Annex to the APRA Data Report

Industrial Plastics in the Alberta Industrial Heartland

April 26th, 2022

Contents

1.0 Introduction

In 2020, the Alberta government announced an intention to make Alberta "the western North America centre of excellence for plastics recycling by 2030." In order for Alberta to succeed in this vision, it is important to consider the programs, systems and infrastructure needed to make Alberta a leader in plastics recycling and to enable post-use plastics to become the feedstock for new products, fostering a circular economy. It is critical to understand the quantity and flows of post-use plastics, by resin type, produced in the residential, industrial / commercial / institutional (ICI) and construction / demolition (C&D) sectors.

The Alberta Plastics Recycling Association (APRA) undertook the Alberta Plastics Data project in 2021 to improve the understanding of the regional supply and demand for post-use plastics in Alberta's Industrial Heartland (AIH), northeast of Edmonton. Specifically, the project focused on developing better knowledge of how much post-use plastic is being generated, where this generation occurs and what types of plastic feedstocks exist. The project also analyzed what current management practices are for post-use plastics, including the proportions recycled, landfilled or used in waste-to-energy facilities.

This Waste Audit Guide and Templates have been produced as one of the deliverables of the Alberta Plastics Data project. The purpose of this guide and templates is to provide a step-by-step description of how waste audits were carried out for the Alberta Plastics Data project, thus facilitating similar data-gathering studies in other parts of Alberta or other jurisdictions.

2.0 Overview of Guide and Templates

The Waste Audit Guide and Templates in this document describe the main steps necessary to carry out a plastics-focused waste audit. The Alberta Plastics Data project interviewed 25 companies of which 10 companies were selected and across these 39 waste generation zones were audited.

Waste audit data collection for this project involved three main steps:

(a) gathering preliminary waste generation data through interviews and a desktop study with staff at participating facilities.
(b) connecting with target companies to invite participation in the waste audit; and,
(c) on-site waste audits at participating facilities.

For each of the tasks completed as part of these three main steps, we have identified lessons learned through our experience of conducting the Alberta Plastics Data project audits – what worked well and recommendations for future audits of a similar nature.

3.0 Identify and Invite Waste Audit Participants

The first step in completing a waste data-gathering exercise such as that completed for the Alberta Plastics Data project is to identify and contact target companies, facilities, and sites to invite participation in the waste study.

The Alberta Plastics Data project was overseen by an advisory committee, with committee members that were committed to advancing a circular economy and well-connected with the business community in the geographical region and sectors that were the target of the waste audit. Advisory committee members were able to provide background information about each company invited to participate in the waste audit process, and were able to facilitate initial contact with the companies. These existing companies enabled the consulting team to engage with companies relatively quickly and easily as "warm leads", rather than cold calls.

The advisory committee prepared a cover letter introducing and inviting participation in the Alberta Plastics Data project and introducing the consulting team (Appendix A : Introduction Letter). The invitation letters were sent to target companies by the advisory committee member who was most closely connected with the company, providing a more personal touch. This advisory committee member also acted as a project liaison when the waste audit was occurring, helping to get hesitant people involved, obtain support for the project and help participants to embrace the study.

Points to note:

- It is useful to have a point of contact when working with multiple companies, e.g. an advisory committee that can help facilitate audits and interviews and through which questions can be directed. This liaison person is often able to use their influence and personal relationships to support participation in the various steps of the process.
- It is necessary to make contingency plans for covid related delays, cancellations and difficulties logistically getting to an audit site.
- If companies pull out of participating in the study, collaborate with advisory committee members to invite and integrate new participants as quickly as possible.

4.0 Gather Preliminary Waste Generation Data through Staff Interviews and Desktop Study

Preliminary waste generation data for each facility in the study was gathered through a combination of interviews with staff at the facility and desktop study.

Plan Interview Questions

During the time the advisory committee was preparing and sending out the introduction letter, the consulting team developed a series of interview questions that would be used to gather data through interviews with staff members at each facility. These interview questions were vetted by the project advisory committee. Interview questions used in the Alberta Plastics Data project are found in Appendix B.

Points to Note:

- Be prepared to vary the level of detail required to answer specific interview questions asked to company representatives, particularly across various industries. The consulting questions outlined in Appendix B are appropriate for all companies, across various industries
- The most ideal tool to record interview questions and answers is Excel, as it facilitates easier data analysis and links across worksheets.
- Interviews are key to dig deeper into the responses and explore the types of materials used in the different departments to uncover post use plastic waste. For example, spray paint or spray lubricants may have a plastic cap. Staff may not identify as post use plastic.

Schedule Interviews

Data gathering interviews were scheduled by contacting each participating company via email to request a 1-hour interview. The interview questionnaire was included as an attachment. The email specifically asked that a staff member knowledgeable about the facility's waste management operations be present in the interview.

The initial Alberta Plastics Data Project was envisioned to invite approximately 40 companies to participate in waste audits. However, initial conversations with target companies indicated that some didn't generate industrial plastic, were not operational, and/or were too small in scale, so ultimately 27 companies were interviewed.

Points to note:

- It can take several weeks to connect with and schedule interviews so build that into the program.
- One hour is a suitable interview length for facility sites of all sizes. Larger and/or more complex facilities will need carry out further investigation to acquire the data needed, so plan time into the project program for this additional time.
- All companies had some information that needed to be gathered after this first interview. Seven to ten days were usually required to gather the information.

Conduct Interviews

Interviews had three main components, in the following order:

(a) Consultant asked the facility staff being interviewed to tell them what the company does.
(b) Consultant asked facility staff to walk them through the movement or activities at the facility one department or area at a time.

→ This process helped the consultant to visualize the departments and/or activity areas, to better identify the locations where post-use plastic may be generated. This step was also key to identifying similarities in activity areas among company types, which helped the consulting team to identify which companies would be the best candidates for waste audits.

(c) The consultant proceeded through the interview questions found in Appendix B.

Points to note:

- It is critical that the email to schedule the interview emphasize the importance of having an employee at the interview who is knowledgeable about waste management at the property and/or can access or gather that information.
- Interview timing is key. Holidays, school breaks, and times of year when operations go into budget mode, environmental reporting mode or are impacted by downstream activities all influence when interviews should and can take place. For the industrial sector targeted in this project, March was not a good time for interviews, due to environmental reporting requirements. However, a side-benefit was that the companies often had waste management numbers at hand, given that they had recently gathered them for environmental reporting.
- Be flexible and understanding when scheduling interviews and waiting for data follow-up from companies.
- It worked best to walk through the interview form with the company contact being interviewed and record the answers. A follow-up email was sent to the person interviewed, with the Excel spreadsheet of answers provided, and any gaps in information identified. Company representatives either updated the Excel interview form and emailed it back to the consulting team or emailed the required information to the consulting team to enter into the Excel interview form.

Conduct Interviews Points of Note- continued:

- Stagger interviews with at least a 30-to-45-minute gap between interviews. This allows the consulting team to review and format information gathered and to send a follow-up email to the facility staff noting any data gaps or needs for more information after the interview. The need for this time to organize information was particularly important for the more complex sites with multiple activity areas.
- It works well to meet company contacts via Microsoft Teams, as staff can share site diagrams, which enabled a deeper understanding of site operations, and allowed the interviewer to ask questions about where or how post-use plastic waste was generated.
- A drawback of holding interviews online via Teams is that the interviews did not include a site tour, thus they are not replacements for visiting sites themselves.
- Ideally, and if time permits, it would be valuable to conduct a Teams interview, followed by a site visit / tour with facility staff. A site visit at this stage in a study has the following advantages:
    - allows the auditor to better understand material flows in the facility and to verify activities and events where post-use plastic may be generated.
    - gives the auditor the opportunity to see the placement of waste bins and understand which activity areas use those bins.
    - allows the auditor to evaluate if the company is a suitable candidate for a waste audit.
    - the waste auditor and facility staff can discuss where the waste audit activities could take place at the facility, and/or if the waste characterization process needs to occur off-site; and,
    - an in-person site visit can provide a personal connection to the data gathering exercise, thus fostering an understanding of and greater support for the study goals.

Record Data

A series of Excel worksheets were used to record data gathered during interviews and desktop study. The consulting team found that Excel was the most ideal tool to record data, as it facilitated easier data analysis across many worksheets.

Points of Note:

- Prior to starting interviews, plan how data will be entered into the Excel spreadsheet, to minimize the need to adjust data formatting prior to using it for modelling.
- Conducting interviews via Teams speeds up the data-gathering step.
- The following eight questions help with preparations for an on-site waste audit: list of company departments; number of employees by department; tonnage of non-hazardous waste; number of non-hazardous waste bins; frequency of pickup for waste bins; size of bins; possibility of conducting an on-site waste audit; turnaround date.

5.0 On-Site Waste Audits

Decide What Facilities and Activity Areas Will Be Audited

Data gathered through interviews with facility staff and desktop study were reviewed and analyzed for the purpose of selecting the facilities that would be chosen for on-site waste audits.

Part of the selection process involved grouping companies according to their departments / activity areas and company size. Given that the purpose of this waste study was to gather data about post-use plastic, departments / activity areas for each company were categorized as either post-industrial (main waste generation was from industrial activities) and post-administrative (main waste generation was from office / staff activities). The post-industrial and post-administrative categories each had their own waste audit sort categorization, as shown in Appendix C.

The sort categories were metal containers, glass containers, compostable materials, beverage containers, recyclable paper, other waste, other divertables and recyclable plastic. The subcategories of these categories were extensive for the recyclables that were plastic as this was the material focus for the study. The broader categories were added to provide more information about the garbage profile. The plastic item types were established from the consultant's previous industrial waste auditing experience and APRA's participation in municipal audits where plastic material was sorted into 30 sub-categories. The sorters also had the flexibility to add plastic material or sort a plastic material type finer if there were significant amounts. Specifically, if a post use plastic item was of a large quantity either via volume or weight i.e., expired hard hats, it could be weighed separately.

Once facilities were chosen for participation in an on-site waste audit, the consulting team mapped out the facility activity areas where post-use plastics were being generated, and determined which areas should be part of the on-site waste audit. Time constraints and challenges due to the Covid-19 pandemic prevented the consulting team from conducting waste audits at all facilities that were interviewed.

Points of Note:

- Activity areas in different facilities carrying out similar processes generate similar material types, with the quantity of material generated varying according to facility size. Data such as number of employees, size/type of waste bins and frequency of waste bin pickup are important, as they facilitate extrapolation of waste audit trends from one facility to another similar facility.
- Inform the staff member that any domestic waste weights would be requested for the audit month and that we will verify the number of employees that used the area during the sample collection period.

Schedule and Coordinate Waste Audits

Once the consulting team selected facility sites where it wished to conduct on-site waste audits, the consulting team arranged a second interview with staff at the facility. During this video call, the consulting team:

(a) confirmed that it was still possible to proceed with an on-site waste audit, given the Covid-19 pandemic circumstances at the time.
(b) if it was possible to proceed, reviewed the activities occurring at the facility and waste bin placement, to determine waste generation zones that would be sampled.
(c) scheduled dates for the waste audit that worked for the facility staff and waste auditors; and,
(d) completed the waste audit preparation checklist in Appendix C to review waste audit requirements.

Points of Note:

- It is important to not schedule waste audits close to scheduled shutdowns /maintenance, long weekends and holidays. If a waste audit must be conducted when the main contact person will be away, ask staff for an alternate contact who will be aware of the waste audit.

- There are often a number of administrative steps involved in scheduling a waste audit at an industrial facility.
    - A company work order may be required to arrange for waste samples to be collected or delivered.
    - Auditors are required to schedule and complete additional safety orientation. Some safety orientations were online, and others were in-person. In-person orientation occurred at the time the waste audit team arrived to complete the audit or at a certain time during the morning of the audit.
    - Plan time for these logistical steps in the study program
- We found that the number of waste generation zones at the facilities audited ranged from 1 to 13, with an average of 4.

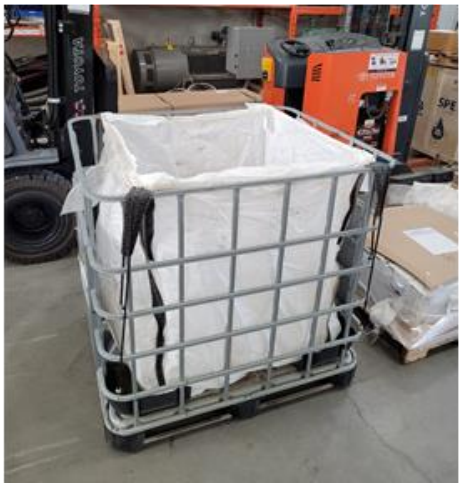
Work with Facility Staff to Collect a Waste Sample for the Audit

A key to successful waste audits is that bins selected for sampling during the audit period are not picked up during the prescribed audit period (usually a number of days) and that waste that is usually placed in a given garbage bin is secured or instead placed in an alternate collection location (e.g., bulk bag, temporary bin, etc.).

Once the audit waste collection period has started, check in with facility staff after the first or second day of collection to see how large a sample has been collected to date.

Points of Note:

- Some facilities will have unique challenges when auditing. Smaller companies may not have the bins needed to collect a sample, and therefore arrangements can be made to provide bulk bags (see image below this text box).
- Some companies require that a work order be completed to transport the waste sample to the sort location. These work orders can take as long as 7 days to process. In this case, the initial interviews with staff need to occur four weeks prior to the start of waste sample collection.
- It takes between two and eight days to collect a sample of plastic waste that shows the types and quantities of post-use plastic that are being generated. We suggest erring on the longer side of collection times, to collect larger sample sizes.
- It can be challenging to estimate how long a sample collection period should be for a particular activity area of a facility. Facility staff may be able to help by monitoring how quickly site waste bins fill, in the lead-up to sample collection for the waste audit.
- To help with data analysis, auditors or company staff, should record the fullness of bins prior to their collection.
- Ask the site to take pictures of their set up process, take pictures of the waste sample being collected in the bulk bag, and to record the fullness of front load bins throughout the property several weeks before the sample is collected.



Bulk bag used to collect a waste sample.

Provide Waste Audit Signs to Facility

To help staff at the facility and waste haulers understand that a particular waste bin was in the midst of a waste audit process, the consulting team provided signage to participating facilities. See Appendix D for an example of the signage provided.

The consulting team emailed each participating facility the files for the waste audit signage that could be printed in their company office. The consulting team recommended that facility staff place the signage in plastic page protectors and duct tape the signs to all sides of the waste bins to be sampled. The goal in using the signage was to clearly communicate to staff that waste items be placed in the sample collection bin, rather than the usual garbage bin.

Some facility staff were creative and put pylons on the top of garbage bins to prevent them from being used or placed caution tape over the bin and zip-tied it down. They also send email memos.

Points of Note:

- It works well to place signage in a plastic page protector and tape copies of the sign to the top, front and sides of a bin.

Check-in With Facility Staff In Preparation for the Audit

Email the facility contact a few days before the audit to check in, and to ensure that any needed preparation and/or supplies for the waste audit are set up.

Points of Note:

- Don't be surprised if you get a call from the facility and your sample has been removed by the waste management company. Even with thorough signage indicating a waste audit is in place, the hauler may disregard and remove the sample. Adjust and see if another sample can be collected and return to complete the waste audit later.

Conduct the On-Site Waste Audit

For the Alberta Plastics Data project, waste audits were completed by three auditors, who were sub-consultants. The sub-consultant that carried out waste audits submitted its own Health & Safety Plan to the facilities where audits were completed. This Health & Safety Plan included hazard assessment, a health and safety manual and Covd-19 safety protocols. Tailgate safety meetings were conducted on-site with the site facility staff contact and the consulting waste audit team.

The waste audit team arrived in the morning at the facility, and completed any required on-site safety orientation.

Two tables were used to sort the waste sample that had been collected into labelled material category bins around the perimeter of the table, as shown in the image to the right.

Materials from each waste zone were categorized as specified in Appendix E.

The total amount of each material category was weighed using a digital scale with precision to 0.01 kg. Digital images of the material types were taken for each sample sorted. After sorting, the sample was placed back in the bulk bag or bin and company staff disposed of it into waste bins.

Following the waste audit, the consulting team sent the participating facility a report that provided the results of the waste audit. This report provides data on waste generation that the company could use to adjust operations to reduce waste. An example of the Waste Audit Feedback Report is found in Appendix F.

Points of Note:

- If possible, arrange for sorting of the waste sample to occur indoors, to avoid challenges and delays due to rain, wind, heat or other inclement weather.
- Given that the waste audits can take place at industrial sites, waste auditors may be required to wear fire retardant coveralls, hard hats, sealed goggles and steel-toed boots. Masks are worn as part of waste audit protocols. A steering committee can connect with industry contacts to borrow fire retardant coveralls and canopies used over the sort area, when sorting was performed outdoors.
- An infrared spectrometry gun can used to identify any unique plastics that are difficult to identify visually. This tool can differentiate samples of film plastic that appear the same to the human eye. However, this gun is expensive to rent ($750 per week) may not be ultimately not worthwhile to rent this equipment. If this Alberta Plastics Data Project were to be repeated, the consulting team would collect samples of any unknown plastics present in significant quantity and send them to a recycling processor to be analyzed and identified in their laboratory.
- If it is not possible to carry out an on-site waste audit, a virtual site tour by facility staff can help waste auditors to understand the types and approximate quantities of materials being generated in various activity areas at a facility.
- When a bulk bag is full, prior to the sorting process, weigh that bag so that an estimated bulk density could be calculated. Acquiring bulk densities is a helpful value for front load bins that are not weighed. Haulers often use industry standard bulk densities in estimating the quantify of waste industries generate.

6.0 Data Analysis

Data analysis required normalizing the audit data by using the desk-based interview research done with the companies. The data took multiple back and forth with the stakeholders to ensure data was applied correctly to the primary sample data.

Points of Note:

- Follow-up on the source(s) of waste data provided by each facility. Are reported monthly weights verifiable (e.g., backed up by scale records) or estimated (e.g., estimated weights based on size and frequency of bin collection).
- Verify the number of staff/occupants that were on-site during the audit sample collection period, particularly during the COVID-19 pandemic when the number of staff on-site might be reduced.

Appendix A : Introduction Letter Example

March 4, 2021

On behalf of the Alberta Plastics Data project, I would like to introduce you, as an industrial site within Alberta's Industrial Heartland or the Northeast Capital Industrial Association, to our contractors for the project.

This unique project brings together local, provincial, and federal partners to assess the generation of post-use plastic to help understand the use and management of plastic within the region. It is one of the first of its kind in Canada to assess plastics generation at industrial facilities. Your site was identified as a key partner to help provide information about post-use plastics generation. The study looks to identify plastics and then build a business case for opportunities to collect and divert plastics for recycling in the region. Our associations are extremely excited about the results of this study as it may bring about opportunities for collaboration, investment, and growth in local markets for post-use plastics.

All the data you provide will be de-identified and kept confidential with no attribution back to your company in the report that is scheduled to be released later this year.

Timeline:

> March - The data gathering portion of this project will take place over the next month, with a questionnaire being sent to your site contacts. You will be contacted by a member of our project team who will lead you through the process. The questions may include the type of plastics you use onsite and current disposal or recycling practices.
>
> April to June - After the data is compiled and results reviewed, the consulting team will follow up about next steps. There may be a request for a site visit (pending site restrictions due to COVID-19) to conduct a plastic composition study on the site. Further information and communication will be provided throughout the process.
>
> End of July - The goal is to complete all data gathering for this project by the end of July 2021 so that analysis and a final report can be produced by December 1.

Your time commitment will depend on what information you are able to provide based on the data you already have onsite. We estimate that many questions will be easily completed, while others will require more attention and investigation. Our team will help walk you through the in-depth questions. We understand this is a busy time of year and we plan to work around your schedule as much as possible.

For your time and contributions to the project, the team will offer you a summary of the findings from the site.

More information about this project and its partners can be found here:
https://albertaplasticsrecycling.com/alberta-partners-advance-plastics-data-project/

Please reach out at any time with questions or feedback,

Sincerely, Laurie – NCIA
Brian/Christina/Kendra - AIHA

Appendix B: Interview Questions

Information A through F was formatted with head heading in an excel workbook tab. Each letter grouping had its own tab. Breaking it down this way allowed for company's information to be recorded as available.

A1. Basic Information

- Company name
- Does your company have multiple sites within the AIHA (yes/no)
- Site name(s) and address(es)
- What type of departments are present on your site:
  a) Administration, control room
  b) Warehousing, shipping and receiving
  c) Maintenance shop
  d) Cafeteria
  e) Power plant
  f) Plant operating area
  g) Sub-areas
  h) other areas (that generate waste)
- Breakdown of how many staff are: 1. on-site office/admin, 2. other on-site (e.g., production/operations), 2. primarily off-site (e.g. field technicians)?
- Are current on-site staffing levels impacted by COVID-19? How?
- Name and contact information of representative
- Brief description of business; provide NAICS code
- Which hauling company(ies) manage your plastic waste?
- Can we have permission to contact your hauler? If so, please provide the name and contact information of the account manager?
- Dates and time when our team can contact you to briefly discuss this data request (mid-March).
- Have you previously carried out a waste characterization on your site? If so, are you able to provide that report?
- Can you please provide a plot plan / site map of the facility (showing all the different areas of the facility)? On the map, if possible, please indicate the locations of garbage bins and recycling bins?
- Do you have a waste material flow chart for your processes that includes the amount of plastics generated? If so, can you please provide?

A2. Plastics Recycling Information

- Does the site currently recycle plastic? Yes or No
- If yes, which departments recycle plastic? Which generates the most?
- What are the types of plastic recycled? (plastic resin #1-7 and description of the item)
- Are types of plastics collected together or separately?
- Size of bin collecting plastic, type of bin, quantity and frequency of collection; or number of items per month?

- Where does the plastic go (i.e., reuse, another company, hauler)?
- Who manages the plastic (i.e., hauler name)?
- Plastic waste information (not recycled)
- What departments generate plastic waste that ends up in the mixed garbage bin?
- What types of plastic are most likely to be disposed of in the mixed garbage bin (i.e., shrink wrap, pails, strapping)? Please indicate if you do not know.
- Which department generates the most plastic waste?

A3. Waste Bin Information

- Size of waste bin
- Type of waste bin (front load, roll-off, gaylord)
- Number of bins
- Frequency of collection
- Where does the hauler take the waste (if known)?
- Who manages waste (i.e., hauler name)?
- What departments share common waste bins?
- Please provide details on the hazardous nature of any plastics waste and how it is managed.

A.4 Reporting

- What data do you receive from your waste services provider? Can you provide a copy of the data that is received either for a single month or preferably annually for 2019 and 2020?
- Do you report waste data that includes information on post-use plastics waste to any of the following (internal, provincial, federal organizations)? If so, can include a copy of what is reported?

B. Turnarounds

- How often, on average, do turnarounds occur at each site?
- Date for the 2021 turnaround and how long will it last?
- What activities will take place in the next turnaround?
- How does the waste produced during a turnaround differ from general operations?
- Please provide details of waste produced on tab 4. Turnarounds
- Who is the primary contractor that will be managing the next turnaround?
- Can we contact the primary turnaround contractor to better access data on plastics waste generated as part of turnaround activities?
- Please provide information on the waste produced during a typical annual turnaround. If available, please attach a turnaround waste management plan
- What are the main types of wastes produced?
- What types of plastic wastes are produced?
- Please provide details on the hazardous nature of any plastics waste and how it is managed.
- What types of plastics are currently recycled and where do they go?
- How is your plastics waste collected?
- How many streams of plastic waste are separately collected and what are they?

- Do you have scale tickets for the waste generated from a turnaround? Previous years information is helpful.

C. Waste Characterization

- Sampling Options: 1) We ask each department to collect waste generated over several days to a central area; or 2) The company asks the hauler to direct the main waste bins to a sort location.
- What sampling option could be accommodated for this study - 1, 2, or both?
- Sorting Options
- Can a waste characterization study take place on the company site between (state the dates)? Yes or No
- If no - Are there any other sites (i.e., waste transfer station, company warehouse, etc.) at which a waste characterization of your facility's waste could occur, that you know of?
- Would this location have access to a front-end loader? Is it sheltered from the elements?
- What is your relationship with the hauler, and would they divert the waste bins to a common location for sorting?
- If yes - Is there an indoor location to sort the waste or would this be outside?
- Could staff bring department waste materials to the central sorting location?
- Will movement of waste require any approvals? If so, by whom?
- Would sorters have ability to deposit material into recycling or garbage bins after?
- What safety training would be required (specific PPE)?
- When could sorters arrive on site and how long could they stay?
- Administration
- What sign-in steps are required for site visits?
- Who would be the contact person for a site visit?

D. Procurement

Item	Plastics material/composition if known	Weight of plastic item/container if known	Quantity Ordered Per Year	Total Stock	Approximate Percentage of stock disposed each year
Example: *Hard Hats*	*HDPE shell of hat, plastic film wrapper*	*.5 kg (whole item)*	*2,000*	*15,000*	*10%*

E. Plastic Feedstock

Item	Current Source	Plastics material/composition if known	Quantity Ordered Per Year	Quantity Used Per Year	Use
Example: *PET resin*	*Merlin Plastics*	*virgin PET*	*200 tonnes*	*180 tonnes*	*Fuel for ethene cracker*

F. Additional Information

Appendix C : Waste Audit Preparation Checklist

APRA Waste Audit Preparation Checklist

Company/Facility: _____

Address: _____

Contact: _____

Phone: _____

Email: _____

1. ☐ Waste audit dates confirmed.

Sample Collection Begins - Date: _____ Time: _____

Sample Collection Ends - Date: _____ Time: _____

Waste Audit - Date(s): _____

On-site (Y/N)? _____

If on-site, dedicated audit space (~25 ft x 25ft) identified? _____

2. ☐ Waste generation zones have been finalized. (List Below)

Waste Zones:

#1 _____

#2 _____

#3 _____

#4 _____

4. ☐ A secure storage area/bin(s) for the audit material has been arranged.

- Note that the area must be clear/empty before sample period begins
- Waste generated from each zone identified in #2 above should be collected, identified and stored separately.
-provide the number of staff on site on average per day during the sample collection period

List on-site safety training and/or Personal Protective Equipment Requirements:

_____

Other Notes/Comments:

_____

Contact Consultant Name if you have any questions

Appendix D : Signage

Appendix E : Material Descriptions

Descriptions of the material types / category and how each item was classified for data analysis for Post-Industrial and Post-Administrative waste activities.

Table 4-1 Classification of Material Types

Classification	Material Type / Category	Description (examples)	Industrial	Administrative
Recyclable Plastics	PET (#1) - rigid containers & jars - clear, colored & black	Heinz ketchup, kraft miracle whip, Hellman's mayonnaise, cooking oil, dish soap, honey, Listerine	■	
	PET (#1) - thermoform - clear, colored & black	Clamshells, sealable cake trays, microwave dinner trays, blister packs, egg cartons	■	
	HDPE (#2) rigid bottles/jugs - Natural	Clear cleaner/spray containers, washer fluid	■	■
	HDPE (#2) rigid bottles/jugs - Color/pigmented	Margarine tubs, laundry detergent, bleach	■	
	HDPE (#2) pails, buckets & drums	Items greater than 5 liters	■	
	PVC (#3) rigid packaging		■	
	PP (#5) pails, buckets & drums	Items greater than 5 liters	■	
	PS (#6) -expanded foam	PS (#6) - expand foam- white, colored & black	■	
	PS (#6) - rigid	Berry containers, muffin containers, clamshell take-out containers, utensils/cutlery, CD cases		■
	HDPE (#2) & LDPE (#4) - film packaging	Product packaging film	■	■
	Grocery / retail carry out bags			■
	PP (#5) flexible/woven		■	
	Mixed rigid containers (#3-#7)	Squeezable bottles, container items		■
Recyclable Paper	Paper cups	Paper cups		■
	Mixed recyclable paper & cardboard	Office paper, cracker boxes, envelopes.	■	■
Other Divertibles	Pallets	Plastic pallets	■	
	Crates/gaylords	Plastic	■	
	Other drums, bulk totes	Plastic	■	
	Pipes	Plastic (PPO Pipes)	■	
	Spools	Plastic	■	
	E-Waste	Meter, cables, computer part, light bulbs, speaker, batteries, printer cartridge	■	■

Classification	Material Type / Category	Description (examples)	Industrial	Administrative
	Scrap - ferrous		■	
	Scrap - non-ferrous		■	
	Wood pallets	Off cuts	■	
	Other wood	Wood offcuts, 2x4 cut offs	■	
Metal Containers	Metal Containers	Food cans		■
Glass Containers	Glass Containers	Food jars (non-refundable containers), isopropyl alcohol		■
Compostable Material	Organics	Food waste and food paper		■
	Compostable Plastics	Compostable plastics		■
Beverage Containers	Beverage Containers	Refundable beverage containers, 8.13 full water bottles		■
Other Waste	Strapping	Plastic strapping, black PE	■	
	Other rigid plastic packaging	foam	■	
	Durable goods	Hard hats, signs, zip ties, foam rollers, pens, spill tarp, piece of airhorn, safety glasses, storage totes, eye droppers, pipettes	■	■
	PE Flexible foam packaging	Flexible flat foam	■	■
	Garbage bags	Liners used to collect waste	■	■
	Shrink wrap/pallet wrap		■	
	Laminated & other film	Chip bag wrappers, plastic foil covers		■
	PPE gloves		■	
	Single Use Plastics	Plastic utensils, straws, stir sticks		■
	Construction/renovation	Insulation, tubes, fines.		
	Industrial hazardous waste	Unknown liquid and solvents, lab par	■	■
	Rubber	Matt, gaskets.	■	
	Textiles & leather	Work gloves, textiles, rags, mop heads	■	
	Coffee pods		■	■
	Other materials	Grease, mosquito traps, fines, mixed materials, latex, rubber gloves, tape, sweepings, air filters, aerosol cans, lab towels, wipes, absorbent pads, caulking tube, tie down, cords, wipes, tin foil, steel, nuts, dryer sheet, masks, wax paper, ear plugs, rope, dust, printer ink dust	■	■

Appendix F : Client Report – Waste Audit Feedback Report

When PDFing the document, we will add a sample report but AFTER the client name has been removed.