

**Coca-Cola Amatil Eastern Creek
Proposed Injection Moulding Plant
Waste Management Plan**

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Coca-Cola Amatil Eastern Creek Proposed Injection Moulding Plant Waste Management Plan

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1 INTRODUCTION

Heggies Pty Ltd (Heggies) has been commissioned by Goodman Property Service (Aust) Pty Ltd to conduct a Waste Management Plan (WMP) for the construction and operation of the proposed Coca-Cola Amatil (CCA) Injection Moulding Plant (hereafter, "the Project"). The Project site will be located at the existing Coca-Cola Distribution Centre within the M7 Business Hub in Eastern Creek, NSW.

The WMP has been prepared in accordance with the Conditions of Consent for the development issued by Department of Infrastructure Planning and Natural Resources (DIPNR) and the Director-General's requirements document (Application MP 10_0125) dated August 2010.

1.1 Objectives

The principal objective of this WMP is to identify all potential wastes likely to be generated on site during development and post development phases of the Project, including a description of how waste would be handled, processed and disposed of (or reused/recycled).

The specific objectives of this WMP are as follows:

- To encourage the minimisation of waste production and maximisation of resource recovery.
- To encourage improved environmental outcomes through waste management.
- To ensure the appropriate management of contaminated or hazardous waste.
- To identify procedures and chain of custody for waste management.
- To ensure the long term sustainability of resource use through more efficient, cost effective and safe waste collection practices for the life of the development.

2 MINISTER'S CONSENT CONDITIONS

Condition A2.15 of the Project Approval states:

"Waste Impacts

A2.15 The Applicant shall not cause, permit or allow any waste generated outside the site to be received at the site for storage, treatment, processing, reprocessing or disposal, or any waste generated at the site to be disposed of at the site.

A2.16 Any waste or wastewater requiring off-site disposal shall be removed by a waste contractor to an appropriately licensed waste facility which can legally accept the waste.

A2.17 All waste materials generated by the development and stored at the site shall be contained within a designated area such as a waste bay or bin to ensure that no waste materials are allowed to enter the stormwater system or neighbouring properties.

A2.18 All works and storage areas where spillages are likely to occur shall be bunded to comply with Australian Standard AS 1940-2004 – The Storage and Handling of Flammable and Combustible Liquids."

3 PROJECT DESCRIPTION

CCA propose to build a Polyethylene Terephthalate (PET) Preform and High Density Polyethylene (HDPE) Closure Manufacturing Plant to provide preforms and closures to its in-house Blowfill Bottling Operations in Australia, New Zealand, Papua New Guinea and Fiji. The facility will require approximately 10,000 m² of space to house technical rooms, the production lines and associated storage and staging of the finished product. The building is anticipated to have multiple heights to accommodate the production line layout requirements.

The facility is proposed to be located within the site of the existing CCA Distribution Centre at Roussell Road, Eastern Creek, NSW as shown in **Figure 1**.

The Project will operate 24 hours per day, 7 days a week with up to 16 personnel to work a day shift and a maximum of 4 personnel to work on other shifts.

Key aspects of the Project will include the following:

- construction of a warehouse (up to 10,000 m²);
- fit-out of the warehouse with manufacturing plant and equipment;
- minor landscaping;
- reconfiguration of shared access to the site;
- augmentation of power services; and,
- ongoing operational requirements of the development.

4 DEMOLITION / CONSTRUCTION WASTE MANAGEMENT

The demolition/construction phase of the Project will generate the following general solid (non-putrescible) waste streams:

- demolition materials, including fencing;
- green waste from the removal of vegetation; and,
- general construction waste.

A comprehensive Waste Management Plan should be provided and implemented by the building contractor. The building contractor should ensure that:

- Construction materials are selected with consideration to their long lifespan and potential for reuse.
- Correct quantities of materials are ordered and prefabricated materials are used where possible.
- Formwork is reused onsite.
- Site disturbance and unnecessary excavation is limited.
- Careful source separation of off-cuts is conducted to facilitate reuse, resale or efficient recycling.
- Subcontractors are informed of site waste management procedures.

Note: The selection of “used” in favour of “new” building products and materials should be encouraged wherever possible.

PROPOSED PET FACILITY AREAS

STAGE 1: 17,471 sq ft
 STAGE 2: 13,754 sq ft
 STAGE 3: 15,146 sq ft
 STAGE 4: 20,241 sq ft

EXISTING PICK OPERATION STAGE 1: 11,581 sq ft

PICK OPERATION EXPANSION STAGE 2: 13,754 sq ft

RELOCATED COLD STORE STAGE 3: 15,146 sq ft

STAGING AREA

HIGH BAY STAGE 4: 20,241 sq ft

STAGE 4 WAREHOUSE

EXISTING ROUTE TRUCK PARKING - 68 SPACES

EXISTING CAR PARK

PET TICKET STAGE 2

PROPOSED PET FACILITY STAGE 1: 17,471 sq ft

RUSSELL ROAD

EXISTING ROUTE 1

KEY PLAN

1. AREA OF PROPOSED PET FACILITY AREAS
 2. EXISTING PICK OPERATION STAGE 1
 3. EXISTING ROUTE TRUCK PARKING
 4. EXISTING CAR PARK
 5. EXISTING ROUTE 1
 6. EXISTING PET FACILITY AREAS
 7. EXISTING PET TICKET STAGE 2
 8. EXISTING PET FACILITY STAGE 1

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4.1 Waste Avoidance

The building contractor should identify opportunities for waste avoidance by:

- Ordering materials to size and ordering pre-cut and prefabricated materials.
- Reducing packaging waste onsite by returning packaging to suppliers where possible, purchasing in bulk, requesting cardboard or metal drums rather than plastics, requesting metal straps rather than shrink wrap and using returnable packaging such as pallets and reels.

4.2 Reuse, Recycling and Disposal

The management of construction materials and waste including options for reuse and recycling where applicable and practicable should be conducted. Only construction wastes that cannot be cost-effectively reused or recycled are to be sent to landfill or appropriate disposal facilities.

The following procedures should be implemented:

- Suitable excavated material should be reused as fill material at another site or for other reuse purposes, as opposed to disposing this material to landfill.
- All solid waste timber, brick, concrete, rock and soil that can not be reused should be taken to an appropriate landfill site and disposed of in an approved manner.
- All metals should be recycled where economically viable.
- All garbage should be disposed of via a council approved system.

The building contractor will need to specify the types and quantities of wastes produced during construction. A guide/estimate of the potential waste percentages is provided based on "rule of thumb" waste generation rates for construction projects, as indicated in **Table 1**.

Table 1 Construction Waste Generation Rates

Material	Estimated Waste %	Volume/Weight Ratios
Timber	5 - 7%	0.5 tonne per m ³
Plasterboard	5 - 20%	2 tonne per m ³
Concrete	3 - 5%	1 tonne per m ³
Bricks	5 - 10%	0.75 tonne per m ³
Iron/Steel	2 - 5%	2 - 4 tonne per m ³

Source: Waste Planning Guide for Development Applications, Inner Sydney Waste Board, 1998

Note: Records demonstrating the actual percentage of waste recycled by weight should be kept by the building contractor and reported to CCA on a quarterly basis.

4.3 Waste Storage and Servicing

The building contractor will need to specify the types and quantities of wastes produced during construction and on this basis, the numbers and capacity of skip bins can be determined.

All general building waste generated on site, when it is not able to be directly deposited into the skip bins, will be placed in designated stockpile areas within the site for transfer to the skip bins by bobcat or other means. All waste placed in stockpile areas and skips for disposal or recycling shall be adequately contained to ensure that the waste does not fall, blow, wash or otherwise escape from the site. On-site sorting and collections systems should be put in place to ensure efficient recycling of waste, including appropriate signage for recycling areas/skip bins.

The frequency of the waste removal will, in most cases, be dictated by the volume of material being deposited into the skip. All skips leaving the project site will be covered with a suitable tarpaulin to ensure that the spillage of wastes from the skips whilst in transit is prohibited.

4.4 Contaminated/Hazardous Waste

Where necessary during the construction stage of works, Goodman should engage qualified and certified contractors to remove all contaminated /hazardous material.

5 OPERATIONAL WASTE MANAGEMENT

The manufacturing process converts PET and HDPE resin pellets into preforms and closures generating a small volume of waste plastic material at the start up process (approximately 0.1% of raw material). HDPE closures are then printed using UV inks according to the designated product they will be applied to.

Note: All PET waste material is either recycled internally within the regrind preform manufacturing process or recycled externally by Plastic Recyclers for reuse.

Hydraulic oil is used for the Injection machines. Solvents/greases/agents and floor scrubbers are required for general purpose cleaning carried out around the machinery.

As such, the operational phase of the Project will generate the following waste streams:

- general solid waste (non-putrescible) (i.e. reject preforms / closures, plastic dust and purge blocks);
- hazardous waste (DG Class 3, Flammable) (i.e. empty ink/colourant drums and waste oil drums); and,
- liquid waste (i.e. wastewater).

Note: No production waste material is disposed of at landfill.

Gaseous waste streams may also result from the following systems (at the specified temperatures):

- Printers (to be determined)
- Cap Dryer (to be determined)
- Resin Dryers (140°C – 190°C)
- Vacuum Pumps (45°C – 65°C)
- Mould Dehumidifier (< 140°C)
- Air Compressor (45°C - 55°C)

Emissions to air should be monitored in accordance with Department of Environment, Climate Change and Water regulations. (Refer to the CCA Air Quality Assessment for more information.)

5.1 Waste Generation Rates

The generated waste and recycling volumes for the Project are given in **Table 2**.

Table 2 Operational Waste Generation Rates

Waste Material	Waste Processing	Waste Generation Rate
General Solid Waste		
Reject PET Preforms	Stored in either a silo (55 tonnes) or in bulker bags (400 kg). 100% of this material is reused in the Injection Moulding Process.	2 bins/day
PET Dust	Stored in bulker bags and sold to Plastic Recyclers.	40 kg/day
PET Purge Blocks	Stored in large steel bins and sold to Plastic Recyclers.	50 kg/day
Reject HDPE Closures	Stored in bulker bags and sold to Plastic Recyclers.	1 bin/day
HDPR Purge Blocks	Stored in large steel bins and sold to Plastic Recyclers.	10 kg/day
Hazardous Waste		
Waste Hydraulic Oil	Empty hydraulic oil drums are stored on site in a bunded storage cube so they are available to store waste oil as the need arises. Waste Hydraulic Oil sent to Oil Recyclers.	200 L/month
Empty Ink Drums	Sealed and stored in a bunded storage cube until removal from site by a Waste Disposal Company.	1 x 20L/day
Empty Colourant Drums	Sealed and stored in a bunded storage cube until removal from site by a Waste Disposal Company.	1 x 20 L/day
Liquid Waste		
Wastewater	Discharged into a storage tank for collection. This tank is pumped out by a Waste Disposal Company.	50 L/day

5.2 Waste Storage and Servicing

- All wastes are to be carefully segregated on site.
- Waste storage areas for empty ink/colourant drums and waste hydraulic oil drums should be bunded, well-ventilated and allow sufficient space for the handling and storage of waste in accordance with Australian Standard AS 1940-2004.
- Containment measures for spillages should be provided nearby (e.g. a spill kit containing non-combustible absorbent material).
- No liquid wastes or washdown waters should be disposed of via the stormwater drainage system. Wastewater storage tanks should be carefully monitored to ensure overflow does not occur.
- Hazardous and contaminated wastes will be removed from site by waste contractors for disposal to appropriately licensed facilities.
- Plastic waste material should be sold to approved plastic recyclers.

5.3 Signage and Education for Staff

Standard signage should be posted in all storage/waste collection areas and all drums/bins are required to be labelled correctly and clearly to identify materials stored within.

Employed staff and contractors should be made aware of all recycling initiatives and waste storage/handling requirements.

5.4 Monitoring and Reporting Requirements

Records of waste volumes recycled, reused or contractor removed are to be maintained and reported to CCA on a quarterly basis.

Waste audits are to be carried out to gauge the effectiveness and efficiency of waste segregation procedures and recycling/reuse initiatives. Where audits show that the above procedures are not carried out effectively, additional staff training should be undertaken and signage re-examined.

6 CCA WASTE MINIMISATION STRATEGIES

6.1 CCA Recycling Initiatives

Recycling initiatives for the Project are outlined below:

- 100% of reject PET preforms are reground for reuse in the Injection Moulding Process.
- All other plastic waste material (approximately 0.1% of raw material) is sold to Plastic Recyclers for reuse in other applications.
- All waste hydraulic oil sent to Oil Recyclers.

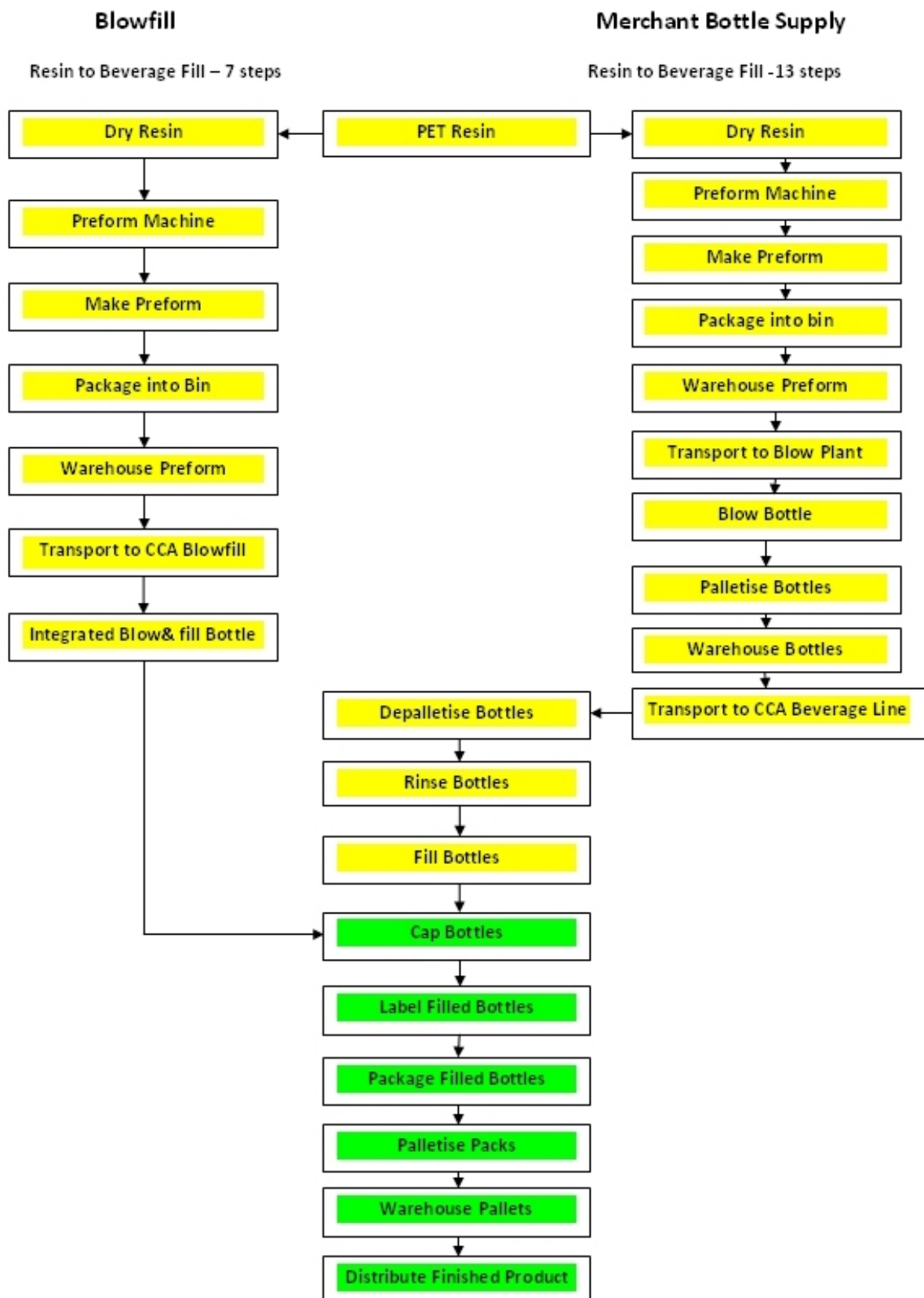
6.2 Blowfill Manufacture Versus Merchant Bottle Supply

The adoption of in-house CCA Blowfill Manufacture in place of Merchant Bottle supply will result in many supply chain reduction benefits, including optimised packaging of preforms and reduced freight requirements (refer to **Figure 2**). Additional waste reduction benefits will also be achieved through investment in new, energy-efficient technologies.

Waste minimisation strategies for the Project are outlined below:

- **Resin Drying** – investment in latest technology drying systems will reduce energy consumption required to dry PET resin prior to moulding
- **Preform Moulding Machine** – investment in latest technology injection machine will produce preforms faster at with a lower energy requirement. (It is estimated that a 5 - 10% energy saving will be achievable in the preform manufacture process.)
- **Preform Production** – preforms produced will be lighter (by an average of 20 - 30%) than those currently produced by Merchant supplier resulting in less PET resin going into the environment.
- **Packaging of Preforms** – up to 20% more preforms will be packaged per bin resulting in reductions to freight costs for transport to the Blowfill Plant.
- **Warehouse Space Requirements** – will be reduced by up to 70% with optimised packaging of preforms and no requirement to store finished pallets of bottles.
- **Transport of Preforms versus Bottles** - the ratio of delivery movements required for bottles versus preforms is 7:1 on average for local supply and 11:1 for interstate delivery. Therefore, the overall transport costs will be reduced (by 15 – 20%) as pallets of bottles will no longer be required to be transported to the Beverage Filling Plant.
- **Depalletising & Rinsing of Bottles** – this supply chain step will no longer be required as preforms are automatically feed to the integrated Blowfill machine therefore labour, energy and maintenance costs will be eliminated for machinery components reducing overall costs of production.
- **Fill Bottles** – investment in state of the art new fillers will deliver tighter controls on fill volume, carbonation volumes and Brix, resulting in a more consistent product for the consumer, less quality complaints and a reduction in cost of manufacture through excess product in bottles and rejection of filled product due to quality variance.

Figure 2 Blowfill Manufacture versus Merchant Bottle Supply



- **Cap Bottles** – a new lightweight closure has been developed (closure is 22% lighter) and will be introduced into the Project to deliver resin reductions, in addition to those introduced for the PET bottle itself. In the future, all CCA PET bottles will include this new lighter weight closure. Additionally, the finish on the bottle will reduce by 1.2 gm PET resulting in further resin usage reduction.
- **Label Bottle** – by standardising the bottle range diameters CCA will achieve cost efficiencies by having a limited number of common label feedstock variants.
- **Package, Palletise and Warehouse Filled Bottles** - bottles produced by the new generation preforms have been standardised in diameter resulting in increased numbers of filled packs of bottles per pallet. Warehouse and freight requirements relating to the delivery of filled bottles is estimated to be reduced by 10%.
- **Distribute Finished Product** - improved pallet pack ratios improve freight efficiencies by delivering more packs of finished product to its customers with less truck movements.

6.3 Benefits of PET Use in Bottle Manufacture

Major drivers for CCA's use of PET in bottle manufacture, compared to the existing packaging mediums of glass and aluminium, are summarised below:

- **Economic** - a recent lifecycle study by the PET Resin Association (PETRA) reports that the use of PET in bottle manufacturing in place of glass or aluminium results in a lower energy footprint.
- **Safety** - with the move into larger packages of product, PET offered a package which was shatterproof and appealing to the consumer.
- **Consumer Appeal** - the lightweight of PET versus glass and visibility of the contents were features appealing to the consumer.
- **Lightweight** - technology developments are driving further light weighting of PET bottles.
- **PET Resin Recycling** – recycled post consumer PET resin may be reused in the bottle manufacture process, as well as many other applications of PET. (Approximately 40 – 50% can be reused in the bottle manufacturing process and up to 100% PET resin can be reused in applications such as Geotextile matting and fibre production etc.)

Note: CCA incorporate recycled post consumer PET resin into its bottles.

7 CLOSURE

This report has been prepared by Heggies Pty Ltd with all reasonable skill, care and diligence, and taking account of the manpower and resources devoted to it by agreement with the client. Information reported herein is based on the interpretation of data collected and has been accepted in good faith as being accurate and valid.

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