Waste Management | Sustainability Services

Waste to Resource Assessment

Prepared for:

Huron-Perth Catholic District School Board

HPCDSB - St. Annes Catholic School
353 Ontario St., Clinton, Ontario
April 14, 2023

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Executive Summary

On April 14, 2023, Sustainability Services conducted a Waste to Resource™ assessment for HPCDSB - St. Annes Catholic School located at 353 Ontario St. in Clinton, Ontario. A few goals of the assessment were as follows:

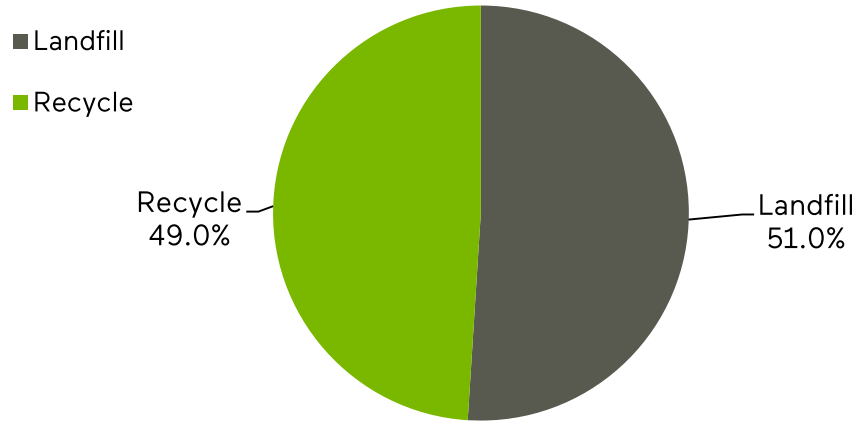
- **Update baseline inventories for waste generation at HPCDSB - St. Annes Catholic School**
- **To identify and quantify waste composition and commodity**
- **To determine the recovery performance of existing programs**
- **Identify opportunities to further increase diversion and reduce cost**
- **Develop strategies that could be implemented throughout the facility**

Our goal is to provide HPCDSB - St. Annes Catholic School with strategies that will maximize the efficiency of your waste diversion system. During the waste assessment conducted by Sustainability Services, visual inspections of waste generation points throughout the facility resulted in the discovery of additional diversion opportunities. The assessment identified four primary opportunities that should occur to improve your overall waste diversion rate. The following are our recommendations:

- **Increase Awareness of Current Diversion Programs**
- **Staff and Student Education and Engagement**
- **Ensure Effective Diversion Infrastructure**
- **Continual Improvement and Additional Recommendations**

The facility generated a combined 35.40 MT of waste and diverted materials in the last year. The current diversion rate for your facility is 49.0%.

Figure 1– Current Diversion Rate at HPCDSB - St. Annes Catholic School



A team of sustainability consultants performed an assessment that involved a walkthrough of the facility and a targeted sort and weigh analysis of the waste stream. The following is a summary of key findings identified during the assessment:

- **The current diversion rate is 49.0%**
- **Annually, it is estimated that 18.06 MT of waste and 17.34 MT of diverted materials will be generated from your facility**
- **Of all the material generated on site, up to 58.9% potentially could have been diverted through currently available diversion programs**
- **Papers account for 40.0% of the waste sent to landfill**
- **Organics account for 20.3% of the waste sent to landfill**
- **Plastics account for 12.6% of the waste sent to landfill**

Assessment Findings and Goals Alignment

Facility Information

Table 1 – Facility Information

Item	Comments
Facility Name:	HPCDSB - St. Annes Catholic School
Description:	St. Anne's Catholic Secondary School was built in 1995 and has approximately 500 students and 80 staff.
Address:	353 Ontario St., Clinton, Ontario
Contact Name:	Chris Makohn
Contact Number:	519-345-2440

Table 2 – Assessment Summary

Item	Comments
Performed By:	Christopher Doyle
Performed On:	April 14, 2023
Assessment Type:	Waste to Resource Assessment – Waste Audit
Assessment Level:	☑ Basic Material Characterization ☐ Detailed Material Characterization ☑ Basic Options Analysis ☑ Detailed Option Analysis ☐ Carbon Analysis ☐ Material Process Mapping ☑ Implementation Feasibility Analysis ☑ Action Plan
Account Manager:	Meaghan Stewart

Goals, Objectives, and Other Factors

The following is a list of company goals, objectives, or other factors considered during this assessment.

- **Apply findings from the waste audit to reduce waste, maximize collection of recycling materials and optimize waste management efficiencies**
- **Set goals, monitor waste generation, and track recovery levels on a regular basis**
- **Streamline and standardize handling routines of materials throughout the facility**
- **Reduce waste spend and disposal costs**
- **Provide ongoing and improved employee training and education avenues**
- **Identify areas of new or enhanced diversion opportunity**
- **Increase capture rate of divertible materials and reduce overall generation of non-recyclable materials**

Regulatory Requirements

The facility took initiative to conduct a solid nonhazardous waste audit in effort to adhere to Ministry of the Environment, Conservation and Parks Regulations 102/94 and 103/94. Under O.Reg. 102/94, all waste audits must address:

- Identify the amount, nature and composition of the waste generated in designated functional areas of the campus.
- How the waste is produced, including relevant management decisions and policies.
- How the waste is managed; and
- The extent to which materials or products used or sold consist of recycled or reused materials or products.

According to O.Reg. 102/94, the Waste Reduction Work Plans or a summary of the plan must be posted at the facility in a place where it can be viewed. If a summary of the work plan is posted, the full Work Plan must be made available for review upon request by any employee.

- The waste audit report and waste reduction work plan must be retained on file for a minimum of five years.
- A waste audit report and waste reduction work plan must be conducted and updated annually.

Please see Appendix 6 – Ontario's 3Rs Regulations for more details or https://www.ontario.ca/laws/regulation/940103 and https://www.ontario.ca/laws/regulation/940102 for the full regulations.

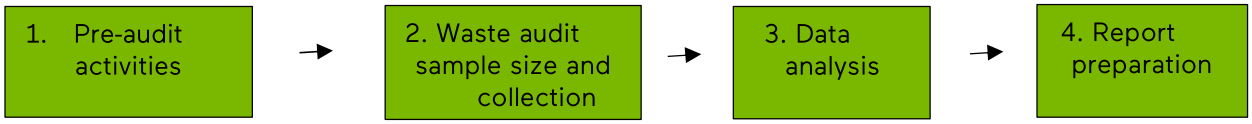
Options Overview

Four options were identified during the assessment. The table below lists key options that represent the most significant opportunities.

Table 3 – Options Summary Table

Option	Description	Benefit	Rationale
Increase Awareness of Current Diversion Programs	Stakeholders need to receive consistent messages about current diversion programs.	✓ Increase diversion and capture rates ✓ Reduced waste spend	Majority of the materials generated throughout the facility can be diverted from landfill though current reuse, recycling or compost programs.
Staff and Student Education and Engagement	All stakeholders need to receive consistent messages about current diversion programs available to them.	✓ Increase awareness on environmental programs and issues ✓ Increased efficiencies ✓ Ensure effective education is offered	All stakeholders need to be encouraged and re-educated regarding waste and recycling procedures within the facility. Dedicated and knowledgeable staff will create the opportunity for the facility to achieve superior capture rates and manage an effective program.
Ensure Effective Diversion Infrastructure	Ensure receptacles and signage is present.	✓ Increase efficiencies in program and reduce gaps	Take measures to help users and set up the diversion program for success.
Continual Improvement and Additional Recommendations	Continually improve waste management program on site. Monitor and effectively manage all programs and methods in place at the facility.	✓ Expand programs available ✓ Ensure the tools and infrastructure are in place to support waste management goals	Control decision-making and input regarding materials brought into the facility. Determine how best to capture non-traditional materials for recycling or reuse.

Sampling Methodology



1. **Pre-audit activities** - Collecting background information (such as identifying occupancy rate, changes in collection services), historical data, diversion reports, receptacle service information, etc. Establishing the plan for the assessment. Conducting a site tour of the facility to review procedures and current infrastructure.

2. **Waste audit and sample size** - To characterize the material stream, visual observations and waste samples were obtained from various collection areas throughout the facility. These collection areas were identified from labels placed on the waste bags or collection receptacle. For the purposes of this assessment, a sample **generation area** is a combination of a specific collection area or department and/or waste generating process. The sample material was collected in a safe, designated location separate from other waste collection areas for the assessment.

   During this assessment, samples were collected from 20 unique generation areas throughout the facility over a 24-hour period. For the purposes of this project is it assumed that the sample period chosen is a fair representation of typical activities and waste generation at the site, although daily variances are possible. The materials were sorted and divided into up to 10 waste categories and weights of each material sub-category (up to 90) were recorded.

3. **Data analysis** – Analysis of on and off-site data provided by WM and the client. Calculation of diversion and capture rate for the site.

4. **Report preparation -** Full report prepared including site specific recommendations and Ministry of the Environment, Conservation and Parks - Audit and Workplan forms.

Limitations

Not all Diverted Materials were available and collected during the sample period. Examples include batteries and light tubes which are collected on a sporadic basis.

Hazardous, Industrial, and Liquid Industrial Wastes were not included within the scope of this assessment. These materials are not typically included in MOE Reg. 102/94 solid waste audits and specialized processes are required to handle these materials due to the health and safety concerns associated.

Material Composition Breakdown

Landfill Waste Material Comparison by Category

This section displays a breakdown of general material categories by weight and volume.

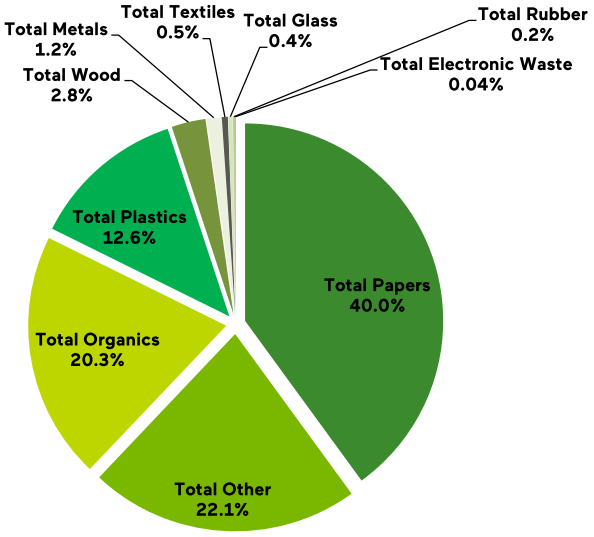
The largest category by weight was Papers materials representing 40.0% of the landfill waste stream.

Table 4 – Landfill Waste Material Comparison

Waste Category	Total Audited Waste Material (kg)	Material Composition (%)	Annual Projected Volume Generated (kg)
Total Papers	10.69	40.0%	7,223
Total Other	5.90	22.1%	3,986
Total Organics	5.42	20.3%	3,662
Total Plastics	3.37	12.6%	2,277
Total Wood	0.74	2.8%	500
Total Metals	0.32	1.2%	216
Total Textiles	0.13	0.5%	88
Total Glass	0.10	0.4%	68
Total Rubber	0.05	0.2%	34
Total Electronic Waste	0.01	0.04%	7
Total	**26.73**	**100.0%**	**18,060**

Figure 2 below represents the generation areas at the facility.

Figure 2 – Landfill Waste Material by Category



Audited Waste Material Composition by Sample Collection Area

The following table displays a breakdown of the waste sources during the Sustainability Services assessment. For further in-depth analysis of the generation areas identified, consult Appendices and Supplementary Data.

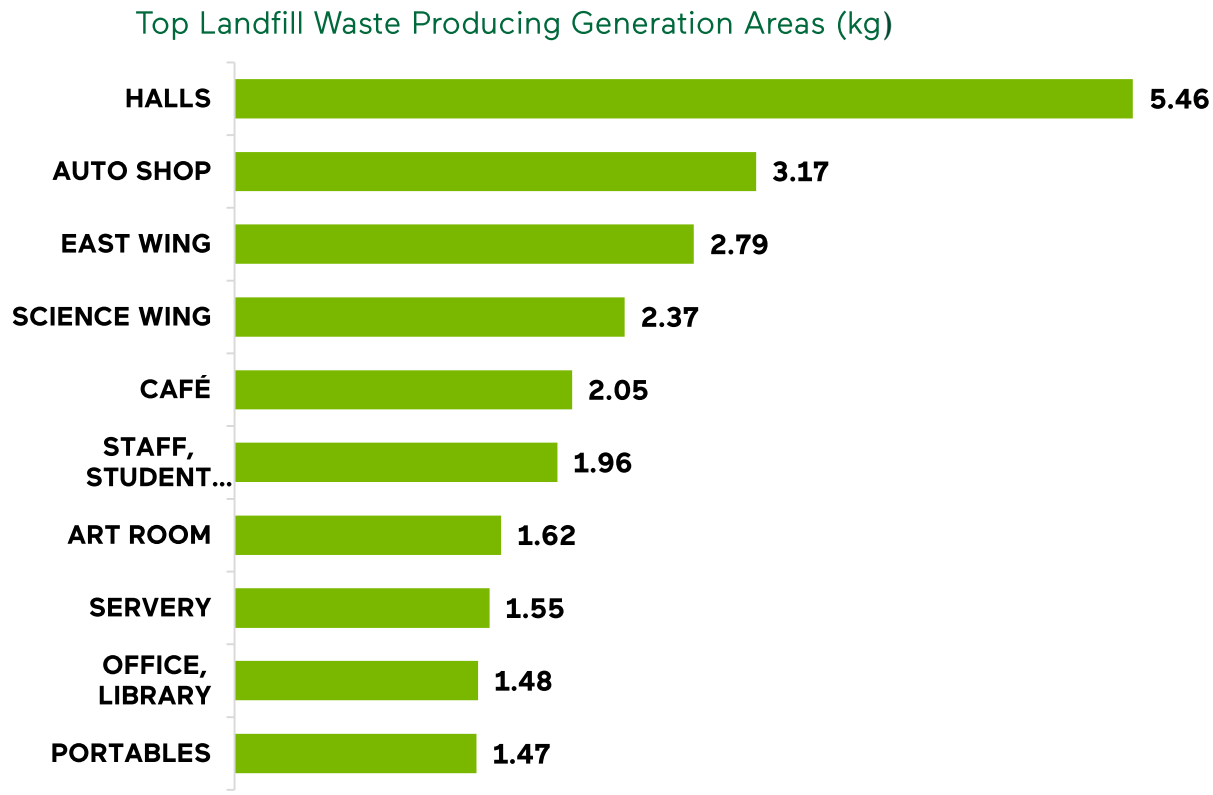
The largest generation area identified in the audit sample was the HALLS generation area representing 20.4% of the audited sample.

Table 5 – Audited Waste Sources

Generation Area	Total Audited Waste (kg)	Generation Composition (%)	Annual Projected Volume (kg)
HALLS	5.46	20.4%	3,689
AUTO SHOP	3.17	11.9%	2,142
EAST WING	2.79	10.4%	1,885
SCIENCE WING	2.37	8.9%	1,601
CAFÉ	2.05	7.7%	1,385
STAFF, STUDENT SERVICES	1.96	7.3%	1,324
ART ROOM	1.62	6.1%	1,095
SERVERY	1.55	5.8%	1,047
OFFICE, LIBRARY	1.48	5.5%	1,000
PORTABLES	1.47	5.5%	993
MUSIC ROOM	0.63	2.4%	426
WOOD SHOP	0.49	1.8%	331
WASHROOM	0.48	1.8%	324
CLASSROOM	0.44	1.6%	297
HAIR SHOP	0.38	1.4%	257
GIRLS CHANGE	0.11	0.4%	74
OPALS BATHROOM	0.09	0.3%	61
COACH OFFICE	0.09	0.3%	61
DRAMA ROOM	0.06	0.2%	41
BOYS CHANGE	0.03	0.1%	20
Grand Total	**26.73**	**100.0%**	**18,060**

Figure 3 below represents the top 10 generation areas at the facility.

Figure 3 – Waste Generation by Collection Area



Diversion Opportunities

Increased diversion opportunities represent the largest potential cost savings and landfill diversion opportunity for HPCDSB - St. Annes Catholic School. While diversion programs are currently in operation, the audit shows that they are not working at their optimal efficiency.

Diversion rate is calculated as follows:

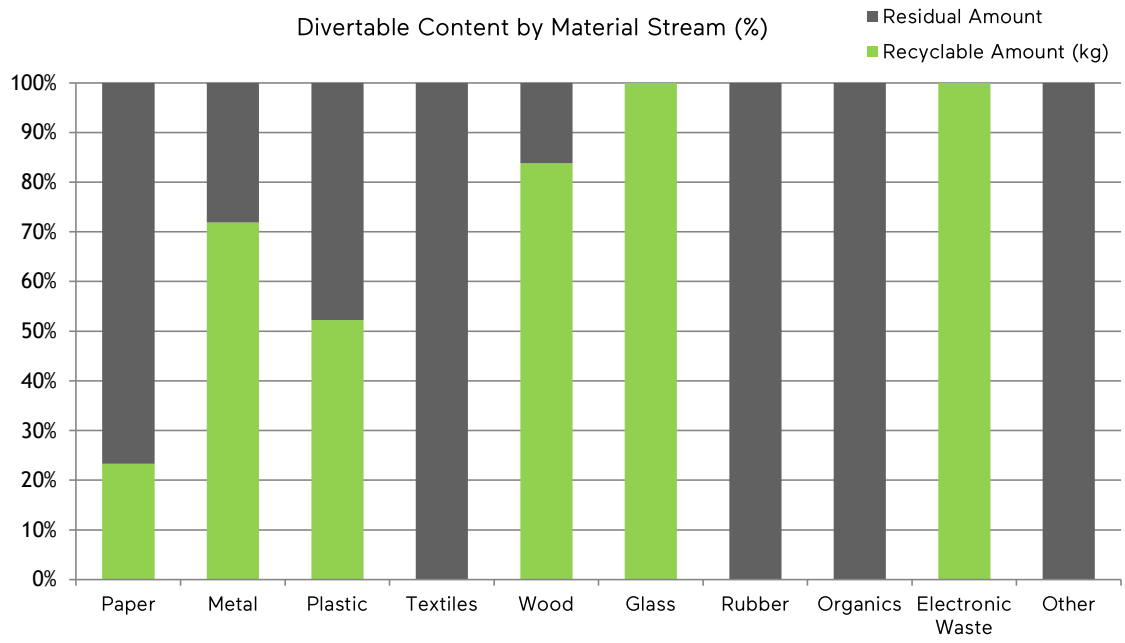
$$\text{Diversion Rate} = \frac{\text{Weight of recovered material}}{\text{Total weight of material generated on-site}} \times 100\%$$

The current diversion rate at the site is 49.0%. Based on the diversion program currently in place 58.9% of the material generated at the facility is recyclable or divertible. Therefore, there is room for improvement within the diversion program where most employees in the facility handle their waste.

Should an organics program be implemented the potential diversion would jump to a significant 84.0% diversion rate. This represents a huge opportunity to increase your waste diversion and reduce associated waste removal costs.

Figure 4 outlines the material in each category which could potentially be diverted.

Figure 4 - Diversion Opportunity by Material Category



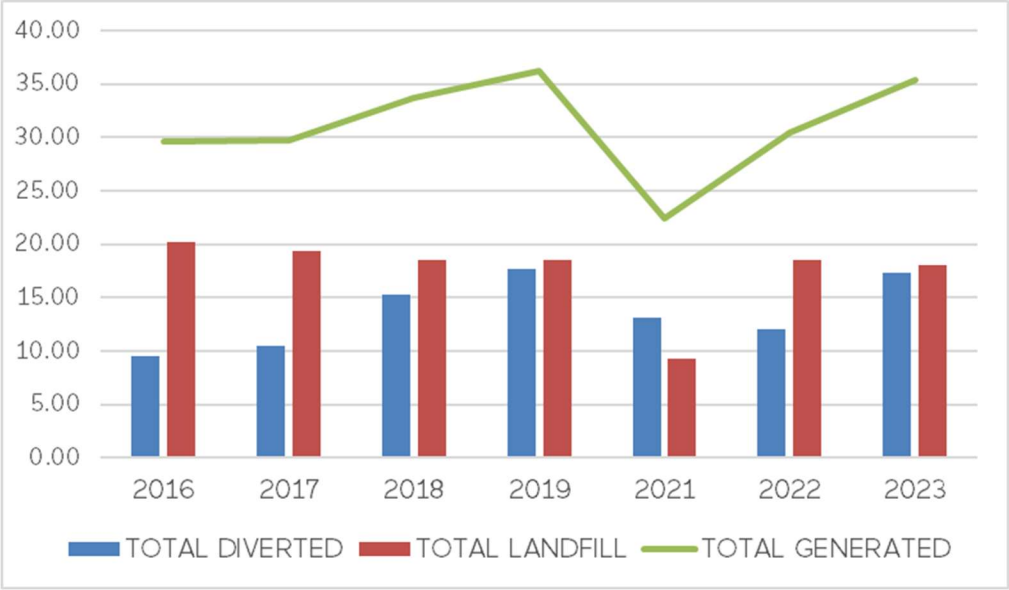
Year Over Year Audit Comparison

An assessment was completed at the facility on an annual basis. It was determined that the diversion rate has increased to 49.0% from 39.4% in 2022.

The facility generated 18.06 tonnes of landfill waste in the current assessment, similar to the 2022 assessment. The facility generated 9.3 tonnes of landfill waste in 2021, which could be seen as an anomaly due to the COVID-19 pandemic.

The facility captured 17.34 tonnes of material for diversion, recycling or reuse in the current assessment compared to 12.04 tonnes in 2022.

Figure 5 – Comparison of 2016 to 2023 results



Diverted Material Comparison by Category

This following table displays a breakdown of assessed diverted, recycled, reused, and composted materials. The facility currently has programs in place to capture the following waste streams:

Table 6 – Facility Service Information

Diversion Program	Service Provider/s	Container Type	Note
Mixed Recycling	WM	6-yard collection bin	-
Confidential Paper Shredding	Shred It	Consoles	
Metal	Municipal	Unknown	
Wood	Municipal	Unknown	
Skids	Vendor	Unknown	
E-Waste	Board, Centralized	Unknown	
Batteries	Battery Recycler	Unknown	
Light Bulbs	Board, Centralized	Unknown	
Toner, Ink Cartridges	Xerox	Unknown	

Landfill at the facility was collected in a 6-yard collection bin.

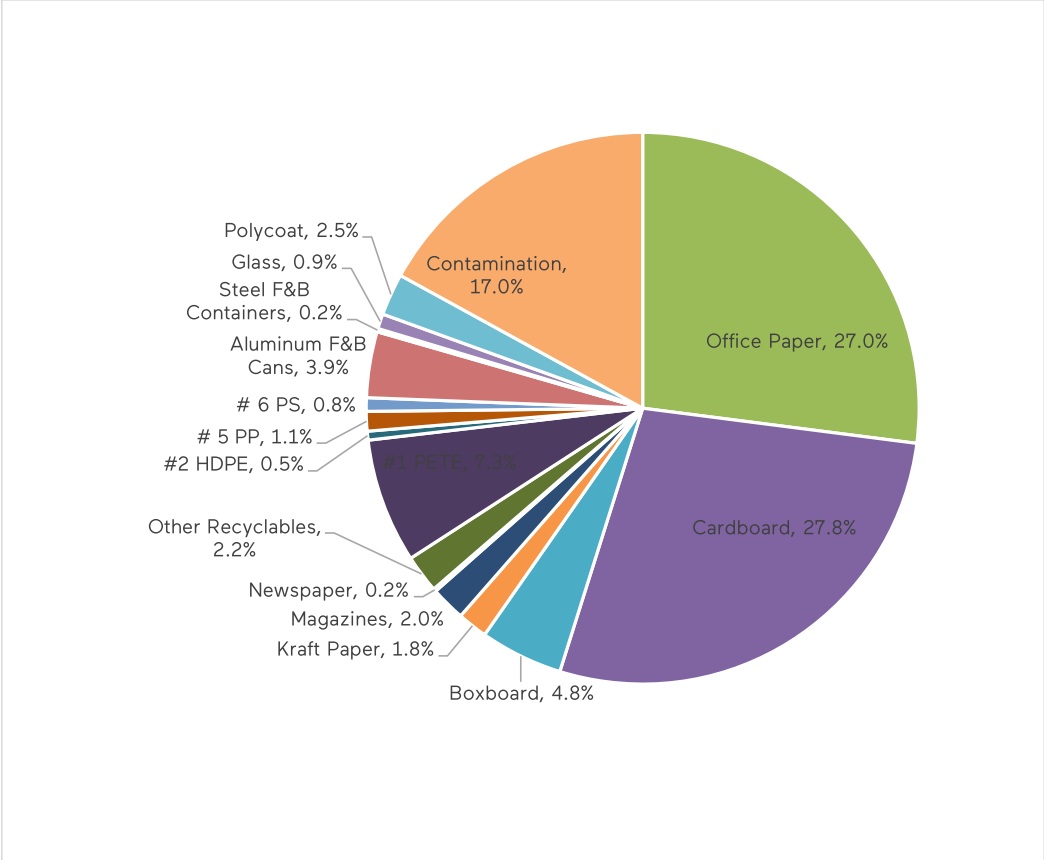
Table 7 – Diverted Material Comparison

Diverted Material	Annual Projected Volume (kg)	Percentage of all Diverted Materials (%)
Mixed Recycling	8,798	50.7%
Cardboard	5,392	31.1%
Confidential Paper Shredding	1,181	6.8%
Metal	750	4.3%
Wood	750	4.3%
Skids	450	2.6%
Printer Cartridges	12	0.1%
Total	**17,338**	**100.0%**

Contamination Identified in Recycling Stream

A sample of the materials collected for the recycling programs was reviewed during the assessment. It was determined that approximately 17% of the sample was various forms of contamination. This included liquids, food, polyfoam and wrappers identified in the recycling bags.

Figure 6 – Breakdown of Audited Material Collected for Recycling



The **capture rate** indicates the percentage of a material (i.e., office paper, organics) that is being disposed of via one of the sites recovery programs (i.e., single stream, mixed recycling, organics). A 100% capture rate indicates that all recoverable materials being produced on-site has been placed in the correct receptacle and the landfill garbage contains no recoverable materials.

$$\text{Capture Rate} = \frac{\text{Recovered material (e.g. paper in mixed recycling)}}{\text{Recovered material (e.g. paper in mixed recycling)} + \text{Waste material (e.g. paper in garbage)}} \times 100\%$$

Based on the assessment findings, of the 35,398 kg of material generated at the facility in the last 12 months, 20,858 kg of that material is potentially divertible in the available diversion programs. As 17,338 kg of material was captured for recycling, the facility wide capture rate was determined to be 83.1%. Table 7 below outlines the capture rate per material.

Table 7 – Capture Rate Calculations by Material

Diverted Material	Total Generated (kg)	Captured for Diversion (kg)	Landfilled (kg)	Capture Rate (%)
Aluminum food and beverage cans	552	411	142	74.3%
Cardboard	8,556	8,340	216	97.5%
Fine paper	4,937	4,045	892	81.9%
Glass food and beverage bottles/jars	161	93	68	58.0%
Newsprint	32	19	14	58.0%
Steel food and beverage cans	32	19	14	58.0%
PET (#1) plastic	1,295	774	520	59.8%
HDPE (#2)	205	56	149	27.4%
LDPE (#4) plastic film	851	-	851	0.0%
PP (#5) plastic containers	533	121	412	22.7%
Polystyrene (#6)	192	84	108	43.7%
Organics	3,662	-	3,662	0.0%
Boxboard	750	513	236	68.5%
Glossy magazines, catalogues, flyers	228	215	14	94.1%
Wood	1,250	750	500	60.0%
Steel	757	750	7	99.1%
Drywall	-	-	-	
Skids	450	450	-	100.0%
Paper towels	4,675	-	4,675	0.0%
Printer cartridges	12	12	-	100.0%
IT equipment/audio-visual equipment	5	5	-	100.0%
Furniture	-	-	-	
Building/renovation material	-	-	-	
Disposable food packaging (incl. polycoat)	1,418	681	736	48.0%
Cell phones	-	-	-	
Diapers	1,013	-	1,013	0.0%
Clothing/textiles	88	-	88	0.0%
Other: misc., beverage pods	3,743	-	3,743	0.0%

Recommendations Overview

Four options have been identified that can help HPCDSB - St. Annes Catholic School make its operations more sustainable. Each option should be carefully reviewed for operational, financial, social, and strategic fit.

- **Increase Awareness of Current Diversion Programs**
- **Staff and Student Education and Engagement**
- **Ensure Effective Diversion Infrastructure**
- **Continual Improvement and Additional Recommendations**

Photographs 1 to 2 – Waste and Recycling Sample Collected for Assessment Period

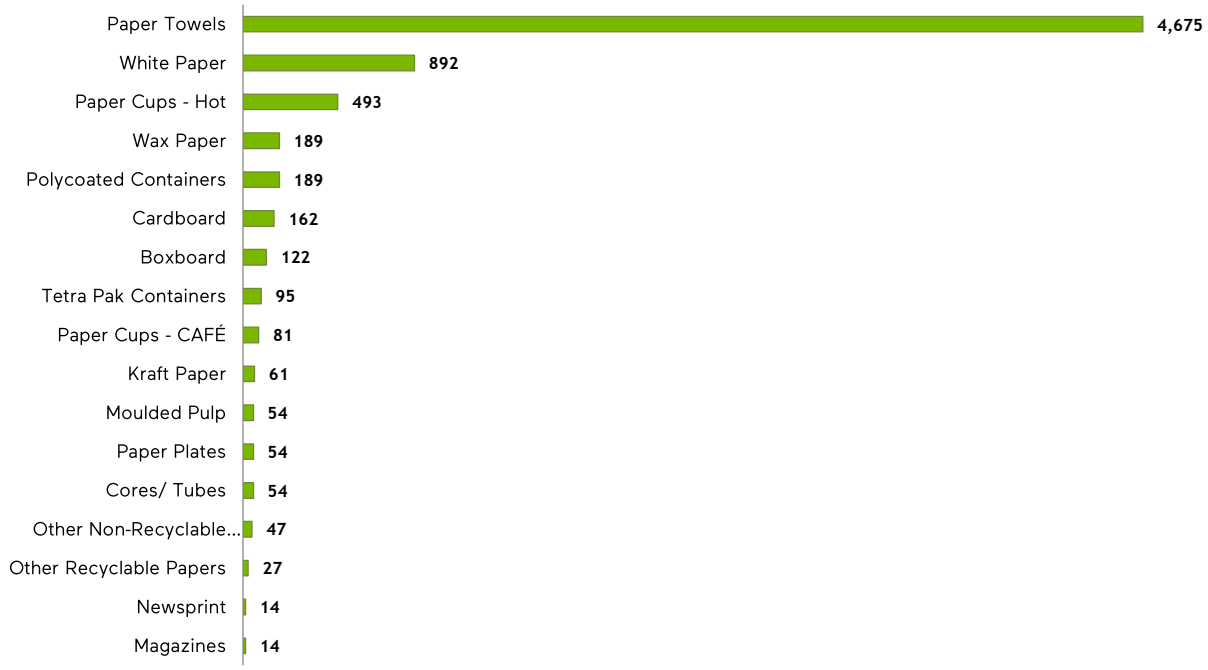
Landfill Sample Material Category Breakdown

Increase Awareness of Current Diversion Programs:
Below is a breakdown of the composition of the audited landfill material generated on site based on the analysis of the audited sample. As well as recommendations for selected sub-category material types.

Papers

Paper materials sent to landfill accounted for 40.0% of your total waste; nearly 7,223 kg of paper will be sent to landfill annually. The facility currently has programs in place to capture confidential paper shredding, cardboard, and mixed paper collection for recycling.

Figure 7 - Annual Papers Disposed in Landfill (in kg)



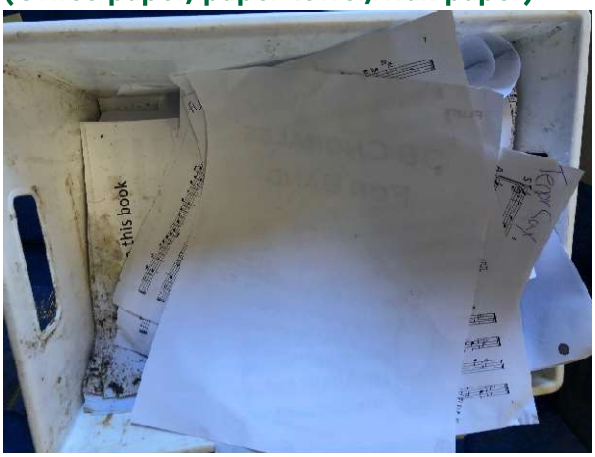
Paper towel represented 25.9% of the landfill sample. This subcategory includes hand towels, facial tissue, and similar materials. These materials were generated throughout various areas of the school. but the facility should consider providing alternatives including hand dryers to reduce these materials in washrooms. The school should review hand dryer options that best suit their facility as the payback of the capital costs are often seen in reasonable time frames through reduced landfill costs and the reduction in costs of purchasing new paper towel products.

White (office) paper represented 4.9% of all landfilled materials audited. Continued education for students and employees should be provided to ensure awareness of current programs and recycling opportunities. Receptacles should be accessible where these materials are generated such as classrooms, staff rooms and computer rooms.

Paper cups accounted for 2.7% of the audited landfill sample. This included lined hot beverage cups. These materials are not accepted in mixed recycling in this jurisdiction. The school should promote the use of reusable mugs and containers to its staff and students.

Poly-coated cups included 1.0% of the landfill sample. This included milk cartons. Education and signage should include these materials to increase awareness that they are recyclable.

Photographs 3 to 5 – Paper Material Examples in Landfill Sample (Office paper, paper towel, wax paper)



Organics

Organics materials sent to landfill accounted for 20.3% of your total waste; nearly 3,662 kg of Organics will be sent to landfill annually. No program currently exists at the facility to capture organic materials for compost.

Figure 8 - Annual Organics Disposed in Landfill (in kg)

Organic material was identified primarily as **food waste**, representing 18.4% of the entire landfill waste stream. **Pre-consumer food waste, hair** and **yard waste** were found in minimal quantities.

These materials mentioned could be diverted from landfill should an organics collection program be implemented at the facility in the future. This represents a significant opportunity to increase the facility's overall diversion rate.

Compostable materials accounted for 46.1% of the landfilled sample when combined with other potentially compostable materials including paper towel.

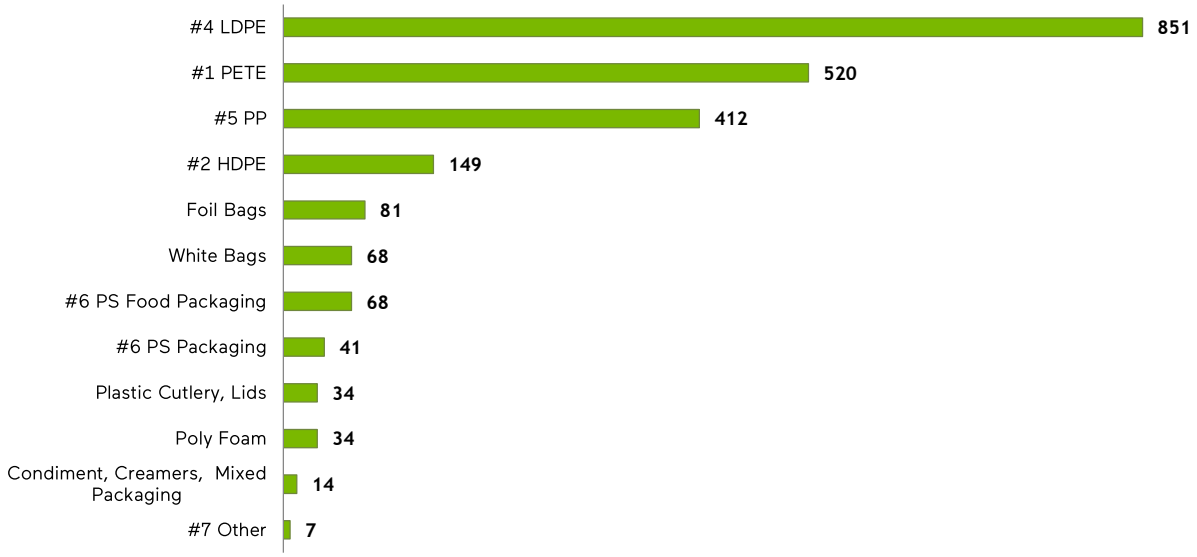
Photographs 6 to 7 – Organic Material Examples in Landfill Sample (Food scraps, pre-consumer foods)

Plastics

Plastic materials account for 12.6% of your waste stream composition; 2,277 kg of plastic materials will be sent to landfill this year from your facility. The facility currently has programs in place to capture bottles and cans throughout the facility.

All plastic material will be marked with a number indicating the type of plastic that was used to make the item. Plastic is generally not a heavy material therefore the high weight generated indicated a notable volume of material. Utilizing current recycling programs will ensure this material is diverted. This number can be used to determine if recycling programs exist for that item. Most commonly, recycling programs will exist for #1, #2 & #5. Limited recycling programs exist for #3, #4 and #6 plastics.

Figure 9 - Annual Plastics Disposed in Landfill (in kg)



#4 LDPE film bags & packaging accounted for 4.7% of landfilled materials. At this time, LDPE materials are not accepted in mixed recycling programs.

PETE#1 plastic materials represented 2.9% of the landfill sample. Water, juice and beverage containers are the most common sources of #1 PETE, and most users are aware that these types of products are recyclable, but these items are being found in the waste stream. Examples of these materials should be included in educational signage.

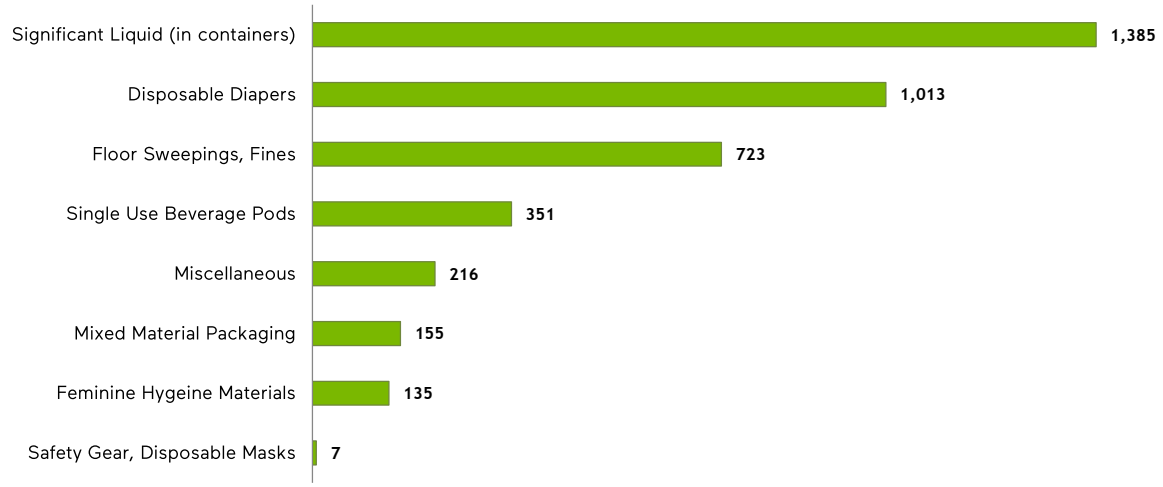
PP #5 accounted for 2.3% of the landfill sample. Fast food beverage, yogurt, food containers are the most common sources of #5 and users should be aware that these products are recyclable, examples of these materials should be included in educational signage

Photograph 8 – Plastic Material Examples in Landfill Sample (PETE)

Other Materials

Other materials sent to landfill accounted for 22.1% of your total waste; nearly 3,986 kg of this category of material will be sent to landfill annually. Currently there are no programs in place to capture most of these materials from landfill, programs may be available for construction & demolition on an as needed basis.

Figure 10 - Annual Other Disposed in Landfill (in kg)



Significant liquids represented 7.7% of the facility's disposal weight. Commonly this category includes soaps, water and coffee and other beverages most often unfinished in the original containers. Staff and students may be encouraged to empty containers to ensure the container is captured for recycling.

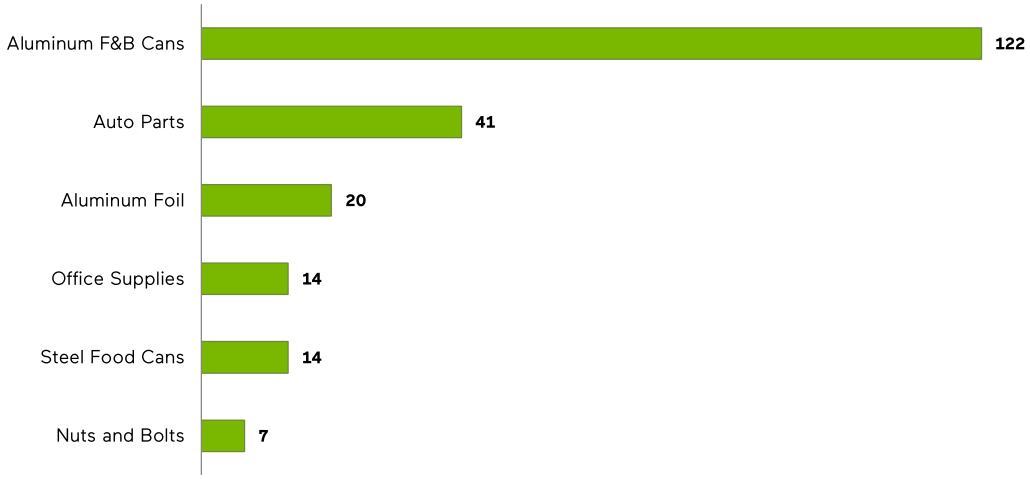
Floor sweepings included auto shop sweepings, hair, floor dust and accounted for 4.0% of the audited sample. These are not recyclable.

Photograph 9 – Other Material Examples in Landfill Sample (Beverage pods)

Metals

Metal materials sent to landfill accounted for 1.2% of your total waste; nearly 216 kg of Metals will be sent to landfill annually. The facility has programs in place to capture most metal food and beverage containers.

Figure 11 - Annual Metals Disposed in Landfill (in kg)



Aluminum food and beverage cans were present in the audited sample. These are recyclable materials and could be accepted in mixed recycling programs. Clearly labeled and easily accessible recycling receptacles are key to ensure that employees and visitors can participate and separate materials where generated.

Aluminum foil 0.5% of the audited sample. These items are not recyclable in the current program.

Photograph 10 – Metal Material Examples in Landfill Sample (Aluminum)

Glass

Glass materials sent to landfill accounted for 0.4% of your total waste; nearly 68 kg of Glass will be sent to landfill annually. The facility has programs in place to capture most glass food and beverage containers.

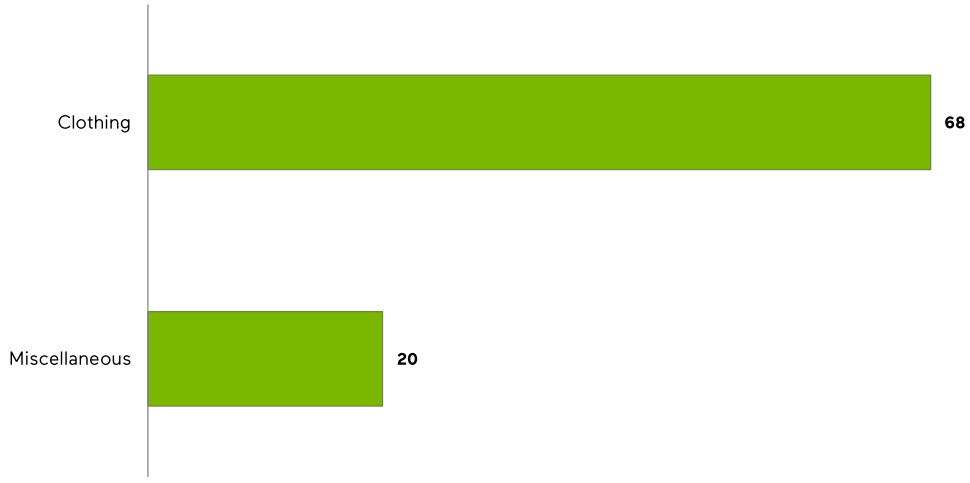
Figure 12 - Annual Glass Disposed in Landfill (in kg)

Glass bottles all recyclable materials, clearly labeled and easily accessible recycling receptacles are key to ensure that employees and visitors can participate.

Textiles

Textiles materials sent to landfill accounted for 0.5% of your total waste; nearly 88 kg of Textiles will be sent to landfill annually. There is currently no program in place to capture these materials.

Figure 13 - Annual Textiles Disposed in Landfill (in kg)

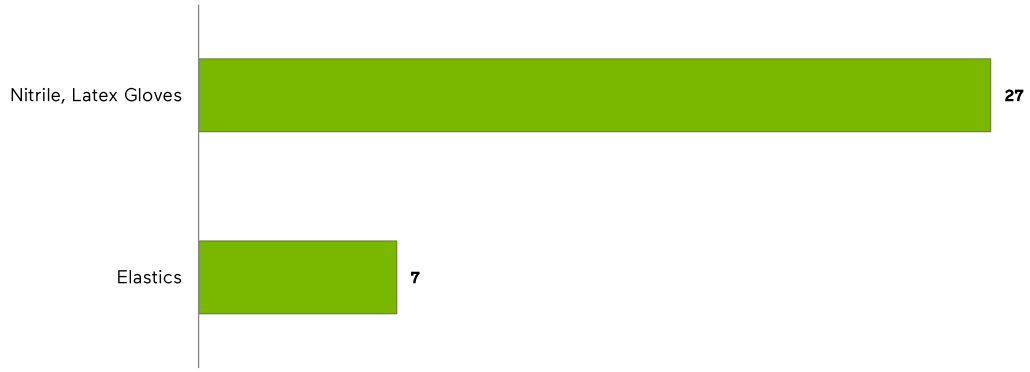


Textiles identified in the landfill waste stream are not currently recyclable. The facility should ensure the employees are trained to fully use all resources such as mop heads prior to disposal. As well, the facility should provide the opportunity to collect and donate clothing is the material is in good condition.

Rubber

Rubber materials sent to landfill accounted for 0.2% of your total waste; nearly 34 kg of Rubber will be sent to landfill annually. There are currently no programs in place to capture these items.

Figure 14 - Annual Rubber Disposed in Landfill (in kg)

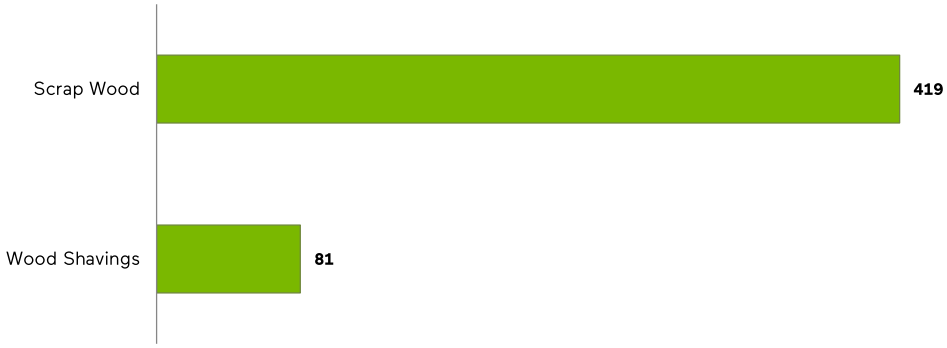


Nitrile work gloves accounted for 0.1% of the landfill sample. These are not accepted in mixed recycling programs. The facility should consider implementing a targeted program from a supplier such as a Terracycle. Terracycle can offer programs for diverting unique materials not typically recycled.

Wood

Wood materials sent to landfill accounted for 2.8% of your total waste; nearly 500 kg of Wood will be sent to landfill annually. Scrap wood materials may be captured through a select program in specific areas of the facility such as the shop class.

Figure 15 - Annual Wood Disposed in Landfill (in kg)



Scrap wood represented 2.3% of the audited sample. These materials should be places in a scrap wood collection bin in place at the facility.

Electronic Waste

Electronic Waste materials sent to landfill accounted for <0.1% of your total waste; nearly 7 kg of Electronic Waste will be sent to landfill annually. Programs are readily available for E-Waste, Batteries and Toner Cartridges through qualified haulers or through supplier take-back programs, efforts should be made to divert these materials from landfill to avoid negative environmental issues.

Figure 16 - Annual Electronic Waste Disposed in Landfill (in kg)

Mixed E-waste was identified in the landfill sample. These materials may pose significant harm to the environment, efforts should be made to divert these materials from landfill to avoid negative environmental issues. Employees should be reminded about available programs for collection and where specifically they should place E-waste for collection.

Site Observations

During the assessment process the diversion infrastructure was reviewed. Below are examples of the collection services, receptacle types and accessibility and the availability of labelling and educational signage.

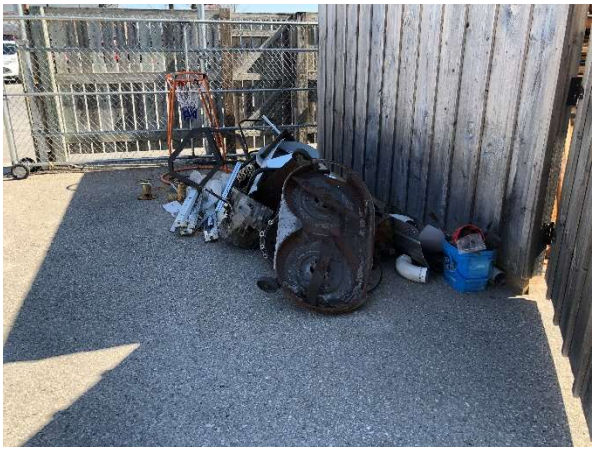
- The receptacles in the photo below are not labelled. It may be unclear to the user which is intended to collect recycling or to collect landfill material. If receptacles are not colour coded, labelling assists keep the uses clear to the user.

- Below are examples from the food service area. The receptacles should clearly indicate what materials they are intended to collect. All recycling receptacles should have clear and consistent labels, some receptacles in the facility were not labelled.

- In the photo below a receptacle is present with no recycling receptacle in the immediate area. All landfill receptacles should be paired with recycling options so users have an accessible option to source separate.

- Some receptacles in the facility were equipped with educational signage.

- Example of metal collection and mixed recycling collection container.



Staff and Student Education and Engagement

As many different stakeholders are involved and contribute to the diversion program it is important to target education towards each group.

Students

- Eco clubs can actively raise awareness of environmental issues and participate in various projects.
    - Clubs can participate in all aspects of the diversion program. Such as ensuring receptacles and signage are in place and aiding collection of certain material streams. Participate in environmental events on campus, research projects such as waste audits or to take field trips to recycling plants for hands on education.
        - An Environmental Themed Day/ Assembly, for Earth Day in April or Waste Reduction Week in October are other examples to increase awareness on campus.

- Class participation - for courses that include environmental themes, students should be encouraged to support environmental themes. Ex. Tech or art classes can create educational materials regarding recycling.

- Boomerang or Waste free lunches can be promoted on specific days or ongoing. Students should be asked to bring their own lunches in reusable containers and any waste is returned home with them.

- Green Events - the school may set up green events during well-attended sporting or community events. All food vendors for the event must provide biodegradable plates, containers, cutlery for food service or easily recyclable containers. During the event, volunteers may help attendees to sort materials into the correct receptacles.

Staff (Faculty) Training

- Staff should be trained in Staff Meetings on all the streams available in the campus diversion program and where they can access them. Staff should be able to communicate the program to students. Regular training demonstrates the School Board's commitment to the environment.

- Communication System / Share Best Practices - Teachers and staff involved in environmental programs or are in engaged in environmental issues should have a system in place to share information and discuss topics such as a dedicated group on Microsoft Teams.
    - Schools may set up a Materials Exchange program so that facilities with extra resources may share with those who need them.

- Many schools in Ontario participate in Eco schools programs. Eco schools offers significant information on waste diversion much of which is prepared and can be incorporated into their lesson planning.
    - Regions, Municipalities, and service providers often provide educational presentations and support materials on waste diversion and other environmental topics. Which may be a valuable resource for educating students.

Staff (Custodial) Training

- Custodial staff should be trained on the diversion program during their orientation and reminded on a regular basis by their managers. Targeted training sessions and regular reminders can ensure that staff understands the steps that are being taken to achieve environmental sustainability and their roles to achieve success.
    - Staff should be trained to notify a point of contact if receptacles or signage is missing.

- Board Facility Management should regularly meet with the custodial team as they may be able to provide firsthand insight into aspects of the diversion program and potential areas of improvement.

- Custodial staff should be trained to maintain "refuse logs" to track the bags and totes placed out each service day. Service providers may not be able to weigh each collection container, and this will help the board accurately track waste generation at each site.

Ensure Effective Diversion Infrastructure

The infrastructure of a diversion program, including the receptacles and education materials, play an integral role in its success. If containers are not present, or accessible to collect recyclable material, users will not be able to participate.

- Facility Managers should, as part of their duties, routinely tour the facilities to monitor the infrastructure. By ensuring recycling stations are available, clean and orderly. This will aid in their effectiveness. Ensure that receptacles equipped with labelling and signage are in place for ease of use by employees, students, and visitors.

- Recycling receptacles should be accessible and the largest receptacles and the most available in terms of numbers.
    - As described in this report, most of the materials generated at the facility are recyclable; therefore, waste receptacles should be less prominent to encourage the use of the recycling receptacles.

- Apply a colour coding system (e.g., blue receptacles and blue labelling for mixed recycling) will help users recognize the recycling containers in different areas of the facility.

- Receptacles should be labeled (e.g., stickers, printing labels, posters, magnets) to identify what stream they are intended to collect.
    - This is an easy way to update current receptacles without the capital costs of new containers.

- Pictures, with simple easily recognizable images, should be used to indicate recyclable materials to those not familiar with the language or for young readers.
    - Signage should be at eye level or accessible for smaller children.

- Recycling receptacles should never be lined with black bags, as they may be confused for landfill and misplaced, during disposal; Request that all custodians use clear bags to collect recyclables to ensure that recyclable or compostable materials are directed to the correct receptacle. Different bags are not as easily confused in carts.

- Promotional materials help educate and increase awareness in the necessity of the 3 Rs. A green information board in the staff room or main office, can be a centralized place for relevant environmental information and reference material, example below.
    - The facility should create a slogan or branding to help promote their diversion program and create continuity for all promotional or educational materials.

Continual Improvement and Additional Recommendations

The following are suggested actions to help the facility improve their internal processes and strive to reach higher diversion rates while maintaining a strong, efficient diversion program.

It is recommended that the facility regularly check with their waste hauler to confirm what materials are recyclable in their jurisdiction. As some of these materials may be integral to the operations of the facility, it is recommended that you regularly review opportunities to reduce or substitute these materials in your operations.

i. Contamination in Recycling Sample

Some non-recyclable materials were identified within the recycling samples. This included a significant amount of liquids, paper towel, food, polyfoam and wrappers in recycling bags and cans, containers, and other plastics in paper towel bags. Based on the assessment about 17.5% of the of the mixed recycling sample could be considered contamination. Education and awareness should be provided to ensure students and employees know that these materials may contaminate the recycling streams and, in some instances, force the material to be sent to landfill, thus wasting the efforts of others who made efforts to recycle.

ii. Sustainability Goal Setting

It is recommended that the School Board set specific diversion **goals** regarding their diversion program and develop a Waste Reduction Strategy:

- Goals must be accompanied by a target date and progress reviewed at least once per year to maintain effectiveness.
- Through the process of goal setting, there is inherent motivation to meet those goals and it is believed that organizations who establish goals publicly are more likely to act with pressure from those who would like to see these goals met. Waste disposal represents a significant cost to the facility and all efforts to reduce disposal cost are beneficial.
- Managers and personnel may change but once the momentum is started and goals are set, new staff will be motivated to see projects through.

iii. Capture Additional Materials

Some non-traditional recyclable materials were identified in the landfill waste sample. This included disposable face masks and nitrile gloves. Programs are available from companies like TerraCycle in to provide the resources to set up a collection station at your facility. Materials could be sent back to TerraCycle with a prepaid shipping label.

In addition, Terracycle offers recycling programs for other non-conventional materials such as stationary items, single use beverage pods and cigarette waste.

https://zerowasteboxes.terracycle.ca/collections/zero-waste-boxes

Example of non-conventional materials which can be recycled by Terracycle

Safety Equipment and Protective Gear Zero Waste Box™

Snack Wrappers Zero Waste Box™

Office Supplies Zero Waste Box™

iv. Bin Assessment

Facility Managers should, as part of their duties, periodically and routinely tour the facility to monitor the infrastructure of the diversion program. By ensuring recycling stations are present, and conveniently available throughout the facility, the recycling participation rate will improve. Ensuring that there are recycling receptacles in every area of the facility, where waste is generated, will allow for the proper source separation of materials.

The manager should ensure that all receptacles are clearly labelled, and pictorial guidelines are present to educate staff, as described above.

Black bags should never be used in recycling receptacles as they can often be confused as landfill waste and there is a risk that already sorted recyclables are disposed incorrectly.

v. Data Management

Each school should continually review the waste services on site, including the number and the size of waste bins, location, and frequency. Should the receptacles be found to be at less than capacity on their service day, or filled up before service day, services should be adjusted, as required, to match the amount of material generated and to be most cost effective.

It is only possible to measure the performance of the waste and recycling programs if they are measured. The Board should set up a regular program to map the materials generated on site and regularly track progress over time, including batteries, fluorescent light tubes, etc. All facility managers, who arrange for these services, should track, and provide the information to a centralized location or person. By reviewing this information on a monthly or quarterly basis, the company will be able to better track the success of the diversion program.

This is vital if successes are to be communicated to staff and stakeholders, and further necessary to understand the opportunities that exist within the waste and recycling systems at the facility.

Waste Management Sustainability Services

2023 Recycling Benefits for HPCDSB - St. Annes

In 2023, we recycled 16 tons of aluminum, cardboard, paper, scrap metals, plastics, and wood pallets.

These recycling efforts conserved the following resources/prevented these emissions:

316 Mature Trees

Represents enough saved timber resources to produce 5,369,500 sheets of printing and copy paper!

39 Cubic Yards of Landfill Airspace

Enough airspace to fulfill the annual municipal waste disposal needs for 45 people!

31,713 Kw-Hrs of Electricity

Enough power to fulfill the annual electricity needs of 2 homes!

Avoided 50 Metric Tons (MTCO2E) of GHG Emissions

That GHG reduction is equivalent to removing annual emissions from 10 passenger vehicles!

58,854 Gallons of Water

Represents enough saved water to meet the daily fresh water needs of 784 people!

Sources: U.S. Environmental Protection Agency, U.S. Energy Information Administration, Environmental Paper Network-Paper Calculator V4.0, Domtar Paper, Gaylord Corporation, U.S. Forest Products Laboratory, and Waste Management.
Notes: GHG = Greenhouse Gas; MTCO2E = Metric Tons of Carbon Dioxide Equivalent

WASTE MANAGEMENT

Appendix 2 - Detailed Waste Breakdown by Generation Area

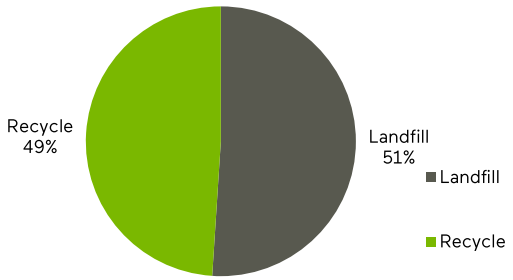
Area	Paper	Metal	Plastic	Textile	Wood	Glass	Rubber	Organic	Electric	Other	Total
HALLS	0.91	0.07	1.09	0.02	0.00	0.00	0.00	1.75	0.00	1.62	5.46
AUTO SHOP	1.79	0.06	0.42	0.00	0.00	0.00	0.00	0.00	0.00	0.90	3.17
EAST WING	1.27	0.05	0.33	0.10	0.00	0.00	0.01	0.60	0.00	0.43	2.79
SCIENCE WING	0.00	0.00	0.04	0.00	0.00	0.10	0.00	0.40	0.01	1.82	2.37
CAFÉ	0.75	0.02	0.18	0.00	0.00	0.00	0.00	0.98	0.00	0.12	2.05
STAFF, STUDENT SERVICES	0.80	0.04	0.29	0.00	0.00	0.00	0.00	0.34	0.00	0.49	1.96
ART ROOM	1.42	0.00	0.12	0.00	0.00	0.00	0.00	0.08	0.00	0.00	1.62
SERVERY	0.93	0.00	0.22	0.00	0.00	0.00	0.00	0.30	0.00	0.10	1.55
OFFICE, LIBRARY	1.02	0.01	0.15	0.00	0.00	0.00	0.00	0.20	0.00	0.10	1.48
PORTABLES	0.12	0.04	0.29	0.00	0.62	0.00	0.02	0.23	0.00	0.15	1.47
MUSIC ROOM	0.56	0.00	0.04	0.00	0.00	0.00	0.00	0.03	0.00	0.00	0.63
WOOD SHOP	0.28	0.02	0.01	0.00	0.12	0.00	0.00	0.06	0.00	0.00	0.49
WASHROOM	0.27	0.00	0.04	0.00	0.00	0.00	0.02	0.00	0.00	0.15	0.48
CLASSROOM	0.10	0.00	0.02	0.00	0.00	0.00	0.00	0.32	0.00	0.00	0.44
HAIR SHOP	0.20	0.00	0.07	0.00	0.00	0.00	0.00	0.11	0.00	0.00	0.38
GIRLS CHANGE	0.09	0.00	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.11
OPALS BATHROOM	0.08	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.09
COACH OFFICE	0.06	0.00	0.01	0.00	0.00	0.00	0.00	0.02	0.00	0.00	0.09
DRAMA ROOM	0.04	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.06
BOYS CHANGE	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.03
Grand Total	**10.69**	**0.32**	**3.37**	**0.13**	**0.74**	**0.10**	**0.05**	**5.42**	**0.01**	**5.90**	**26.73**

Appendix 3 – Diversion Report

Diversion Overview
HPCDSB - St. Annes Catholic School, Clinton Ontario

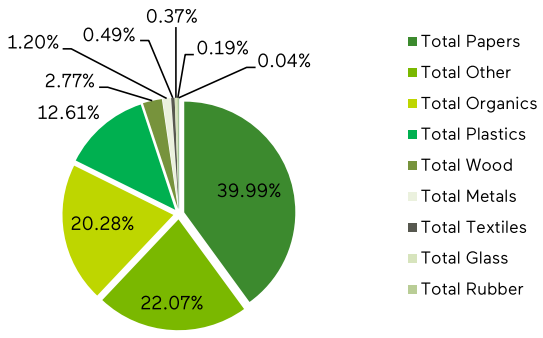
Diverted Materials	Annual Projected Volume (kg)	% Of Diverted Materials
Mixed Recycling	8,798	50.7%
Cardboard	5,392	31.1%
Confidential Paper Shredding	1,181	6.8%
Metal	750	4.3%
Wood	750	4.3%
Skids	450	2.6%
Printer Cartridges	12	0.1%
E-Waste, Batteries	5	0.03%
Total	**17,338**	**100.0%**

Diversion Summary



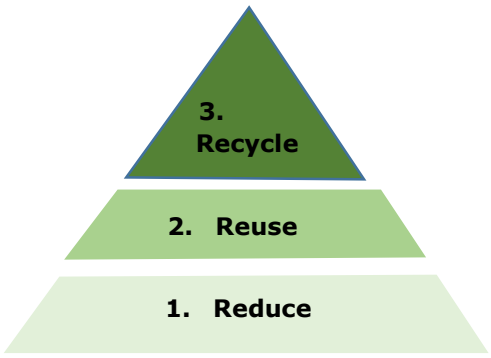
Waste Category	Material Composition (%)	Annual Projected Volume (kg)
Total Papers	40.0%	7,223
Total Other	22.1%	3,986
Total Organics	20.3%	3,662
Total Plastics	12.6%	2,277
Total Wood	2.8%	500
Total Metals	1.2%	216
Total Textiles	0.5%	88
Total Glass	0.4%	68
Total Rubber	0.2%	34
Total Electronic Waste	0.04%	7
Total	**100.0%**	**18,060**

Waste Material By Category



Appendix 4 – Six Steps to a Successful Sustainability Program

The three R's waste hierarchy gives an order of priority of actions to be taken to reduce the overall amount of waste generated at your site



Studies indicate that between 2 and 5 percent of waste streams are reusable. There are many ways to prevent waste, at the source, and reuse products to reduce waste, including:

	Material	Reduction Strategies	Reuse Strategies	Recycling Strategies
Papers	**Cardboard / boxboard**	Encourage suppliers to use reusable packaging (e.g., plastic totes) Purchase reusable products	Re-use of cardboard for storage and packaging	Provide enough receptacles, information and signposting for OCC and mixed recycling programs
	Office paper	Encourage use of electronic communications Encourage tenants to print two sided	Encourage one sided printed paper for scrap paper Creation of scrap pads Utilize centralized notice boards	
	Paper towels	Install hand-dryers in washrooms and dish cloths in kitchens		
	Newsprint / Magazines	Provide communal newspapers in break out areas and spaces	Encourage staff to share magazines and newspapers Donate used magazines and newsprint Use newsprint for packaging materials	
	Paper cups	Place reusable coffee cups in kitchen areas Encourage users to bring reusable coffee cups Incentivize the use of own cups (discounts, loyalty cards)	Provide coffee making facilities in kitchens and encourage users to refill reusable coffee cups	Encourage tenants to use compostable and recycling coffee cups which are accepted in organics/mixed recycling programs
Plastics	**PETE**	Encourage building users to bring reusable water bottles Ensure sufficient water fountains for building users	Encourage building users to reuse plastic bottles Use refundable recycling schemes at the site	Provide enough receptacles, information, and signposting for mixed
	HDPE	Encourage bulk buying of goods to reduce volume of packaging		

		Purchase products with minimal packaging		recycling programs
	LDPE	Train custodial staff to empty individual waste receptacles into single black garbage bag		
	Polystyrene	Develop procurement policies which require on-site retailers to use compostable and recyclable packaging and cutlery		
	Organics	Set up partnerships and donation programs with local charities		Implement organics program
Containers	**Beverage Cans**	Encourage use of drinks dispensers at food courts and in kitchens	Use refundable recycling schemes at the site	Provide enough receptacles, information, and signposting for mixed recycling programs
	Glass Bottles/Jars	Encourage use of drinks dispensers at food courts and in kitchens		
	Single Use Beverage Pods	Encourage use alternative coffee making facilities (i.e., filter coffee, pod free coffee machines)	Use reusable k-cups	Set up k-cup recycling programs with local supply companies
	Office supplies	Set up communal stationary points in offices for building users	Establish donation programs with local schools	Set up recycling programs with specialist companies such as Teracycle

Appendix 5 – Material Descriptions

Material	General Descriptions
#1 PETE	Polyethylene Terephthalate, Water Bottles, Soft Drink Bottles
#2 HDPE	High Density Polyethylene Containers, Chemical Containers or Jugs; High Density Polyethylene Bags or Film, Strong "crispy" Bags
#4 LDPE	Low Density Polyethylene Bags and Film, Garbage Bags, Shopping Bags
#5 PP	Poly Propylene, Yogurt Containers, Straws
#6 PS	Poly Styrene, Beverage Containers, Packaging Materials, Take-out Food Containers, Packing Popcorn
#7 Other	Products Labeled #7, Unlabeled Plastic Items
Aerosol Cans	Spray Cans
Air Filters	Furnace Filters, Vehicle Filters
Aluminum	Aluminum Parts and Products
Aluminum F & B Cans	Aluminum Food and Beverage Cans, Pop Cans
Aluminum Foil / Wrappers	Food Wrappers and Packaging
Batteries	Dry Cell Batteries, Large Batteries
Boxboard	Cereal, Tissue Box Material
Building Material	Construction Material, Drywall, Insulation
Bulbs	CFL, LED, Fluorescent Bulbs and Tubes
Ceramics	Objects Formed with Clay (e.g., Pottery)
Coffee Grounds	Used Coffee Grounds
Coloured Glass	Coloured Beverage Bottles and Jars
Cooking Grease	Fats, Oils and Grease
Compostable Containers	Compostable Take-Out Containers, Paper Plates
Cores and Tubes	Paper-Based Cores and Tubes
Courier and Shipping Bags	Poly Mailer Bags
Clear Glass	Clear Beverage Bottles and Jars
Drinking Glass	Glass Cups, Wine Glass
Electronics	Cables, Computer Equipment, Toasters, TVs, Phones, Printers
Face Coverings	Surgical Masks, Dust Masks, N95 Masks
Floor Sweepings	Debris, Dust
Furniture	Chairs, Desks, Lamps, Shelves
Hygiene Materials	Feminine Hygiene Materials, Disposable Diapers, Cloth Diapers
Kraft Paper	Paper Bags, Heavy Brown Paper
Label Paper	Sticker Paper
Liquid in Container	Significant Liquid in Bottle, Container or Cup
Magazines	Glossy Magazines and Newspapers
Metal Banding	Metal Straps
Molded Pulp	Drink Trays, Egg Cartons, Product Packaging
Misc. Metals	Metal Shavings, Nuts and Bolts, Metal Clothes Hangers, Scrap Metal
Misc. Plastics	Plastic Utensils
Misc. Textiles	Rags, Mop Heads, Cloth Gloves

Mixed Material Packaging	Condiment Containers, Envelope with Window, Miscellaneous Product Packaging
Napkins	Paper Napkins and Tissues
Newsprint	Newspapers, Weekly Flyers
Nitrile and Latex Gloves	Nitrile and Latex Gloves
OCC	Old Corrugated Cardboard
Paint Cans	Empty Paint Cans
Pallets and Skids	Wooden Pallets and Skids
Paper Cups	Paper or Polycoated Cups
Paper Towels	Paper Hand Towels
Personal Clothing	Used Shirts, Uniforms, Hats
Photo Paper	Glossy Paper
Plants / Flowers / Yard Waste	Indoor and Outdoor Plants, Flowers, Leaves, Yard Waste
Plastic Cutlery	Plastic Forks, Spoons, Knives, Stirring Sticks
Plastic Strapping	Plastic Shipping Straps, Plastic Banding
Polycoat	Milk Cartons, Tetra Packs
Polyfoam	Foam Protective Packaging Materials, Styrofoam
Post-Consumer Waste	Scrap Food Waste
Pre-Consumer Waste	Food Preparation Waste
Rubber Tubing	Cable Protection, Metal Coverings, Pipe Fittings
Safety Gear	Safety Vests, Jackets, Harness, Safety Toe Covers, Work Gloves
Scrap Wood	Construction Materials, Misc. Wood Pieces
Shoes and Boots	Assorted Footwear
Shrink Wrap	Shrink Wrap, Plastic Film
Single Use Beverage Pods	K-Cups and Pods
Steel	Steel Food Cans, Steel Parts, and Products
Stir or Chop Sticks	Wooden Stir or Chop Sticks
Tires	Car Tires, Forklift Tires
Tissue Paper	Thin Packing Paper
Wax Paper	Paper for Wrapping or Packaging
Wet Strength Paper	Wet Strength Kraft Paper, Medical Paper
White/ Ledger/ Office Paper	White Paper, Printer Paper
Wood Shavings	Scrap Construction Shavings and Debris
Wooden Crates	Shipping Crates

Appendix 6 – Ontario's 3Rs Regulations

Ontario's 3Rs Regulations

Ontario's 3Rs Regulations governing non-hazardous solid waste from residential, industrial, commercial and institution sources became law in March 1994. Designated IC&I organizations are now required to conduct annual waste audits and update annual waste reduction work plans. This documents overviews the regulatory requirements for IC&I sector organizations.

Regulation	Intent	Requirements	Who Must Comply
Ontario Regulation 102/94 ***Waste Audits*** ***Waste Reduction Work Plans***	To understand the amount and composition of all waste produced, how the waste is produced including relevant management policies and practices, and how the waste is managed A waste reduction work plan seeks to establish concrete goals to reduce waste	Annual waste audit must be completed in which the types of waste and quantities of waste are assessed. A waste reduction work plan must contain a strategy for reducing, reusing and recycling waste, identify who is responsible for implementation and provide a summary of timing and expected results from the waste reduction projects. This plan must be communicated with all employees	• Retail shopping complexes of 10,000+ m^2 floor area • Class A, B or F hospitals under Ontario Reg. 964 • Schools with 350+ students at a location or campus • Restaurants with gross annual sales of $3,000,000+ • Office buildings with 10,000m^2 of floor area • Hotels and motels with 75+ units • Building construction projects of 2,000+ m^2 • Building demolition projects of 2,000+ m^2 • Manufacturing sites with 16,000 employee hours per month
Ontario Regulation 103/94 ***Source Separation Programs***	To promote the source separation of materials throughout the facility	Handling and storage facilities must be provided for recyclable materials. Efforts must be made to ensure the system is used and that source-separated materials are reused or recycled. Employees must be instructed on the use of the program	
Ontario Regulation 104/94 ***Packaging Audits*** ***Packaging Reduction Work Plans***	To examine the impact of packaging on the waste management system and identify waste reduction plans. Packaging refers to all materials used to protect, contain or transport a product.	Bi-annual audit must address; types and quantities of packaging used, reusability or recyclability of packaging, the environmental impact of the waste and the lifecycle of the packaging materials. Reduction work plan must identify ways to reduce packaging used, increase reuse or recyclability content, reduce the environmental impact and reduce the burden of waste for the consumer.	• Manufactures or packagers of packaged food, beverage, paper or chemical products with total employee hours of 16,000+ per month • Importers of packaged food, beverage, paper or chemical products for sale in Ontario with value of goods imported $20,000,000 per year

THINK GREEN.