interested stakeholders. The mediums include social medium platforms (Twitter and Facebook), local newspapers, Regional websites, mail outs (hard copy and emails) and Regional Council/Committees. The Notice of Commencement provided a brief background of the project, outlined the proposed undertaking, described the process and consultation methods and provided a contact for questions or concerns regarding the project.

As part of the consultation process, the Regions have prepared three Public Information Centres (PICs) at various stages throughout the process. The Regions released the PIC Notices using a variety of mediums to ensure a wide distribution of information to interested stakeholders. The mediums include social medium platforms (Twitter and Facebook), local newspapers, Regional websites and mail outs (emails).

PIC#1 was arranged by the Project Team and held on August 21, 2019 at the Durham Regional Headquarters, located at 605 Rossland Road East, Whitby, from 5 to 8:00 pm. The PIC was intended to gather and respond to public comments on the process. PIC#1 focused on the following:

a. Describing the proposed study and purpose

b. Presenting the screening criteria checklist

c. Identifying potential effects

d. Identifying the next steps in the EA process

A total of 30 participants attended PIC #1. The project team received eight completed comment sheets/emails in relation the PIC #1.

Public Information Centre #2 (PIC#2) was arranged by the Project Team and held on October 23, 2019 at the Durham York Energy Centre, located at 1835 Energy Drive, Courtice, from 4 to 8:00 p.m. The Regions dedicated the 4 to 5 p.m. timeslot for

interested representative from the Indigenous communities to address any specific questions or concerns their communities may have had.

PIC#2 focused on the following:

a. Updating stakeholders on the project status

b. Providing an opportunity to discuss the studies completed and the assessment of potential environmental effects

c. Providing an opportunity to discuss relevant impact mitigation measures

d. Identifying next steps in the EA process

A total of seventeen participants attended PIC #2. Twelve participants opted to participate in the tour of the DYEC. To date the project team has received no completed comment sheets/emails in relation the PIC #2.

Public Information Centre #3 (PIC#3) has been arranged by the Project Team and will be held on December 12, 2019 at the Garnet B. Rickard Recreation Complex, located at 2440 Durham Regional Hwy 2, Bowmanville, from 4 to 8:00 p.m. The Regions will dedicate the 4 to 5 p.m. timeslot for interested representative from the Indigenous communities to address any specific questions or concerns their communities may have.

PIC#3 will focus on the following:

a. Updating stakeholders on the project status

b. Providing an opportunity to discuss the draft Environmental Screening Report

A full Record of Consultation will be provided in as Appendix E to this report including a summary of comments received and provided responses.

9. Next Steps

9.1 Notice of Completion

The ESR will be finalized in early 2020. Hardcopies of the completed ESR will be available for public viewing at the DYEC, at Durham Region headquarters and Clarington municipal office. An electronic version will be available on the DYEC website. Copies of the ESR will be provided to the MECP Regional EA Coordinator, government agencies and Indigenous communities that have expressed an interest in reviewing the report.

Following the completion of the ESR, a Notice of Completion will be published in local newspapers on two separate dates and posted on the DYEC website. The Notice of Completion will also be mailed to the MECP Regional EA Coordinator, adjacent landowners and tenants, Indigenous communities and to all who have expressed an interest in the DYEC capacity increase.

9.2 60 Day Public Review Period

The Notice of Completion marks the beginning of a 60-calendar day review period for the ESR. During the review period MECP, other government agencies, Indigenous communities and interested persons have the opportunity to review the completed ESR.

9.3 Opportunity for Elevation Requests

Persons who have environmental concerns regarding the project that are not addressed in the ESR can request an elevation of the Screening to an individual EA. However, MECP advises that concerns be brought to the proponent as early as possible in the Screening process so that they may be addressed by the proponent prior to the Notice of Completion. If the proponent has not been able to resolve concerns, concerned persons may write to the MECP Director, Environmental Assessment and Permissions Branch to request that the project be elevated. An elevation request must be made in accordance with the requirements outlined in Section B.3 of the Guide. Elevation

requests are considered comments to a public process and will be shared with the proponent and other interested stakeholders.

9.4 Statement of Completion

The final step in the Screening process is submission of the Statement of Completion. If no elevation requests are submitted during the review period or submitted elevation requests are resolved or withdrawn, the Statement of Completion form is completed and submitted to the MECP Director, Environmental Assessment and Permissions Branch and EA Regional Coordinator and placed in the project file.

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