

1/05/2023

Customer: Moorabool Shire Council

Customer reference:
EW01-2022.2023

Confidentiality, copyright and reproduction:

This report is the Copyright of Moorabool Shire Council and has been prepared by Ricardo Energy Environment and Planning a trading name of Ricardo-AEA Ltd under contract RFQ EW01-2022/2023: Transfer Stations Resource Recovery and Resale Shop Feasibility, dated 01/12/2022. The contents of this report may not be reproduced, in whole or in part, nor passed to any organisation or person without the specific prior written permission of Moorabool Shire Council. Ricardo Energy Environment and Planning accepts no liability whatsoever to any third party for any loss or damage arising from any interpretation or use of the information contained in this report, or reliance on any views expressed therein, other than the liability that is agreed in the said contract.

Ricardo reference:
31601

Ricardo is certified to ISO9001, ISO14001, ISO27001 and ISO45001.

Ricardo, its affiliates and subsidiaries and their respective officers, employees or agents are, individually and collectively, referred to as the 'Ricardo Group'. The Ricardo Group assumes no responsibility and shall not be liable to any person for any loss, damage or expense caused by reliance on the information or advice in this document or howsoever provided, unless that person has signed a contract with the relevant Ricardo Group entity for the provision of this information or advice and in that case any responsibility or liability is exclusively on the terms and conditions set out in that contract.

Contact:

Maarten de Beurs, Level 4, 3 Bowen Crescent,
Melbourne, Victoria 3004, Australia

Registered office:

Ricardo Energy, Environment & Planning Pty
Level 17, 383 Kent Street Sydney NSW 2000

T: + 61 (0) 3 9978 7823

E: plc.admin@ricardo.com

E: Maarten.deBeurs@ricardo.com

Author:

Katelyn Reynolds

Issue History			
Issue No	Date Issued	Document Status	Approved By
1	27/02/2023	Draft for review	Maarten de Beurs
2	4/04/2023	Internal Draft	
3	12/04/2023	Final	Maarten de Beurs
4	1/05/2023	Final	Maarten de Beurs

CONTENTS

1. INTRODUCTION	4
1.1 CURRENT TRANSFER STATION NETWORK	4
1.2 STRATEGIC CONTEXT	4
2. WASTE FLOW MODELLING	5
2.1 MATERIAL INPUTS	5
2.1.1 Current	5
2.1.2 Delivery Analysis	8
2.1.3 Forecast	10
2.1.4 Additional streams	10
2.1.5 Emergency Wastes	11
2.2 REGIONAL NETWORKS	12
2.2.1 Regional Circular Economy Plan	14
2.3 RECOVERED MATERIALS MARKETS	15
2.3.1 Market Overview	15
2.3.2 Existing re-processors	16
2.3.3 Future Needs	17
2.3.4 Future Accessibility	19
3. TRANSFER STATION NETWORK BETTER PRACTICE	19
3.1 BEST PRACTICE PERFORMANCE AREAS	19
3.1.1 Financial Sustainability	20
3.1.2 Future proofing	21
3.2 BACCHUS MARSH	22
3.2.1 Site Location	22
3.2.2 Site Zoning	23
3.2.3 Traffic Flow	24
3.2.4 Assessment of Better Practice	24
3.3 BALLAN	27
3.3.1 Site Location	27
3.3.2 Site Zoning	28
3.3.3 Traffic Flow	29
3.3.4 Assessment of Better Practice	29
3.4 MOUNT EGERTON	31
3.4.1 Site Location	31
3.4.2 Site Zoning	32
3.4.3 Traffic Flow	33
3.4.4 Assessment of Better Practice	33
3.5 COMMUNITY FEEDBACK	35
3.5.1 Illegal dumping	35
3.5.2 Kerbside Collection Expansion	36
3.5.3 Resale Shop Expansion	36
3.5.4 Council to Constituent recycling communication	37
4. RESALE SHED AND REPAIR SHOP	37
4.1 CASE STUDIES	37
4.2 BUSINESS FEASIBILITY	38
4.2.1 Porter's Five Forces	38
4.2.2 Unique Selling Proposition	38
4.2.3 Pricing Structure/Strategy	39

4.3	OPERATIONAL NEEDS	39
4.4	RECOMMENDED INVESTMENT	40
5.	OTHER IMPROVEMENT OPPORTUNITIES	41
5.1	SUBSIDIES ON WORM FARMS, HOME COMPOSTING FACILITIES, AND CHICKENS	41
5.2	WASTE CONTAMINATION LEVELS	41
5.3	FUTURE FOGO PROCESSING	41
5.4	BICYCLES	42
5.5	CONCRETE AND BUILDING RUBBLE	42
5.6	BUILDING MATERIALS	42
5.7	ELECTRONIC/ELECTRICAL ITEMS	42
5.8	GARDENING TOOLS	42
5.9	CLOTHING AND TEXTILES	42
5.10	DETOX YOUR HOME EVENT	43
5.11	MULCH COLLECTION SERVICES	43
5.12	FUTURE GLASS PROCESSING	43
5.13	CONTAINER DEPOSIT SCHEME	43
5.14	EXPANDED POLYSTYRENE	43
5.15	TRANSFER STATION LAYOUT REDESIGNS	43
5.16	COMMUNITY EDUCATION	43
5.17	ESTABLISH COMMUNITY-COUNCIL ENVIRONMENTAL INITIATIVES	44
5.18	COMMUNITY-LED ENVIRONMENTAL COMMITTEE	44
5.19	INVIGORATE THE COMMUNITY	44
5.20	AMEND TRANSFER STATION OPERATIONS	44
5.20.1	Change in Allowable Materials	45
5.20.2	Pricing Structure	45
5.20.3	Updating Tender Specifications Contracts	45
5.20.4	Increasing staffing onsite	45
5.21	ALTER HARD WASTE COLLECTION	45
6.	TRANSFER STATION NETWORK STRATEGY	46
6.1	DELIVERY MODEL	46
6.1.1	Resale Shop	47
6.1.2	Supplementation of sites	48
6.2	OTHER IMPROVEMENT OPPORTUNITIES	48
7.	CONCLUSION	51
7.1	SUMMARY OF HIGH PRIORITY ACTIONS	52

Figures

Figure 2-1	Volumes received per vehicle	8
Figure 2-2	Pricing Structure	9
Figure 2-3	Weight received per vehicle	9
Figure 2-4	Grampians Central West Region	14
Figure 3-1	Bacchus Marsh Site Location	22
Figure 3-2	Bacchus Marsh Zoning Map	23
Figure 3-3	Bacchus Marsh Traffic Flow	24
Figure 3-4	Ballan Site Location	27
Figure 3-5	Ballan Zoning Map	28
Figure 3-6	Ballan Traffic Flows	29

Figure 3-7 Mt Egerton Site Location	31
Figure 3-8 Mount Egerton Zoning Map	32
Figure 3-9 Mt Egerton Traffic Flows	33
Figure 3-10 Transfer Station flow diagram	35

Tables

Table 2-1 Bacchus Marsh Waste Analysis	6
Table 2-2 Ballan Waste Analysis	7
Table 2-3 Mt Egerton Waste Analysis	7
Table 2-4 Population Growth	10
Table 2-5 Risk rating criteria	11
Table 2-6 Emergency Waste Types	11
Table 2-7 Summary of Regional Transfer Station Network	13
Table 2-8 Re-processor and destination	16
Table 3-1 Five Better Practice Performance Areas	19
Table 3-2 Performance assessment: Financial sustainability	20
Table 3-3 Performance assessment: Future Proofing	21
Table 3-4 Bacchus Marsh – Performance assessment: Risk Management	25
Table 3-5 Bacchus Marsh – Performance assessment: Stakeholder needs	25
Table 3-6 Bacchus Marsh – Performance assessment: Smart materials management	26
Table 3-7 Ballan - Performance assessment: Risk Management	29
Table 3-8 Ballan – Performance assessment: Stakeholder needs	30
Table 3-9 Ballan – Performance assessment: Smart materials management	30
Table 3-10 Mt Egerton – Performance assessment: Risk Management	33
Table 3-11 Mt Egerton – Performance assessment: Stakeholder needs	34
Table 3-12 Mt Egerton – Performance assessment: Smart materials management	34
Table 6-1 Summary of Improvement Opportunities	48
Table 7-1 High Priority Actions	52

1. INTRODUCTION

The Moorabool Shire Council serves as local government to an existing population of 37,000. With a projected annual population growth rate of 2% per year, Moorabool Shire is expected to reach a population of 70,000 by 2041. With this projection of urban development, waste modelling and infrastructure needs to be proactively updated and developed to compensate for projected waste increases.

In addition to the population increases, the recent introduction of the *Recycling Victoria: a new economy* policy, Container Deposit Scheme and the Recycling Victoria regulatory organisation mean that a transition to a Circular Economy is gaining momentum. In order to futureproof waste operations in the shire, Moorabool Shire Council need to adopt a circular economy approach to waste infrastructure.

Moorabool Shire Council wish to investigate the construction of a resale shop on one of the transfer station sites, along with other opportunities that could be available to increase resource recovery rates from the transfer station network. While the majority of material currently disposed of is garbage, there is opportunity to increase resource recovery of materials as well as improve services to assist in reducing illegal dumping. With \$80,000 spent annually on resourcing to manage litter across the Shire, the Moorabool Shire Council is aiming to leverage existing infrastructure and to expand waste diversion offerings to their community.

As a peri-urban Shire, investment in an approach to Circular Economy infrastructure needs to reflect the duality of the rural west and north areas of the Shire as well as the semi-suburban east.

1.1 CURRENT TRANSFER STATION NETWORK

The Moorabool Shire Council currently operates a network of three transfer stations, at Bacchus Marsh, Ballan and Mt Egerton. These three sites cater for different areas of the shire, with Bacchus Marsh serving the suburban areas of the east of the shire, and Ballan and Mt Egerton in more rural locations. The services provided and the context of these sites are explained in more detail in **Section 3**.

Generally, the sites provide disposal routes for the following items:

- General Waste
- Garden Waste
- Commingled Recyclables
- Paper/Cardboard
- Steel/scrap metal
- E-Waste
- Whitegoods
- Tyres
- Mattresses
- Motor Oil
- ChemClear/DrumMuster (agricultural chemical containers)

Further services are being introduced for glass and food organics at each site, in accordance with the requirements of the *Recycling Victoria: a new economy* policy. Infrastructure to receive these streams is being installed at the transfer station sites although it is yet to be determined how Moorabool Shire Council will deliver the services to residents – this could be through kerbside services where applicable, or through a range of drop-off options, including drop off to the transfer stations.

1.2 STRATEGIC CONTEXT

Moorabool Shire Council's Waste and Resource Recovery Strategy 2030 identifies that keeping costs down for ratepayers is identified as a key priority and this is reiterated when considering introducing new services such as a hard waste service.

The strategy establishes three goals:

- Avoid waste creation.
- Recover more materials.
- Protect the community and environment.

The actions that are most relevant to this project include:

- 12 Investigate the viability of options to assist ratepayers with hard waste disposal – e.g. hard-waste collection service or voucher disposal.
- 13 Review operational model of Transfer Stations. Explore social enterprise opportunities, resale / repair shop feasibility, increase resource recovery (FOGO, concrete, glass, gas bottles, furniture, clothing, soft plastic etc).
- 23 Investigate feasibility of discount Transfer Station drop-off months for tyres / mattresses i.e. regularly dumped items.
- 24 Facilitate an annual Detox Your Home event in partnership with Sustainability Victoria for the safe disposal of unwanted household chemicals.

2. WASTE FLOW MODELLING

Waste flow modelling was undertaken to identify the materials deposited at the current transfer station network and where these streams are currently being disposed of. Annual volumes of incoming material were sourced from operational data. The composition of incoming material was based on an audit carried out for one day at the Bacchus Marsh and Ballan Transfer Stations.

2.1 MATERIAL INPUTS

The incoming material volumes have been heavily impacted by a number of factors in recent years, including Covid-related shutdowns and behavioural changes, and the start-up and subsequent closure of a competitor transfer station in Bacchus Marsh. As a result, the estimated volumes of material were based on varying sources. Bacchus Marsh used an average of the landfill, greenwaste, recycling and other tonnages disposed of from the site in the calendar year 2017-2019 period, avoiding data that was affected by the presence of the competitor transfer station and Covid-19 changes, as well as avoiding relying too heavily on earlier data that could not be cross-verified against the total tonnage data supplied separately.

Ballan volumes were based on the 2018-2020 period, avoiding an unusually high year in 2017. Ballan's data did not appear to be affected by Covid-related restrictions. This may be due to less severe restrictions in regional areas. Data for 2021 appears to be relatively low and were therefore excluded as the reason for the decline was not established but could be related to Covid-19 restrictions in 2021.

Mt Egerton volumes were based on the most recent three years of data (2019-2021), as there were no obvious data concerns with this period.

Other streams (paper and cardboard, E-waste, scrap steel and mattresses) have poor data (often less than 12 months of reliable consistent data available) but appear to make up approximately 10% of the total volume of material. This data has been included in calculating total volumes despite the data quality concerns however given the indicative scale of these streams, it is not expected to impact the results of the analysis.

The audit data split between landfilled and recycled material suggested a recovery rate of approximately 60%, however once this data was corrected to ensure material categories that are not actually recycled at the transfer stations (masonry, rubber and textiles, wood) were allocated to landfill, the estimated volumes of recycled material approximately matched the demonstrated volumes of material exported for recycling. This resulted in an adjusted recovery rate of 30-40% of the material deposited.

2.1.1 Current

While organics dominate the material disposed of (approximately 30-40% at Bacchus Marsh and Mt Egerton), this number is likely to be inflated. The garden organics dropped off at the transfer stations form a major part of this stream, however the general waste that was deposited in bags during the audit period was also allocated a general Municipal Solid Waste (MSW) composition, being 40% organics. It is considered that MSW mixed

wastes delivered to a transfer station are unlikely to have as high an organics content due to the use of composting where kerbside collections are not available and the unpalatability of storing and transporting bagged organic materials. As such, it has been assumed that the recycled organics are 100% garden organics and that the organics tonnes landfilled consist of garbage bags with an unknown composition, which could be a range of materials, from organics to contaminated recyclables and other non-recyclable materials.

2.1.1.1 Bacchus Marsh

From the waste audit data provided, the current composition of materials at the Bacchus Marsh Transfer Station (including an assumed split between landfill and recycling based on the audit data) is presented in **Table 2-1** below.

Table 2-1 Bacchus Marsh Waste Analysis

Waste Type	% of Weight	Estimated Tonnages	Landfill	Recycled	Tonnes landfilled
Cardboard	8.43%	194.7	61.9%	38.1%	120.6
Electrical	2.64%	61.0	85.0%	15.0%	51.9
Organics	42.95%	992.3	44.2%	55.8%	438.5
Glass	1.00%	23.0	53.0%	47.0%	12.2
Masonry	10.33%	238.7	100.0%	0.0%	238.7
Metals	10.43%	241.0	53.6%	46.4%	129.2
Paper	0.50%	11.6	21.6%	78.4%	2.5
Plastic	8.29%	191.6	13.4%	86.6%	25.7
Rubber and Textiles	5.45%	126.0	100.0%	0.0%	126.0
Wood	9.94%	229.6	100.0%	0.0%	229.6
Other recyclables	0.02%	0.5	100.0%	0.0%	0.5
Misc.	0.01%	0.2	0.0%	100.0%	0.0
TOTAL		2310.3	59.5%	40.5%	1375.3

Key points to note include the apparently large proportion of cardboard and organics being landfilled. These materials are highly recoverable and have existing recovery routes at the site. While the organics being landfilled may be inflated, the volumes of recovered organics and cardboard align with the data obtained on waste transported out of the site.

Metals also show significant volumes being landfilled, however this is likely small appliances and furniture that are mixed with other materials and cannot be easily separated.

Key opportunities for recovery of additional streams include masonry and rubble, rubber and textiles and wood / timber. It is understood that masonry and rubble is not supposed to be received at the sites, however it was delivered at both Bacchus Marsh and Ballan according to the audit. This may imply that there is a demand for the receipt of this material.

2.1.1.2 Ballan

The mix of materials delivered to Ballan is provided in **Table 2-2**. It is worth noting that both Ballan and Bacchus Marsh waste compositions rely on a single day's audit, however with some adjustments to assumptions, such as changing the destination of masonry and rubble, rubber and textiles and wood / timber to being 100% landfilled rather than partly recycled, the figures generated for waste stream outputs are closely aligned with the actual average disposal tonnages.

Table 2-2 Ballan Waste Analysis

Waste Type	% of Weight	Estimated Tonnages	Landfill	Recycled	Tonnes landfilled
Cardboard	6.59%	53.9	30.8%	69.2%	16.6
Electrical	2.59%	21.2	83.2%	16.8%	17.6
Organics	15.99%	130.8	67.0%	33.0%	87.6
Glass	2.97%	24.3	54.3%	45.7%	13.2
Masonry	23.02%	188.4	100.0%	0.0%	188.4
Metals	12.70%	103.9	4.1%	95.9%	4.3
Paper	0.46%	3.8	0.0%	100.0%	0.0
Plastic	8.54%	69.8	38.5%	61.5%	26.9
Rubber and Textiles	9.75%	79.8	100.0%	0.0%	79.8
Wood	17.14%	140.2	100.0%	0.0%	140.2
Other recyclables	0.00%	0.0	100.0%	0.0%	0.0
Misc.	0.25%	2.1	0.0%	100.0%	0.0
TOTAL		818.1	70.2%	29.8%	574.5

The materials composition at Ballan is heavily influenced by a large delivery of masonry/rubble, which is very heavy for its volume. If the composition is adjusted to remove the largest masonry/rubble delivery, the composition and recovery rates are very similar to those at Bacchus Marsh, with the following notable differences:

- Organics volumes are lower, possibly due to larger block sizes in the area being more able to manage this on-property.
- Building or demolition materials appear to be more prevalent, with metals, wood and masonry/rubble being disposed of at higher rates than at Bacchus Marsh.

2.1.1.3 Mt Egerton

The composition of waste at Mt Egerton was not audited and therefore an average composition of all the audit findings was applied for this site. The tonnages estimated in **Table 2-3** approximately align with the tonnes disposed from this site.

Table 2-3 Mt Egerton Waste Analysis

Waste Type	% of Weight	Estimated Tonnages	Landfill	Recycled	Tonnes landfilled
Cardboard	7.82%	29.0	63.5%	36.5%	18.4
Electrical	2.63%	9.7	0.3%	99.7%	0.0
Organics	34.05%	126.2	93.8%	6.2%	118.3
Glass	1.65%	6.1	53.8%	46.2%	3.3
Masonry	14.52%	53.8	100.0%	0.0%	53.8
Metals	11.18%	103.7	4.8%	95.2%	5.0
Paper	0.49%	1.8	16.8%	83.2%	0.3
Plastic	8.37%	31.0	20.3%	79.7%	6.3
Rubber and Textiles	6.87%	25.5	100.0%	0.0%	25.5
Wood	12.32%	45.6	100.0%	0.0%	45.6
Other recyclables	0.02%	0.1	100.0%	0.0%	0.1
Misc.	0.09%	0.3	0.0%	100.0%	0.0
TOTAL		432.9	63.9%	36.1%	276.6

The tonnages of material generated at the Mt Egerton site are low. This results in limited opportunities to recover additional material, unless the material can be combined with other sites across Moorabool Shire.

The higher than usual landfill rates for organic material should also be noted. This figure is based on audit data to estimate the amount of green waste delivered to site annually (126.2t), combined with actual records of green waste sent for recycling from the site (an average of 7.9t, or 6.2% of the estimated input). This poor recovery rate is likely to be due to a heavily contaminated green waste skip (as was observed on the site visit) as a symptom of poor signage and skip layout on the Site.

2.1.2 Delivery Analysis

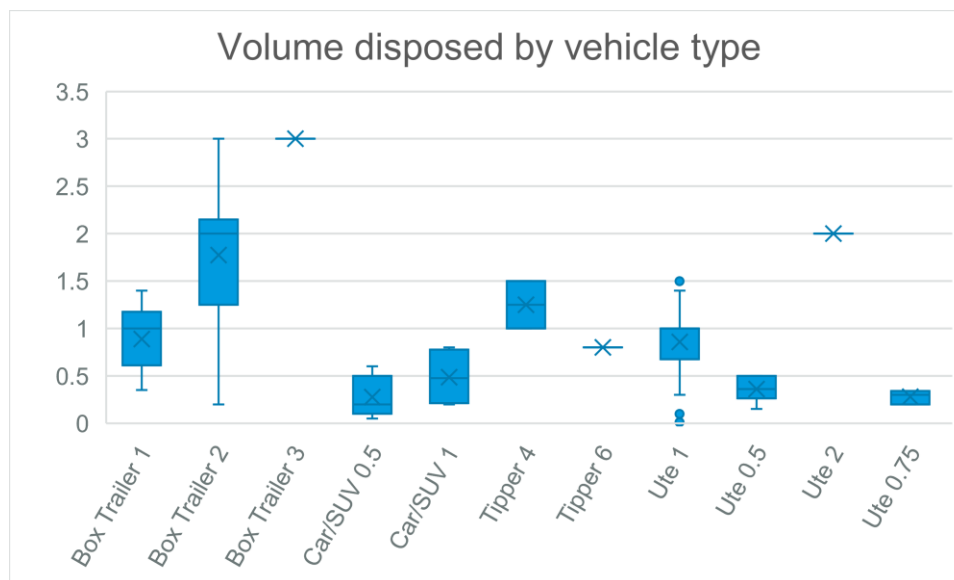
The audit data provided for Bacchus Marsh and Ballan analysed each delivery by vehicle type and volume of material disposed of. Vehicle types were also split by size (e.g. 1, 2 or 3m³ box trailers).

The following vehicle types were identified:

- Box Trailers (1,2 and 3m³)
- Car/SUV (0.5 and 1m³)
- Tipper truck (4 and 6m³)
- Ute (0.5, 0.75, 1 and 2m³)

The distribution of volumes received (at both sites combined) by vehicle type is shown in **Figure 2-1**.

Figure 2-1 Volumes received per vehicle



These categories do not align with the current pricing structure, however it appears that the current pricing structure allows for the variation in volumes as shown, by including six categories for trailers and two for utes, as well as charging trucks by volume.

Figure 2-2 Pricing Structure

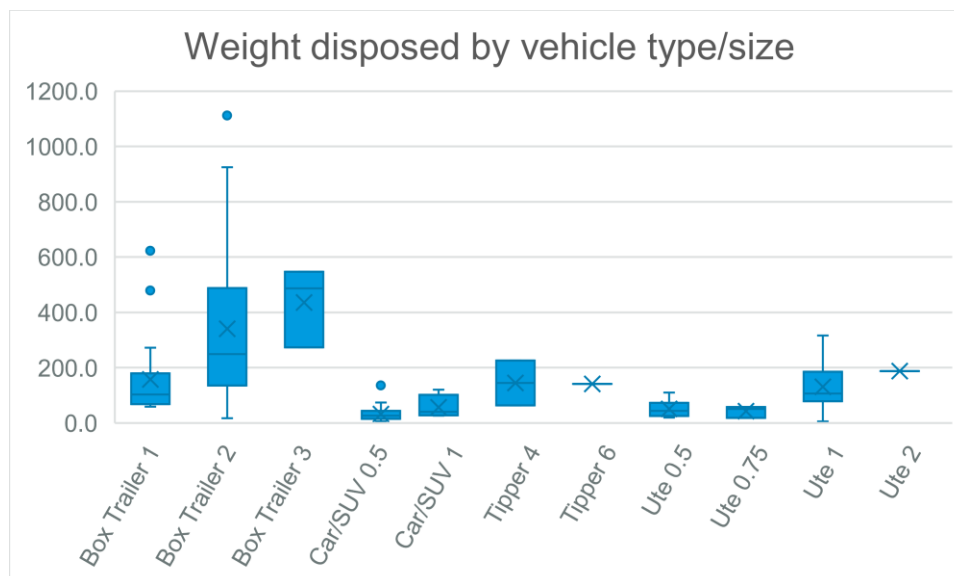
MT EGERTON TRANSFER STATION					
OPEN Saturday and Sunday 12.00pm – 5.00pm		CLOSED Weekdays Christmas Day, Boxing Day, New Year's Day, Good Friday		TOTAL FIRE BAN DAYS Open if scheduled to open	
DOMESTIC FEES	EXAMPLES	RESIDENTS *	NON-RESIDENTS	TYRES	
Car or Station Wagon	 	\$35	\$46	Prices for the disposal of tyres on application to the Transfer Station Operator	
Trailer up to 6 x 4 or Utility	 	\$52	\$91	COMMERCIAL	
Trailer up to 6 x 4 or Utility (Heaped Load)	 	\$70	\$153	No commercial waste accepted above 5m3 load	
Trailer up to 6 x 4 (High Sides)		\$91	\$198	TRANSFER STATION VOUCHERS	
Large Trailer over 6 x 4		\$70	\$153	Transfer Station Vouchers (26 vouchers) are available to purchase at Council Offices for residents not in a waste service area.	
Large Trailer over 6 x 4 (Heaped Load)		\$111	\$243	NO CHARGE	
Large Trailer over 6 x 4 (High Sides)		\$128	\$284	Kerbside Recyclables	
Trucks: 5m3 (Commercial)		\$75	\$150	Car Oil	
Clean Greenwaste (contaminated materials will incur full fee)		½ Price	½ Price	Scrap Metal	
Mattresses (all sizes)		\$41 each	\$41 each	Batteries	
		All fees are inclusive of GST		Fridges/Freezers	
				TVs/Computers	
				E-waste	
				NOT ACCEPTED	
				Asbestos	
				Paint & Chemicals	
				Prescribed/Industrial Waste	

* RESIDENTS NEED TO SHOW SOME FORM OF IDENTIFICATION WITH ADDRESS TO BE ELIGIBLE FOR RESIDENTS' PRICES



As materials disposed of at the site are typically taken to a processor that charges by weight (e.g. landfills) the loads deposited were converted to weights using factors provided in the audit report. **Figure 2-3** reveals that particularly heavy loads typically come in trailers (1-3m³), while utes (0.5-2m³) do not typically appear to transport heavy wastes.

Figure 2-3 Weight received per vehicle



The data also revealed that the different vehicles have different characteristics. Trailers and Utes typically arrive full, while small trailers and cars have a much higher prevalence of partial loads. Cars typically arrived less than half full, indicating that they were dropping off small or incidental items as opposed to having stockpiled a number of items to create a full load, which was more likely for trailers and utes.

The loads delivered to the transfer stations were typically mixed, with only organic wastes and cardboard showing up regularly as “single stream” deliveries. Glass, Wood and Masonry (e.g. bricks and rubble) almost never showed up as single stream deliveries, while Metals, Electrical and Rubber/Textiles occasionally did. This suggests that dropping off organic wastes and cardboard are common drivers of a visit to a transfer station, as well as delivering a mix of materials (general waste or a few different recyclables).

2.1.3 Forecast

Population projections for Moorabool Shire Council were sourced from profile.id and divided by the catchment areas for each transfer station. The results of this projection are provided in **Table 2-4**. This highlights the challenge facing the Bacchus Marsh transfer station. In order to adequately service the projected population in the Bacchus Marsh transfer station catchment, by 2041 a duplication of this site will be required. As the site is currently highly constrained, a new site may be necessary. The growth in this catchment is driven by the development of the Parwan, Merrimu and Hopetoun Park areas as well as growth in the Bacchus Marsh township. While growth will only be approximately 17.6% by 2026, by 2031 the site is unlikely to be able to cope with the expected increase in patronage.

While similar rates of growth are expected in the Ballan area, the transfer station there also services the surrounding rural areas. The site is also large and is likely to be able to service the growth in patronage.

The Mt Egerton area is not expected to show significant growth and therefore it is not suggested that this location will have any pressure on its capacity to service the surrounding area.

Table 2-4 Population Growth

Transfer station	2021 catchment (population)	Growth by 2041 (population)	Annual growth rate	Growth by 2026	Growth by 2031	Growth by 2041
Bacchus Marsh	24,530	22,352	3.29%	17.6%	40%	91.1%
Ballan	6,804	4,482	2.56%	13.5%	28%	65.9%
Mt Egerton	6,556	970	0.69%	3.5%	7.1%	14.8%

2.1.4 Additional streams

A review of the Waste Services Operations Review reveals that other than the illegally dumped wastes, most other waste streams in the Moorabool Shire area have existing disposal options, as long as the materials are effectively delivered to these locations. The development of additional services targeting new streams should therefore be focussed on the opportunities provided by new technologies and changes in legislation as well as ensuring that materials reach their required destination. The requirement to provide services for E-waste is an example of this, where a landfill ban required the collection of this stream. The future developments in this area include the imminent collection of FOGO and glass wastes, while other opportunities identified in the modelling could include:

- Expanded polystyrene (through a melter)
- Container Deposit Scheme (CDS)
- Wood
- Rubble / Masonry

Further to these streams, transfer station sites could provide a “one-stop-shop” for the disposal of materials with existing product stewardship schemes or collection infrastructure (similar to the collection of car oil, batteries and whitegoods currently). These could include:

- Soft plastics
- Paint
- Textiles
- Light globes
- Non-kerbside hard plastics
- Farm/rural plastics (silage wrap, baling twine etc)

2.1.5 Emergency Wastes

Transfer station networks can provide valuable support in times of emergencies. These sites can assist in triaging waste and increasing the opportunity for resource recovery/decreasing reliance on landfills.

The following section provides a summary of potential waste types to consider in the event of emergencies. Each of the waste types has been assigned a risk rating using a high-level red, amber, green rating system.

Table 2-5 below lists the criteria for the rating system.

Table 2-5 Risk rating criteria

Risk rating	Definition	General action
High	Substantial public health, environmental or safety risks	Requires immediate action to identify, assess, remove and dispose safely
Medium	Moderate safety risk, prevents other essential activities from occurring.	Action required as soon as possible to identify, assess, remove and dispose safely.
Low	Low risk to health, environment or safety	Non-urgent clean-up activities.

It is likely that transfer stations will only become critical in case of a major emergency, namely bushfires, floods, storms, and earthquakes. Biological emergencies, truck rollover and chemical spills are not considered to require specific management as the waste sources and waste types generated from these emergencies are generally limited in range and volume and can often be managed by emergency services.

The waste types typically generated in emergencies are outlined in **Table 2-6**, along with the risk rating and likely volume. Wastes with both a high risk and high volume should be considered priorities for emergency management at transfer stations (high risk low volume wastes can typically be managed by existing collection systems).

Table 2-6 Emergency Waste Types

Waste Type	Risk	Volume	Management method	Need for Transfer Station?
Asbestos	High	Low	Requires disposal to appropriately licensed landfill	
Contaminated soil	High	Med	Requires disposal to appropriately licensed landfill	
Deceased Animals	High	Med	Typically requires disposal to appropriately licensed landfill Can be buried on-site with EPA approval	
E waste	Medium	Low	Transfer station or landfill	Yes
Hard waste	Low	High	Transfer station or landfill	Yes
Masonry	Low	Med	Transfer station or landfill	Yes
Medical waste	High	Low	Contact medical waste disposal service provider	
Metals	Low	Med	Transfer station or landfill for small volumes Contact scrap metal removalist for large volumes	Yes
Other hazardous wastes	High	Low	Household – Drop off at transfer station or landfill	Yes

			Industrial – Refer to EPA Victoria guidelines	
Other putrescible waste	High	Med	Requires disposal to appropriately licensed landfill	Yes
Septic tanks	High	Med	Contact plumber or licensed service provider	
Soil and sediment	Medium	High	Transfer station or landfill. Can be used onsite if uncontaminated	Yes
Vegetative waste	Medium	High	Transfer station or landfill Can be used onsite	Yes
Vehicle bodies	Medium	High	Contact scrap metal removalist	
White goods	Low	Med	Transfer station or landfill Contact removalists	Yes

This table shows that Moorabool Shire's transfer station network should consider specific emergency support for:

- Hard Waste
- Putrescible waste (general household waste)
- Soil and Sediment
- Vegetative Waste

This is borne out by the recent use of Ballan Transfer Station to store green waste from storm damage.

Transfer stations are also likely to receive E-waste, masonry/rubble, metals, hazardous wastes (e.g. drum muster, motor oils etc) and whitegoods however these should be manageable with existing systems.

2.2 REGIONAL NETWORKS

Ballarat Transfer Station

The Ballarat Transfer Station is located in Alfredton, 15 kms west from the Moorabool Shire Council (MSC) boundary. It serves as a repository for the Western boundary of Shire and accepts paint and batteries, in contrast to the MSC Transfer stations. Ballarat is also a hub for the region that offers fulltime availability.

The Ballarat Transfer Station operates Monday to Friday: 8am – 4pm, Public holidays 10am-4pm, Closed Christmas Day, New Year's Day, Anzac Day and Good Friday. Small commercial businesses can also use the Ballarat Transfer Station, and it offers a free Green Waste Week in preparation for Bush Fire season for Ballarat residents.

The resale shed at the site upcycles bikes, play equipment, and other garage sale items.

In 2019, Council introduced the Pass on Glass recycling scheme, requiring residents to keep glass out of the kerbside commingled recycling bin and to drop off glass (for free) at nine recycling sites across Ballarat. Lids and labels are to be removed from all glass bottles and jars. Half of the material is broken down into glass cullet, washed, and sorted by colour at Visy's facility before being processed to make more glass bottles and jars. The other half is crushed into glass sands or aggregate mix for use in local trials in road and concrete construction projects.

Melton Transfer Station

Melton Transfer Station is located in Cobblebank, 12kms east from the MSC Boundary. Opening hours 8am – 4.30pm, 7 days a week. Closed Christmas Day, New Year's Day, Anzac Day and Good Friday. Melton is also a hub for the region that offers fulltime availability. Higher charges apply for non-residents, except for greenwaste which is competitive against MSC gate rates. Melton also accepts solar panels free for residents, and bricks and cement (at cost), in contrast to the MSC transfer stations.

Melton is undergoing a major upgrade of their transfer station, including a new Front End Resource Recovery Centre (FERRC) shed to provide for disposing of reusable or recyclable material (free of charge) prior to travelling over the weighbridge; and Resale Shop featuring a dedicated drop-off zone, large indoor area to accommodate furniture, and a sheltered outdoor section for timber, doors, metal, plumbing, bricks and tiles.

Trentham Transfer Station

Trentham Transfer Station is part of the neighbouring Hepburn Shire yet serves the constituents on the northern border of the MSC. The convenience and pricing structure of the Trentham TS gives it a competitive advantage over the closest MSC Transfer Station, alongside its Resale shop onsite.

Trentham is open Wednesday, Saturday, Sunday – 9am to 5pm, and accepts building materials (domestic only) and gardening equipment for free.

Daylesford Transfer Station

Open Monday, Tuesday, Thursday, Friday, Saturday and Sunday 9am – 5pm, Daylesford TS is located 14kms from the MSC boundary.

Daylesford TS offers free Green Waste disposal in November for residential properties within the Hepburn Shire. In addition to their resale shops, when stock builds up Hepburn Shire host community garage sales and regularly post resale shop items on their Facebook and Instagram sites.

Suez Wendouree

Open Monday to Friday 8am-5pm, closed weekends, located ~18kms west from MSC boundary. Free drop off for TVs, Computers & Accessories can be dropped off at the site for free as part of the National Computer and Television Recycling Scheme.

Detox Your Home Events

The MSC will be undertaking a Detox Your Home Event in 2023 at Ballan Transfer Station. Additionally, the Ballarat Transfer Station undertakes the Detox Your home initiative as a permanent drop-off site. Residents in the western portion of the Shire have easy access to this.

ChemClear

ChemClear is a non-profit collection service for unwanted or obsolete agricultural and veterinary chemicals, where residents must register their inventory a few months prior to collection dates. Collection events are scheduled on demand for service based on the volume of chemical registrations received by region.

A summary of these regional networks is presented in **Table 2-7**, showing the additional materials received at each site compared to those managed in Moorabool Shire Council's network.

Table 2-7 Summary of Regional Transfer Station Network

Additional Materials Accepted	Ballarat	Melton	Trentham	Daylesford
Paint	✓	✓	✓	✓
Gas bottles	✓	✓		
Resale Shop – good used items	✓	✓	✓	✓
Glass Dropoff	✓			
Solar Panels		✓		
Building Materials	✓	✓	✓	✓
Rubble	✓	✓		
Expanded Polystyrene		✓		
Detox Your Home (household chemicals)	✓			

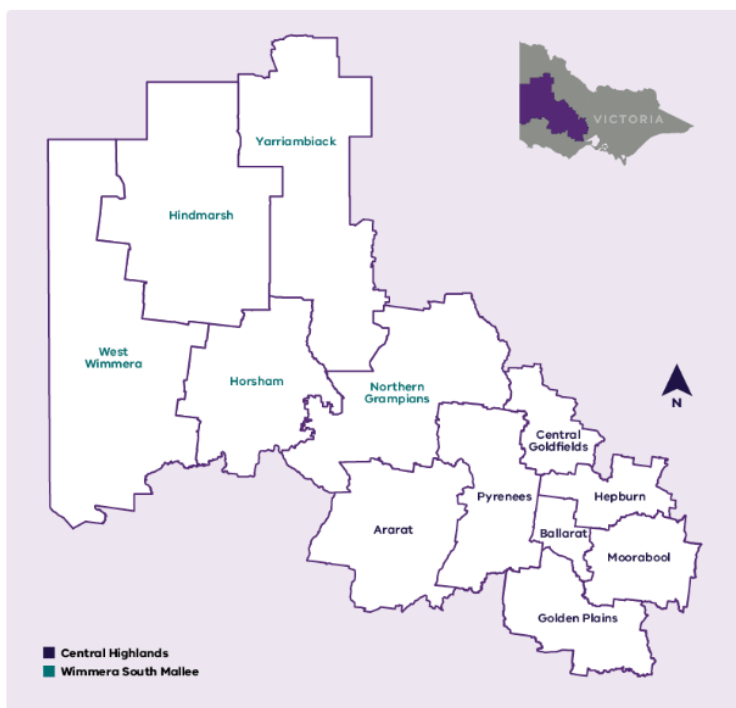
2.2.1 Regional Circular Economy Plan

The Grampians Central West Regional Circular Economy Plan¹, released October 2022, outlines 5 circular economy aspirations to 2030:

1. Local demand and supply of recycled materials is strong.
2. Consumers and manufacturers are informed and empowered.
3. The circular economy is a key part of life in the region.
4. There are clear legislative, policy and funding conditions to drive investment in recycling in the region.
5. Regional research and development leads to innovation, pilots and new market entrants in the sector.

While the Grampians Central West Region has been suspended with the introduction of Recycling Victoria in place of the Waste and Resource Recovery Groups, the region was made up of 12 councils, including Moorabool:

Figure 2-4 Grampians Central West Region



The region covered a large geographic area, with 2 sub-regions - Central Highlands and Wimmera Southern Mallee. The Central Highlands has a concentrated population close to Melbourne metro areas with high-capacity transport connections, as well as good access to end markets for recycled materials.

By 2030, Central Highlands is forecast to grow by 17%, where higher rates of waste and recyclable materials are likely to grow. This will increase demand for sorting, processing, and storage infrastructure. Increased material transport out of the region will place added pressure on regional roads.

Grampians Central West has developed 6 key enablers to achieve their circular economy aspirations to 2030.

1. Improved infrastructure
2. Developing end use markets
3. Improved collaboration and communication
4. Behaviour change (industry and consumers)
5. Legislation, regulations, or standards reform
6. Other key changes including research and development, re-skilling and job training.

¹ [Grampians-Central-West-regional-circular-economy-plan.pdf](#)

The Ballarat West Employment Zone is investigating current trials and new projects to demonstrate value of circular economy initiatives, especially local processing and feedstock storage solutions to sort, clean and keep materials in the region.

2.3 RECOVERED MATERIALS MARKETS

2.3.1 Market Overview

Victoria, and Australia, still has a heavy reliance on the export of recyclable materials due to the shortfall in infrastructure coupled with the inhibited growth of markets for locally produced recycled content. Recycled commodity prices continue to be good with continual increases in the commodity values for recovered paper, plastics and metals, but not for glass². Government initiatives and investment in onshore processing, is expanding Australia's capacity to sort, process and remanufacture glass, plastic, tyres, paper and cardboard.

2.3.1.1 Glass

In April 2021 Visy announced the investment of \$35 million into an expansion of its glass beneficiation operations at Laverton and upgrades of glass packaging manufacture at Spotswood to boost glass recycling markets. The expansion of capacity is timed to coincide with the introduction of CDS. The growing market demand for recycled glass likely to flow through to higher value commercial rates for sorted glass.

Fulton Hogan are investing in a new regional glass processing hub to process glass into feedstock for asphalt at their Lara Asphalt plant to recycle 10,000 t glass for use in local roads.

Waste hierarchy principles preferences recycling glass back into more glass bottles and jars, rather than downcycling into road base or construction. The glass packaging collected through separated glass kerbside collections is of better quality for recycling back into bottles, however the CDS sourced glass will also be of a much higher quality than the material coming through commingled collection systems as sorted by MRFs.

Currently glass that is being collected separating via Council kerbside collections or drop-offs is being recycled into construction or local roads, with the intention of some Councils to switch to packing use when available.

The City of Ballarat moved to separate glass from mixed recycling in 2019, introducing a Pass on Glass system where residents have taken their glass to nine drop-off sites, with 3,860 tonnes of glass jars and bottles recycled by Visy in Melbourne where it is made into new glass bottles.

2.3.1.2 Paper and cardboard

The market for scrap paper and cardboard products has been strongly affected by Asian restrictions on waste imports since 2017–18, and weak market value of recycled and virgin paper products as well as fragmented and interrupted markets. From July 2024, Australia will regulate paper and cardboard exports through the implementation of a licencing and declaration scheme, increasing the prospects for higher levels of domestic recovered fibre processing in Victoria. Visy are investing in new drum pulper technology at their Campbellfield paper mill to recycle 95,000 t of mixed kerbside paper and cardboard each year.

2.3.1.3 Metals

Over the last decade, metals have remained relatively steady in tonnes recovered for reprocessing in Victoria. Metal recycling is sensitive to global metals prices, which have been relatively strong in recent years. About half of Australia's recovered metals are exported, including all aluminium and tin-plated steel cans. The remainder, particularly ferrous metals, are remanufactured in Australia. Some toxic (e.g. cadmium and cobalt) or precious (e.g. gold and palladium) metals are found in composite material products such as electronic waste.

2.3.1.4 E-waste

Most of the e-waste is dismantled into its various components here in Australia, some materials are sent overseas for final processing. Most batteries are sent to South Korea, while circuit boards and batteries go to Singapore for processing. Other components, such as copper, steel and plastics, are smelted here in Australia.

2.3.1.5 Soft plastics

In response to the collapse of REDCycle collections in November 2022, some councils offered drop-off facilities at their transfer stations. The Soft Plastics Taskforce, consisting of supermarket retailers ALDI, Coles and

² Sustainability Victoria's Recovered Resources Market Bulletin February 2022 Victorian Market Intelligence Project edition #19

Woolworths are developing an interim solution to restore community access to soft plastic recycling. An in-store collection pilot program is anticipated to be launched in late 2023 for select stores. Currently, Australia does not have the infrastructure to recycle the volume output of the Australian public.

Macedon Ranges Shire Council launched their kerbside soft plastics recycling collection trial in Romsey in 2022, where 2,246 properties are collecting soft plastics separately in the Council-supplied orange collection bag and placing it in the recycling bin on collection day. Soft plastics are sent to a specialist processor to make new plastic products locally. Ricardo is aware of Councils utilising APR's pyrolysis facility for their transfer station soft plastics. The reprocessing options for REDCycle collected soft plastics are undergoing repair and the TonerPlas facility is expected to be online in July 2023. This will likely enable REDCycle collections to resume.

2.3.1.6 Tyres

In 2020–21 the resource recovery rate for tyres was about 70%, split evenly between recycling and energy recovery. About 41% of end-of-life tyres are from passenger vehicles, 34% from trucks and 25% from off-road. Nearly all of the energy recovery was in export markets now comprising shredded tyre-derived fuels that meet a specification, whole tyres for reuse, large tyres for retreading or processed tyre material for recycling. Onshore processing of tyres is mostly for recycling - markets include road construction additives, playground flooring, sports surfaces and retaining walls.

2.3.1.7 Organics

Recent years has seen a significant growth in the volume of organics processing due to higher rainfall during La Nina weather pattern and increased FOGO collections rolling out across the state. Investment in upgrades of organic processing is happening at pace in response to the lack of capacity to meet the 2030 target of halving organics to landfill, and new EPA regulatory requirements for increase buffer distances and better compost product quality.

Sustainability Victoria have co-invested with 7 organic processors across the state to upgrade facilities, including Pinegro's Mt Wallace facility to increase capacity by 26,000t including FOGO. BioGro will also establish a new Regional Organics Recovery Facility in the Colac Otway region to process kerbside and commercial organics.

2.3.1.8 Textiles

In 2021, 860 kt of textiles such as clothing, carpet and manchester waste was generated in Australia, equating to 33 kg per capita, and increasing every year. The recycling rate for textiles is only 5%, most of which is a carpet recycling facility in Melbourne. The pathways for end-of-life clothing, being the major component of textile waste is growing. Reuse through donations greatly exceeds recycling at about 66%, of which about 60% is exported.

2.3.2 Existing re-processors

Current commercial arrangements are in place for each of the recoverable waste streams, as shown in **Table 2-8**. It is important to note that Visy, Pinegro and Maddingley Brown Coal are the only Council-held contracts, for comingled recycling, green waste, and general waste respectively. All other processors are sourced by the transfer station contractor of the day.

Table 2-8 Re-processor and destination

Waste Stream	Processor	Destination
Comingled Recycling	Visy	Plastic bales for export, some cardboard and paper reused locally, glass recycled locally.
Greenwaste	Pinegro Mount Wallace	Compost products sold locally
Paper and Cardboard	Suez Ballarat	Most components exported
E-waste	Infrabuild	Some components exported
Scrap Steel	Kings Marine Scrap Metal	Most components exported
Tyres	Tyrecycle	Half recycled locally, half exported for fuel

Waste Stream	Processor	Destination
Batteries	Kings Marine Scrap Metal	Most components exported
Light globes	Infrabuild	Metal components exported, glass recycled locally
Whitegoods	Degassed by Echofeet	Some components exported
Waste Oil	JJ Richards	Recycled into fuel
Oil Drums	Cleanaway	Repurposed or scrap metal

Visy's comingled recycling is processed at their Laverton facility, where plastics are baled for export, and most of the cardboard and paper is reused locally, glass is also recycled locally.

Pinegro's Mount Wallace facility is undergoing a \$1.6M upgrade to accept FOGO. A new Aerated Floor Composting System will better manage compost temperatures, moisture content, oxygen levels and odour. The upgrade will allow the processing of an additional 26,000 tonnes of organic waste each year and support 20 jobs during construction and a further 5 ongoing positions.

Tyrecycle collect end-of-life tyres and recycle 99% at their Somerton facility, by processing crumb and granules for construction and sporting grounds. About half of their product is exported for fuel.

Infrabuild are steel recyclers based in Wendouree, Ballarat. E-waste is typically broken down and metals recovered, while the plastics and other components are exported for energy recovery, similar to shredder floc.

Kings Marine Scrap Metal is based in Ballarat and buys scrap aluminium, batteries, brass, cans, copper, electric motors, stainless steel and cars, for processing, resale and export.

2.3.3 Future Needs

New requirements (in the *Recycling Victoria: a new economy* policy) for kerbside collections and processing service and standards to be regulated by Recycling Victoria, will have flow on impacts or synergies for MSC's transfer stations. These requirements are:

- Collection frequency to be at least fortnightly for commingled, organics and residual waste, four weekly for glass (MSC's preferred collection schedule has yet to be developed).
- Organics stream to include both garden and food organics possibly including designated compostable packaging and bags, dependent on organics reprocessor requirements.
- Glass bin to include CDS material, and food, wine, spirits packaging.
- Commingled to include all forms of fibre packaging, steel and aluminium packaging and all rigid plastics.
- Residual waste bin to be limited in size to constrain landfilling of recyclables. Exemptions for large households, and those with babies (generating nappies) are appropriate.

The packaging and retail industry will need to continue its drive to eradicate unrecyclable consumer packaging, including a total phase out of PVC, EPS and carbon black, and a decision on recyclability and associated recycling systems for all forms of polymer coated fibre packaging. It is noted that a facility in NSW has recently opened to process liquid paperboard. It is also expected that kerbside collections will be complemented by convenient drop off recycling locations for bulk cardboard packaging, expanded polystyrene and a wide range of durable items from books and clothing to electronics and bikes. This function is already performed by transfer stations to some extent. The future of specific waste streams is increased source separation, as evidenced by initiatives such as the Nespresso pod recycling arrangements, shoe returns through TreadLightly, and old textile return programs through stores such as Sheridan, H&M and Zara.

2.3.3.1 FOGO

Establishing and expanding the region's organics processing facilities is considered a high priority to facilitate the implementation of mandated FOGO service, supply and predicted demand for upcoming green technologies.

Pinegro's potential Mount Wallace facility upgrade to accept FOGO will enable increased capacity for MSC's predicted volumes.

2.3.3.2 *Glass*

Collections of glass will scale up as the mandate for separated glass collections rolls out across Victoria. This will require sorting and processing for glass to take advantage of growth as a resource for the region's infrastructure projects. Further to the kerbside collected and drop off glass streams, the introduction of the CDS in 2023 will create further glass streams requiring handling. There will also be a need to find locations for CDS depots.

2.3.3.3 *Paint recycling*

Paintback is a voluntary collection service using purpose-built collection and storage points at participating councils and commercial sites. The closest drop off points for MSC residents are Melton TS or Ballarat TS.

Paintback transports unwanted products from the collection point for treatment where the packaging and unwanted liquid are separated, and the containers are recycled. Solvent-based paint is used for energy recovery.

DIY and trade painters can take their unwanted paint and packing to Paintback sites, which accept up to 100 litres per visit stowed in containers of up to 20L.

Paintback is researching new ways to extract more value from the unwanted products to develop the circular economy.

2.3.3.4 *Fluorescent Globes*

Fluorescent light globes are reprocessed to recovery mercury primarily. In doing so, processing these globes also recovers phosphor, glass and metals. The reprocessing of these globes will continue to be required however few are now sold with most being replaced by LED technologies.

2.3.3.5 *Furniture*

The primary method of recovering furniture is resale. Furniture is often made from mixed materials and difficult to recycle without disassembly. Resale shops (or tip shops) with sufficient area available to store and display items are a key service for this waste stream. Furniture recovery will continue to be required at transfer stations. There are limited product stewardship initiatives developing, with Ikea one of the businesses offering to take back any furniture products that are no longer usable.

2.3.3.6 *Chemicals*

ChemClear³ relies on local councils to provide temporary sites for the ChemClear retrieval team during a campaign. Once a collection run is announced, registrants are notified about when and where they can drop off their chemicals with a program. ChemClear's registration data determines from which local government areas that it will visit to collect registered chemicals. Councils can establish more than one collection site in their region to help waste holders minimise their travel to a location.

ChemClear does not require Councils to hold, sort or store any chemicals under the program, ensuring all chemical waste stays with the owner of the waste until the day of collection, when it is then passed to the ChemClear team who facilitates the storage, transport and disposal with their licensed contractors. ChemClear provides communication and promotional materials to Councils and collection reports on chemicals received from their regions after the collection.

Detox your home⁴, is organised through Sustainability Victoria. Similarly based on demand via registrations, with no restriction on residents attending events outside their local area.

2.3.3.7 *Gas bottles*

Old gas bottles present a danger in the rubbish or recycling streams if they get compacted. Therefore, they require special handling. Gas bottles can be recovered for their metals content when source separated. This stream will continue to require management in the future.

³ [ChemClear](#)

⁴ [Dispose of household chemicals \(Detox Your Home\) | Sustainability Victoria](#)

2.3.3.8 Plastics

Soft plastics

Expanding soft plastic collection and processing capacity is also a key priority for the region. Several new players in the market are expanding processing, including GT Recycling Geelong who are investing in upgrades to take 10,000t more of plastics, including soft plastics, and APR who are progressing plans for a second pyrolysis unit to turn soft plastics into biocrude oil.

Hard plastics

A range of other companies located west of Melbourne, are also expanding to re-process more plastics:

Advanced Circular Polymers, Somerton – PET flakes 70,000 tpa.

Circular Plastics Australia, Laverton (Cleanaway-PACT Group) 20,000 tpa to make plastic food grade resin.

Circular Plastics Australia, Altona North (Cleanaway-CocaCola) to produce 1 billion PET bottles.

2.3.3.9 Expanded Polystyrene (EPS)

EPS has been an issue for the waste sector for some time. The material is light, can easily be windblown and therefore turn into visible litter and is also bulky making it uneconomic to transport. EPS is expected to continue to be an issue however there are emerging opportunities to melt EPS onsite into much more dense polystyrene. Melters are a feature of the upcoming Melton facility and the City of Yarra RRC.

2.3.4 Future Accessibility

Rural areas of Moorabool Shire Council have an aging population. Comparatively to Greater Melbourne, Moorabool Shire harbours a larger percentage of persons aged 70 to 74. The current and future transfer station network needs to consider accessibility for the elderly. In addition, access to this essential council service should ensure that people with physical and other disabilities can access the service. This may necessitate a higher level of service than currently occurs.

3. TRANSFER STATION NETWORK BETTER PRACTICE

3.1 BEST PRACTICE PERFORMANCE AREAS

Each of the facilities' performance was assessed against the *Guide to Better Practice at Resource Recovery Centres* (The Guide). The assessment of better practice during site operation and management focuses on five areas outlined below (Table 3-1).

Table 3-1 Five Better Practice Performance Areas

Performance Area	Descriptions
Risk management	Identifying hazards and controlling risks related to health and safety, the environment, emergencies, hazardous waste and dangerous goods
Meeting stakeholder needs	Meeting the needs of customers, the community, government, suppliers and other stakeholders
Financial sustainability	Achieving an acceptable balance between income e.g. from gate fees and expenditure
Smart materials management	Designing and managing a facility to maximise operational efficiencies
Future proofing	Ensuring that the facility has enough processing capacity and can meet future needs and challenges from changes in technology, legislation, population and other factors over time

For each TS, The Guide's - *Workbook 2* was used to assess better practice during site operation and management.

3.1.1 Financial Sustainability

The financial sustainability of a facility's long-term operation requires an acceptable balance between revenue e.g. gate rates, sale of recyclables, and operating costs. It is necessary to plan and respond to changes in costs and revenues brought about by external factors, including changes in the price for recovered recyclables, increases in landfill disposal costs, as well as changes to operating costs, like electricity and labour.

This performance measure has been assessed across all three transfer stations as one, given the sites all operate under the same financial model with the same reprocessors and end markets at play.

All three transfer stations operate at a loss of approximately 30%-50%, with Mt Egerton suffering greater losses in some years, according to data from 2019/20 to 2021/22. The network can be viewed as a service to the community, and it is unlikely that they will make a profit, given the large range of services provided. Comparatively, private transfer station operators have licence to strategically pursue services that allow for a better chance at profitability. While cost recovery can be pursued in some instances for public transfer stations, it is not always achievable. It is suggested that reduced losses be targeted, as pursuing cost recovery may lead to a reduction in services and decreased customer satisfaction as well as a reduction in non-tangible and non-quantifiable benefits.

Some sites (Bacchus Marsh in particular) were impacted by Covid-19 restrictions during the assessed period however in these cases the cost of disposing of waste also decreased.

Table 3-2 Performance assessment: Financial sustainability

Financial sustainability	Achieved?	Priority	Suggested improvements
Demand for end products	Y	M	Regular review of current and new buyers of recyclables
Internal operating costs	N	H	Continue to monitor operating budget
Collaboration & cost efficiencies	Partial	M	Pursue funding opportunities

The demand in end markets is steady and aligned to the current recyclable market offerings, which is further discussed in **Section 4.2**. It is good practice to stay informed and regularly reviewing market challenges and opportunities as overseas markets for unprocessed materials contract, and new local recycling infrastructure is being constructed and new players entering the market to recover more material streams onshore.

Keeping informed about the performance of commercial collectors and re-processors is also important as they are regulated by EPA and subject to compliance notices or potential closures from EPA. Contractors should be informing their customers if they are subject to any regulatory action – this should also be a robust clause in any contractual arrangement.

In the past, Sustainability Victoria (SV) has produced a regular Recovered Resources Market Bulletin, featuring an overview of kerbside materials flow and commodity prices. This report is currently migrating to Recycling Victoria and is expected to be published early 2023.

SV is also the agency overseeing several rounds of funding targeting local councils and community groups to help transition to a circular economy through the Victoria Government's circular economy policy, Recycling Victoria: a new economy. SV can also provide advice and support with projects the invest in the recycling industry. It is recommended that MSC keep up to date on funding opportunities that align with suggested improvements.

It is good practice to regularly review all utility costs and look for efficiencies with better environmental outcomes, such as energy use and greenhouse gas reduction options by using alternative energy sources. This appears to have been done in the Operations Review.

Councils are already meeting economies of scale by utilising the same providers across all three sites. There may be more regional collaboration opportunities with neighbouring councils for improved cost efficiency in transport, purchasing power and further economies of scale.

3.1.2 Future proofing

Factors such as legislation, technology and community expectations can change during the lifespan of a transfer station. Futureproofing involves identifying what is likely to change over time and planning for when changes are likely to occur. Consideration of how the facilities complement each other as a network and likely flow-on effects. Future proofing operations enables future opportunities to be exploited, e.g. upgrade plant and equipment to increase processing capacity and landfill diversion of incoming mixed waste. This also includes managing changes in compliance requirements or policy changes, e.g. product stewardship, or changes in composition and different material streams.

This performance measure has been assessed across all three transfer stations as one, given the sites operate as a network within the same market and regulatory environment.

Table 3-3 Performance assessment: Future Proofing

Future proofing	Achieved?	Priority	Suggested improvements
Forecasting – roles & procedures	Partial	H	Develop Standard Operating Procedures (SOPs) for managing emerging waste streams
End markets	Partial	H	Continue to review market developments for opportunities to re-sell materials
Transfer station network	Partial	M	Review further economies of scale or consolidation, as well as duplication of Bacchus Marsh
Legislative and policy changes	Partial	H	Review impact of proposed changes in buffer distances across all sites
Future expansion or post-closure	Partial	L	Develop a stakeholder communications and engagement plan

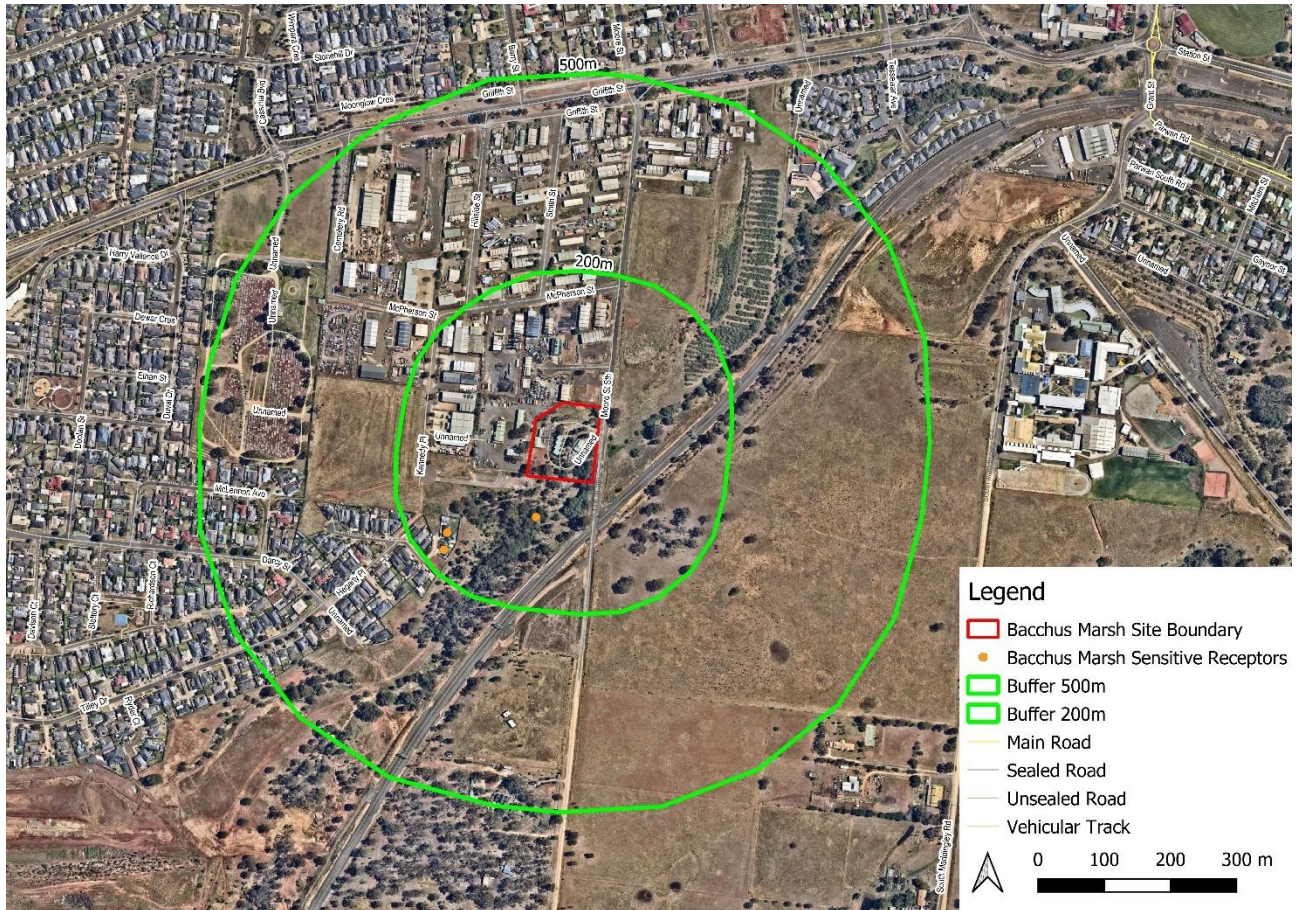
Standard operating procedures are useful for managing current and emerging material streams and can help track trends and monitor contamination levels. Recycling Victoria will also be developing new standards and guidelines to increase recovery rates - proposed legislative changes are consulted through the online [EngageVic](#) website. Updates on proposed new standards and changes can be received through registration.

The development of a stakeholder engagement and communications plan about the upgrades concurrently with upgrade plans should consider local community, planning authorities, EPA, current and future collections and re-processors and other stakeholders. Land use compatibility is also an area to keep track of with any residential areas closer to the facilities which can place pressure on operations. Other facilities in the region can also impact on operations, as has been demonstrated by the development and then closure of the independent facility in Bacchus Marsh.

3.2 BACCHUS MARSH

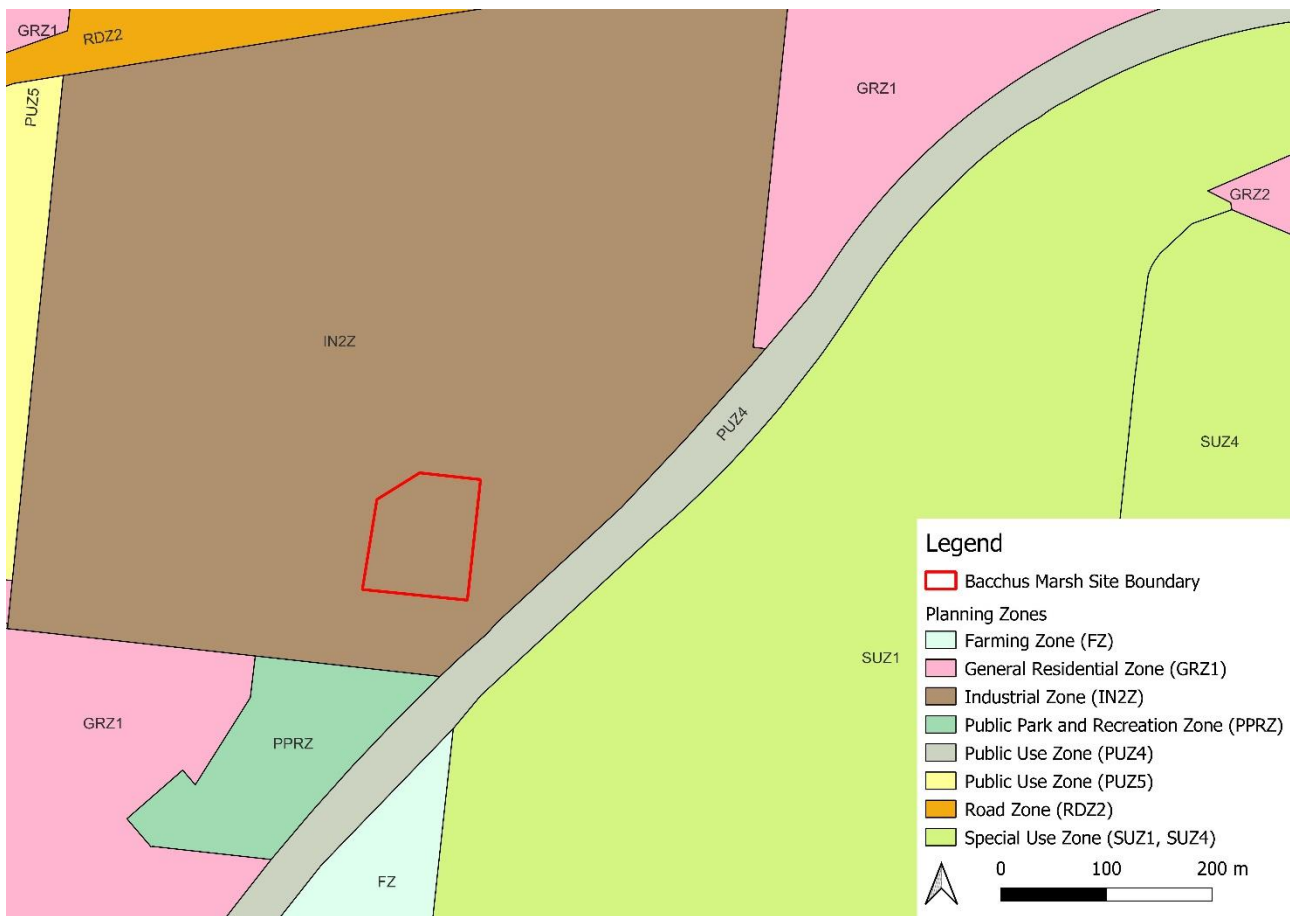
3.2.1 Site Location

Figure 3-1 Bacchus Marsh Site Location



3.2.2 Site Zoning

Figure 3-2 Bacchus Marsh Zoning Map

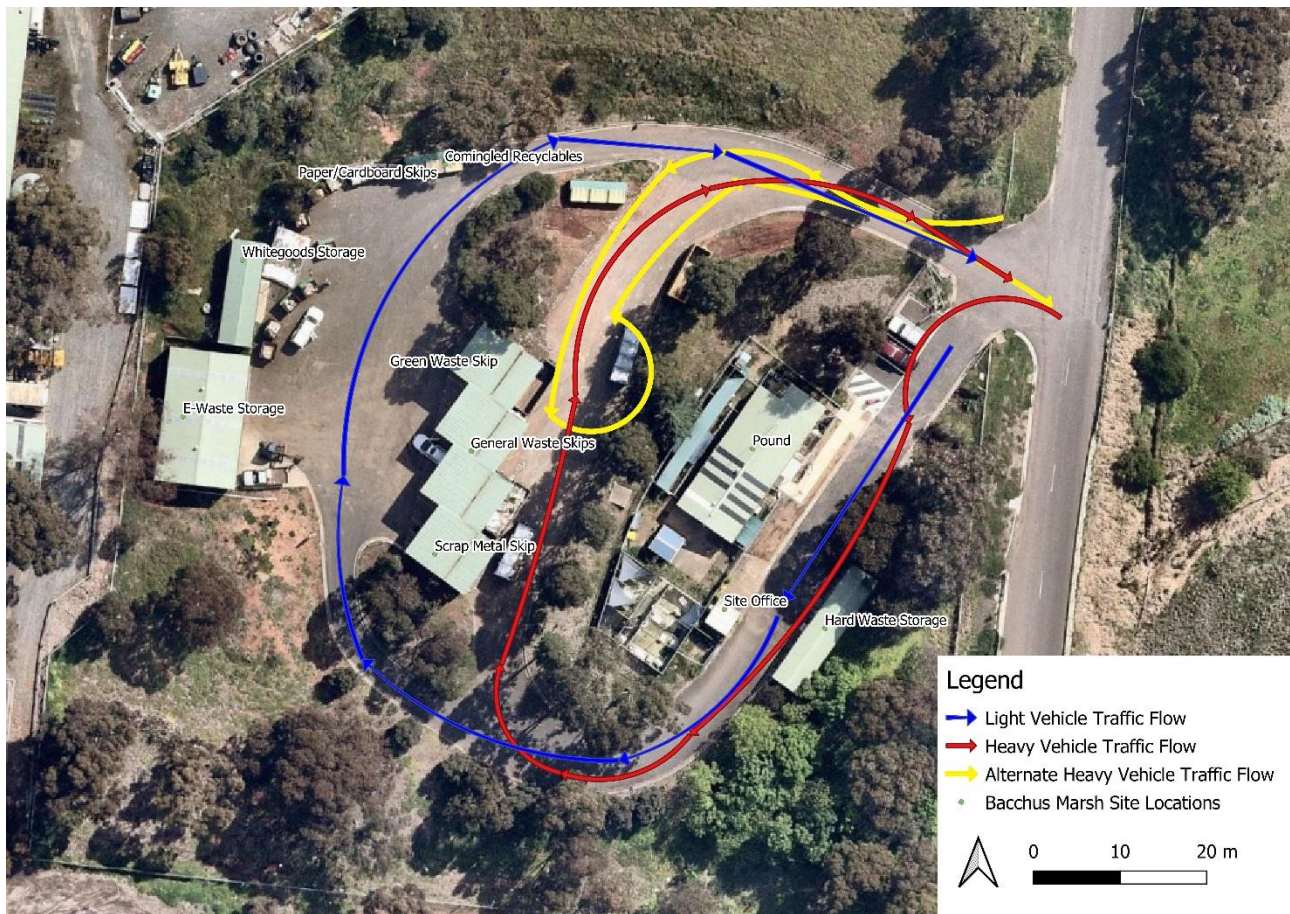


The Bacchus Marsh Transfer station is completely zoned within an Industrial Zone 2 Planning Zone. A retail premise sits under a Section 2 use in the zone, meaning a permit for development will be required for the use as a resale facility.

Operating hours are 10am-4pm Friday to Monday, closed Tuesday to Thursday.

3.2.3 Traffic Flow

Figure 3-3 Bacchus Marsh Traffic Flow



Separate traffic flows for both heavy and light vehicles ensures that the patrons and collection vehicles avoid crossing paths. Both heavy and light vehicles enter through the same direction and diverge at the southern end of the site for collection vehicles to access skips for pick up. This however happens after the initial drop off of free items including mattresses, recycling, whitegoods and motor oil. This may create some conflict between pedestrians and heavy vehicles at the Site Office.

3.2.4 Assessment of Better Practice

Bacchus Marsh TS receives the most visitors, vehicles and tonnages per year. Its location is adjacent to the most densely populated part of the Shire, servicing an urban area of an estimated 22,223 people in within the urban area with another roughly 7,000 people in the surrounding suburbs of the municipality.

According to the throughput of material managed, the Bacchus Marsh facility is classified as **Category 2**, receiving over 1,001 tonnes per annum (tpa). Category 2 is between 1,001 – 30,000 tpa. Categories are useful for benchmarking and comparing facilities against others of similar size.

The site is constrained in size which limits large infrastructural changes, although new FOGO and glass receival sheds are being constructed in the south-west corner.

Table 3-4 to Table 3-6 below present the assessment findings, i.e. whether the site achieves best practice, suggested priorities and improvements.

3.2.4.1 Risk management

Risk management processes cover hazards and risks to protect human health and the environment and considers compliance with legal duties required under environmental and OHS laws, including identifying and planning for unforeseen or emergency events. Given this was a site assessment only, the insurance arrangements were not assessed, but are important to have in place.

Table 3-4 Bacchus Marsh – Performance assessment: Risk Management

Risk Management	Achieved?	Priority	Suggested improvements
Regulations and legislation	Partial	H	Prevent oil leaks and spills
OH&S	Partial – storage overload of mattresses and tyres onto road access	H	Follow <i>Management and storage of combustible recyclable and waste materials</i> , EPA Publication 1667
Emergency Response	Partial	M	Identify areas for increased waste from emergency events.
Environmental	Yes	M	Lids or covers over bins when not in use
Hazardous and dangerous goods	Partial	M	Follow <i>Liquid storage and handling guidelines</i> , EPA Publication 1698

Bacchus Marsh TS meets most regulatory compliance requirements, however minor improvements would benefit, including fixing obstructed signage, improved storage and improved prevention of oil leaks.

3.2.4.2 Stakeholder needs

Understanding the needs of stakeholders creates a positive working relationship with everyone who is affected by the facility and will help address concerns before they become an issue or delay a project.

Table 3-5 Bacchus Marsh – Performance assessment: Stakeholder needs

Stakeholder needs	Achieved?	Priority	Suggested improvements
Regulations and legislation	Partial – new buffer distance	H	Seek alternatives for EPA, and engage stakeholders early re increases in buffer distance
On-site management	Yes	L	Retain as much vegetation when constructing new sheds to help screening and aesthetics
Service levels	Yes	L	Review operating hours for potential new re-processors, consider customer service/ layout improvements
Community expectations	Partial	M	Highlight convenience and cost in targeted communications with the community

Operating hours are suited for residents that work a regular Monday to Friday week, but given the site is closed Tuesday-Thursday, this may not suit potential future commercial re-processors to the site. Operating hours should be reviewed to align with future plans to meet the range of stakeholders.

EPA released draft guidelines for new separation buffer distances in December 2022, including increased distances for Transfer Stations accepting green waste/putrescible waste e.g. FOGO to 500 metres. This increase only applies to transfer stations accepting green waste or putrescible waste. The current 250-metre separation distance for nuisance dust will still apply to all transfer stations.

For Bacchus Marsh, which accepts green waste and is planning to accept FOGO, there is a risk of breach of this requirement, as the 500m distance reaches significantly more sensitive receptors. Council will need to engage these stakeholders and discuss with EPA to address this issue and seek alternative solutions. Alternatively, this could be further incentive for Council to source another site for the future transfer station of Bacchus Marsh.

Based on community feedback (further discussed in **Section 3.5**) there is a general positive reaction to the Shire including glass and FOGO collection options, with focus on convenience and cost, with 50% of respondents needing expanded communication on what can and can't be recycled. It is therefore important to get the right messaging about the balance of convenience and cost, and what can and can't be recycled.

Road flow and access provides enough pedestrian movement and single file car traffic. While individual skip bins are well signed, signage to help educate customers where certain wastes can be placed could be provided up front.

3.2.4.3 Smart materials management

Smart materials management involves optimising traffic flow and maximises recovery of recyclables from mixed waste loads – this can lower operational costs, as more waste is diverted from landfill.

Table 3-6 Bacchus Marsh – Performance assessment: Smart materials management

Smart materials management	Achieved?	Priority	Suggested improvements
Resource Recovery	Partial – contamination risk	H	Order of drop-off to follow waste hierarchy
Transport	Yes	L	
Procurement	Partial	H	Consider the purchasing of recycled content for any on-site consumables or equipment
Sustainability	Partial	M	Energy usage

The Bacchus Marsh TS traffic flow works effectively enough, but not efficiently. On an already cramped site, congestion can build leaving customers waiting to deposit materials in the correct bay. Ideally the first drop off points should be the higher value recyclables with the final drop off point for general waste. Transfer stations that operate well with high levels of resource recovery are moving towards “stations” for drop off where customers can access all the required disposal points in one location. This involves having a number of smaller bins for common items, in a “front of house” area, which staff then consolidate for storage and removal in a “back of house” area. This makes it simpler for customers to properly source separate materials. Careful design could enable a system like this at Bacchus Marsh. This would include having access to recyclable materials closer to the entrance or skip bins. Currently, cardboard recycling bins are opposite the sawtooth structure, causing customers to walk a large distance and cross traffic flow, to access.

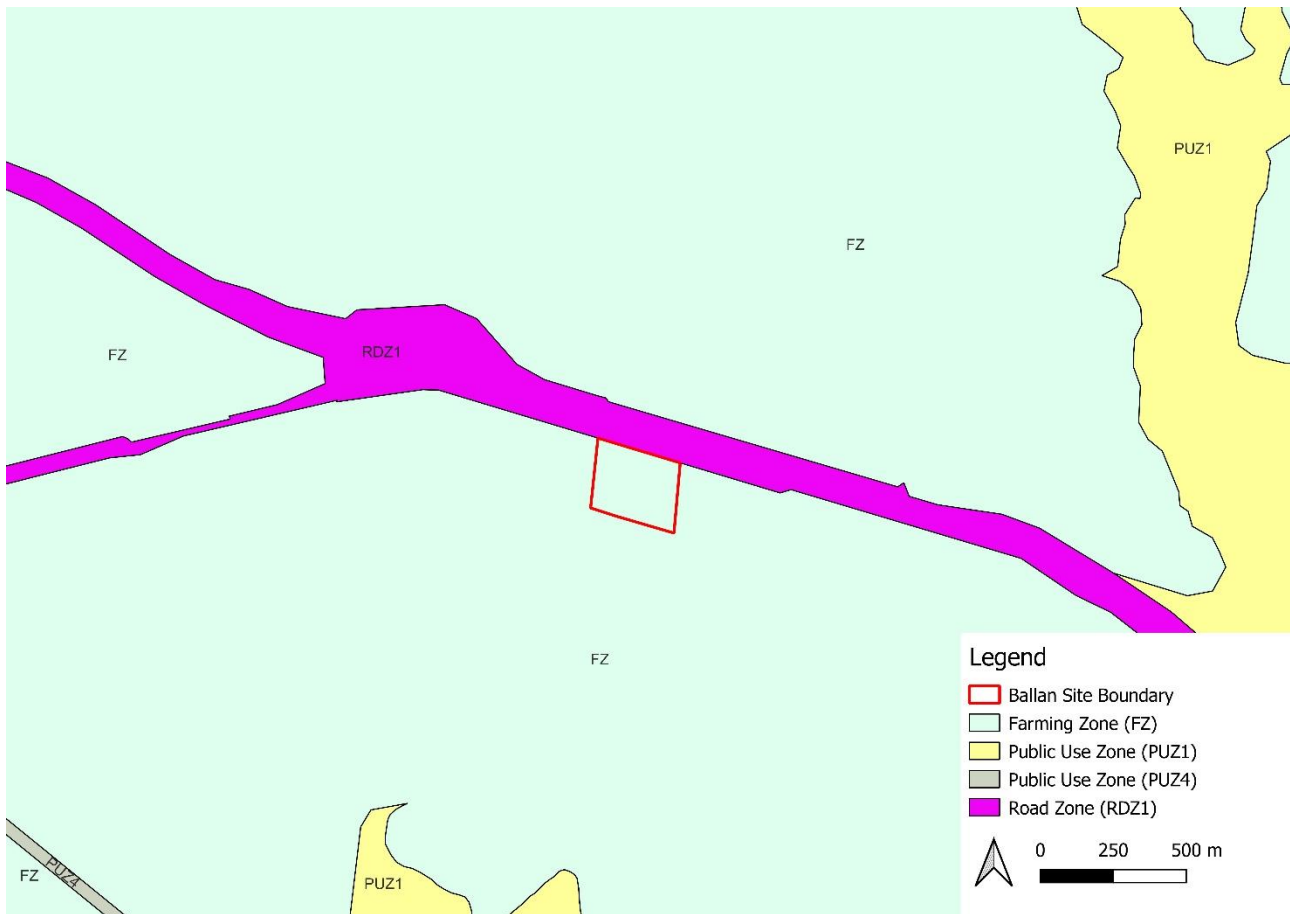
Overseeing customer activity to ensure the right materials are going into the right skip bins can help lower the contamination rate of material streams. This could involve improving visual access by rearranging drop off points to be closer to the higher value drop off points. The installation of a camera can also be a cost-effective deterrent measure. Having more staff onsite for assistance and adherence to best practice is advised.

Procurement of recycled content is one of the important pieces of the circular economy, and can help drive market demand therefore increasing the value of recyclables. Many councils have adopted procurement policies that consider the circular economy principals when purchasing materials and products, including consumables for staff amenities and office equipment. This can also extend to infrastructure upgrades and civil construction, road bases, etc.

Although energy usage on site might be low, the site aspect looks favourable for using renewable energy. Substantial greenhouse reductions can be achieved with the installation of solar panels, and alternative power could also be used to charge electric vehicles.

3.3.2 Site Zoning

Figure 3-5 Ballan Zoning Map



Operating hours are 1-5pm, Wednesday to Monday. Closed Tuesdays.

3.3.3 Traffic Flow

Figure 3-6 Ballan Traffic Flows



Traffic flow for both heavy and light vehicles are kept mostly separate with collection of large skips from heavy vehicles collected along the east perimeter of the site. Light vehicles enter the site via the main entrance, bypassing the Site Office to the left and continuing in a clockwise flow around the hard waste storage shed. Cardboard, commingled and other skips (as well as mattresses etc) are collected by heavy vehicles through the main entrance.

3.3.4 Assessment of Better Practice

Ballan TS receives fewer visitors and lower tonnages per year compared to Bacchus Marsh. Its location on Montville Rd off Western Hwy provides great access, and good buffer distances for a relatively larger site.

The Ballan facility is classified as **Category 1**, receiving less than 1,001 tpa, although it has received over 1000t in some previous years (e.g. 2016, 2017). Ballan's performance was also assessed against the better practice guide as above. Table 3-7 to Table 3-9 present the assessment findings, i.e. whether the site achieves best practice, suggested priorities and improvements.

3.3.4.1 Risk management

Table 3-7 Ballan - Performance assessment: Risk Management

Risk Management	Achieved?	Priority	Suggested improvements
Regulations and legislation	Partial	H	Prevent oil leaks and spills
OH&S	Partial – storage of combustibles	H	Follow <i>Management and storage of combustible recyclable and waste materials</i> , EPA Publication 1667

Risk Management	Achieved?	Priority	Suggested improvements
Emergency Response	Yes	M	Identify designated areas for increased green waste from emergency events.
Environmental	Yes	M	
Hazardous and dangerous goods	Partial	M	Follow <i>Liquid storage and handling guidelines, EPA Publication 1698</i>

Ballan TS meets most regulatory compliance requirements, where minor improvements would benefit, including fixing obstructed signage and improved storage to meet combustible guidelines. Signage to help educate customers where certain wastes can be placed could be provided up front.

Ballan has the greatest capacity for storing and managing emergency wastes due to the large hardstand areas adjacent to the closed landfill cell.

3.3.4.2 Stakeholder needs

Table 3-8 Ballan – Performance assessment: Stakeholder needs

Stakeholder needs	Achieved?	Priority	Suggested improvements
Regulations and legislation	Partial – new buffer distance	H	Seek alternatives for EPA, and engage stakeholders early re increases in buffer distance
On-site management	Yes	L	
Service levels	Yes	L	Review operating hours for potential new re-processors
Community expectations	Partial	M	Highlight convenience and cost in targeted communications with the community

Ballan's buffer distances will also increase under the updated regulations for green waste/putrescible waste e.g. FOGO to 500 metres, capturing a few more sensitive receptors. Council will need to engage these stakeholders and discuss with EPA to address this issue and seek alternative solutions.

Operating hours are 1-5pm Wednesday to Monday. Closed Tuesday. This suits residents that work a regular Monday to Friday week, but given the site is closed in the morning, may not suit potential future commercial re-processors to the site. Operating hours should be reviewed to align with future plans to meet the range of stakeholders.

Ballan has the greatest capacity to expand for receipt of materials due to the size of the site.

3.3.4.3 Smart materials management

Table 3-9 Ballan – Performance assessment: Smart materials management

Smart materials management	Achieved?	Priority	Suggested improvements
Resource Recovery	Partial – contamination risk	H	Increase visual access
Transport	Yes	L	
Procurement	Partial	H	Consider the purchasing of recycled content for any on-site consumables or equipment
Sustainability	Partial	M	Energy usage

The Ballan TS traffic flow works well. Site is large, which means limited visual monitoring, which can give rise to contamination.

Transfer stations that operate well with high levels of resource recovery are moving towards "stations" for drop off where customers can access all the required disposal points in one location. This makes it simpler for

customers to properly source separate materials. Ballan has sufficient area to consider configuring the site into a system like this.

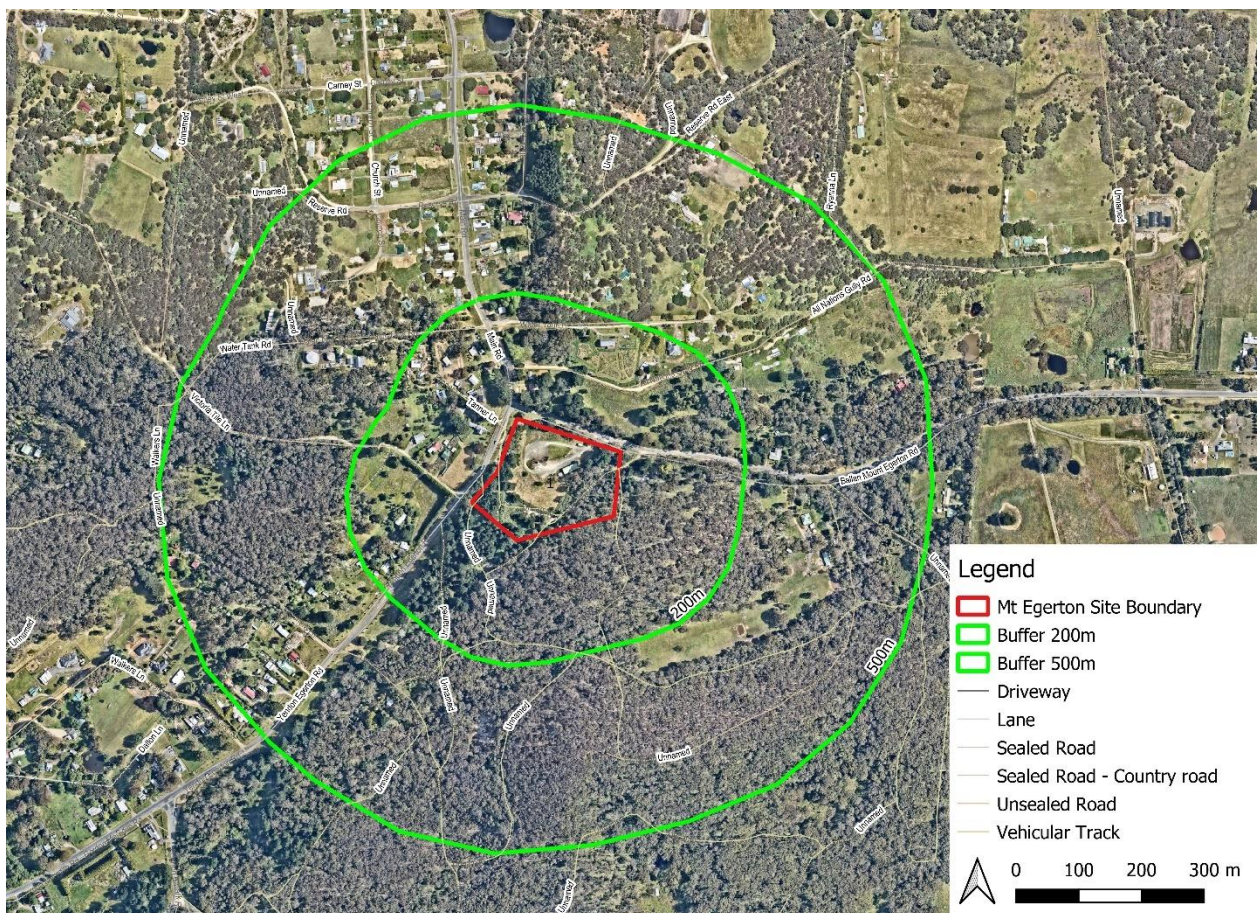
Although energy usage on site might be low, the site aspect looks favourable for using renewable energy. Substantial greenhouse reductions can be achieved with the installation of solar panels, and alternative power could also be used to charge electric vehicles.

There is an opportunity to enhance specifications for the operational contractor to increase circular economy principles and pursue higher order recycling or reuse opportunities.

3.4 MOUNT EGERTON

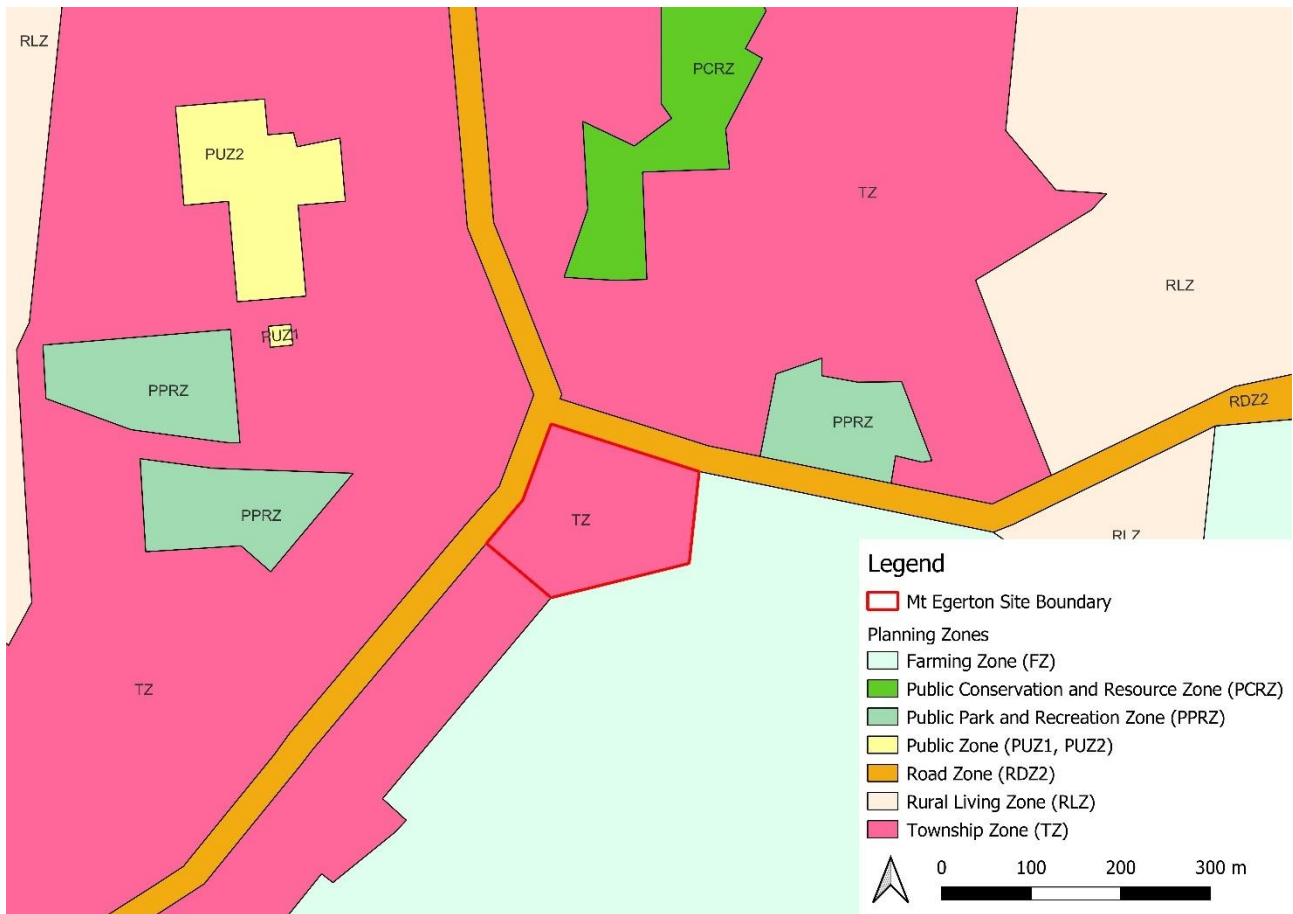
3.4.1 Site Location

Figure 3-7 Mt Egerton Site Location



3.4.2 Site Zoning

Figure 3-8 Mount Egerton Zoning Map



Situated within a Township Zone, a potential resale shop on the Mt Egerton site encompasses a Section 2 use, meaning a permit will be required to operate the shop on site.

3.4.3 Traffic Flow

Figure 3-9 Mt Egerton Traffic Flows



Traffic flow at the Mt Egerton site operates to cater to all vehicle types along the same anti-clockwise rotation. Despite the shared traffic flow, the design of the site is able to designate areas for patrons to safely unload without disturbing the traffic flow. The site's anti-clockwise flow is counterintuitive.

3.4.4 Assessment of Better Practice

The Mt Egerton Site is the most under-developed site of the three within the Moorabool Shire council. Built on a closed landfill and former quarry, topographically it is surrounded by steep hills on the southern boundary and sits below the road level to the north.

The Mt Egerton site is classified as **Category 1**, receiving less than 1,001 tpa. Mt Egerton's performance was assessed against the better practice guide. Table 3-10 to Table 3-12 below present the assessment findings, i.e. whether the site achieves best practice, suggested priorities and improvements.

3.4.4.1 Risk management

Table 3-10 Mt Egerton – Performance assessment: Risk Management

Risk Management	Achieved?	Priority	Suggested improvements
Regulations and legislation	Partial	H	Address rusting around shed, to prevent leaks and spills. Accepting only acceptable waste Address settlement under one of the skips

Risk Management	Achieved?	Priority	Suggested improvements
OH&S	Partial – storage of combustibles	H	Follow <i>Management and storage of combustible recyclable and waste materials, EPA Publication 1667</i>
Emergency Response	Yes	M	Identify designated areas for increased waste from emergency events.
Environmental	Yes	M	
Hazardous and dangerous goods	Partial	M	Follow <i>Liquid storage and handling guidelines, EPA Publication 1698</i>

Mt Egerton meets most regulatory compliance requirements, however minor improvements would benefit, including fixing signage and improved storage to meet combustible guidelines.

Signage to help educate customers where certain waste goes could be provided up front, and signage on the skips is minimal to non-existent.

Traffic flow could be improved to maximise recovery, where drop off for recyclables is first, after checking in with the site office/gate.

3.4.4.2 Stakeholder needs

Table 3-11 Mt Egerton – Performance assessment: Stakeholder needs

Stakeholder needs	Achieved?	Priority	Suggested improvements
Regulations and legislation	Partial – new buffer distance	H	Seek alternatives for EPA, and engage stakeholders early re increases in buffer distance
On-site management	Yes	L	
Service levels	Yes	L	Review operating hours for potential new re-processors
Community expectations	Partial	M	Highlight convenience and cost in targeted communications with the community

Buffer distances will increase for green waste/putrescible waste e.g. FOGO to 500 metres, capturing a few more sensitive receptors. Council will need to engage these stakeholders and discuss with EPA to address this issue and seek alternative solutions. This will include many of the Mt Egerton residents previously outside the buffer zone.

Operating hours are 12pm-5pm Saturday and Sunday. Closed Monday to Friday. This suits residents that work a regular Monday to Friday week, but given the site is closed during the week will not suit potential future commercial re-processors to the site. Operating hours should be reviewed to align with future plans.

3.4.4.3 Smart materials management

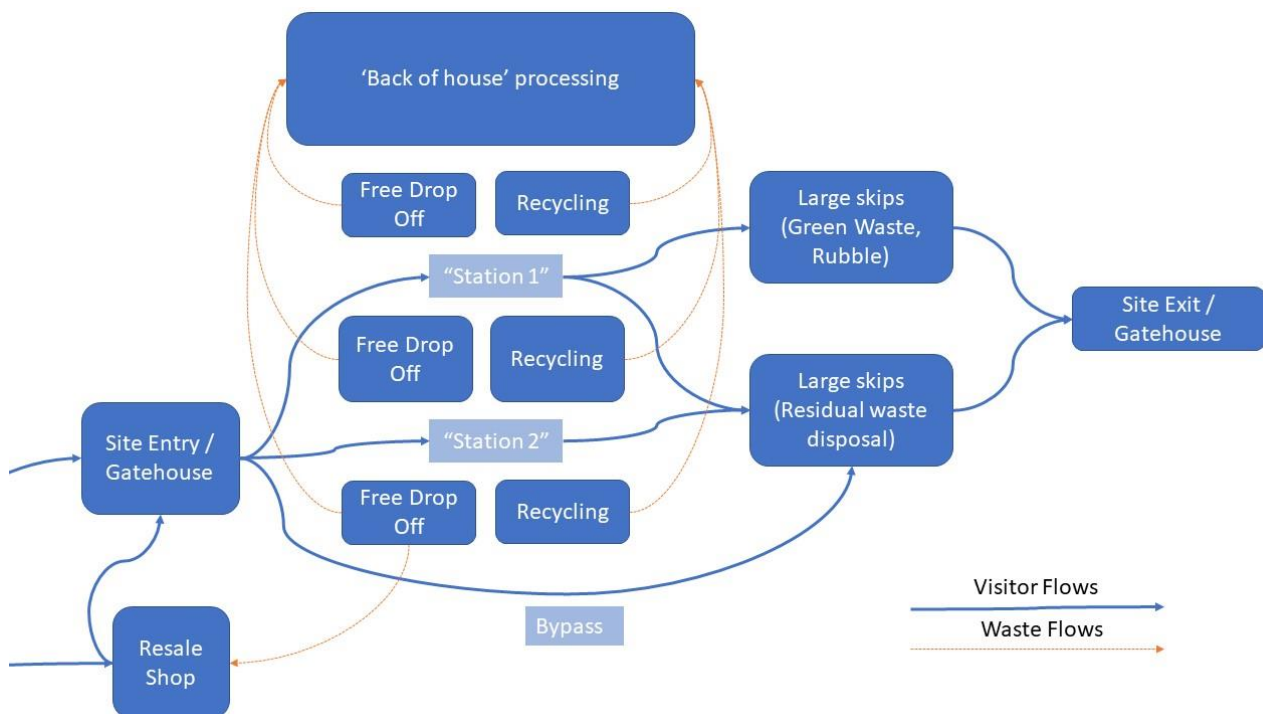
Table 3-12 Mt Egerton – Performance assessment: Smart materials management

Smart materials management	Achieved?	Priority	Suggested improvements
Resource Recovery	Partial – contamination risk	H	Increase visual access
Transport	Yes	L	
Procurement	Partial	H	Consider the purchasing of recycled content for any on-site consumables or equipment
Sustainability	Partial	M	Energy usage

The traffic flow could be improved to accommodate the site to receive recyclables first, to reduce risk of contamination. This would also assist with the visibility of resource recovery options.

A theoretical flow for a transfer station that might be applied to each of the sites is presented in Figure 3-10.

Figure 3-10 Transfer Station flow diagram



3.5 COMMUNITY FEEDBACK

The Community feedback as per the Moorabool Shire Council 2030 Waste and Resource Recovery Strategy Survey reveals a multipronged appetite to waste solutions across the entire council area. The responses are relatively broad ranging and highlight areas of improvement for the Shire's waste management.

Questions included an investigation of the people's response to the current services and opinion of potential future services. The survey also canvassed opinions on the Transfer Stations and the potential for a Resale Shop. Nearly 700 responses were received across the shire which has provided valuable feedback to MSC.

Paramount concerns raised by the community include:

- Illegal dumping
- Kerbside collection expansion
- Resale Shop Expansion
- Council to Constituent recycling communication

3.5.1 Illegal dumping

Illegal dumping is a large issue across all areas of the Shire, from both local and external sources (e.g. surrounding Council areas). Most people in the Shire have experienced the effects of illegal dumping, with 80% of respondents noting that they have seen illegally dumped materials within the Shire within the last year. The 2021 Moorabool Shire Council Waste Strategy Operational Review confirms that illegal dumping has increased. Attitudes towards enforcement of litter and illegal dumping are greatly shaped by the degree to which an individual sees it as a threat, with offenders believing that recourse for littering will not be followed through. Illegal dumping is a symptom of population growth, education deficits on the importance of waste recycling, and the avoidance of disposal fees at waste management facilities. As such, effects of the practice can increase fire risks, impact the health and safety of the population and surrounding environment and increase costs associated with reclaiming the dumped materials.

Currently the Community Safety team initially inspect incidences of illegal dumping to identify whether there are identifying materials in the waste that could lead to any enforcement action. Moorabool then have a two-person Litter and Graffiti crew that was established in 2021 with the responsibility for cleaning up incidents of dumping in the Shire.

Insights from an external study reveals the effect of community characteristics on illegal dumping rates (Masumoto, 2011⁵). The study concludes a positive correlation between the frequency of illegal dumping and the unemployment rate of a community. As such, frequency of illegal dumping can be explained by the socioeconomic conditions of a community. This signifies that increases in cost of disposal is a variable that increases instances illegal dumping. Illegal dumping also decreases as the cost of illegal dumping rises. The NSW EPA Illegal Dumping Research Report (2015) mirrors this, indicating that cost, convenience, and lack of alternative options for disposal are large proponents to illegal dumping, while fines for dumping were perceived to be too lenient and the risk of getting caught was too low for both industry and resident offenders.

According to Moorabool Shire Council datasets, since 2020, there have been approximately 650 counts of illegal dumping every year within the Shire. Most common was the dumping of household garbage, accruing a sum of 358 cubic metres of waste, though it is recorded across other waste types like household furniture and paper/cardboard. This is in line with the NSW EPA Report that indicated similar results of common types of waste dumped in their participating LGAs. In Moorabool, some of these dumping incidents have been traced to businesses from neighbouring Council areas.

*MWRRG's Illegal dumping prevention toolkit*⁶ recommends approaches on 'hot spots' and provides a template to draft an Action Plan, detailing preventative, pro-active and responsive measures. Formal interventions, like permanent collection bins and surveillance equipment may reduce illegal dumping. Other interventions may include public intervention campaigns to help change the culture on illegal dumping. However, it's cautioned that existing haphazard or "blitz" style advertising fails to enact long-term behaviour change. A longstanding and consistent engagement strategy, in collaboration with surrounding Councils is recommended. Further work would be required to develop an Action Plan surrounding education, including further investigation where other councils have seen positive impacts and recommend tailored approaches.

A review of the current arrangements for litter enforcement and contractual arrangements for the collection of dumped rubbish and litter may also find improvements for council consideration, including input from Councils contractor to gain an understanding of the collection process, scheduling, composition of waste, and the challenges to overcome.

Council should also tap into the Litter Enforcement Officers Network (LEON) to leverage the knowledge shared amongst council litter officers, including access to business case templates to enhance their own in-house litter and dumped rubbish response team. For example, Mornington Peninsula Shire has successfully established their own Litter Prevention Team to combat the increasing issue of illegally dumped waste. A total of 99 infringements were issued between 1 July 2021 and 30 June 2022, totalling over \$105,000.

An Action Plan for Litter and Illegal Dumping, incorporating the findings above, is recommended for Moorabool to develop.

3.5.2 Kerbside Collection Expansion

According to the Community Feedback Survey data, there is a general positive reaction to the increase of Council initiatives across the Shire including glass collection, FOGO collection and hard waste collection. However, there is notable rural constituent aversion to commuting long distances for drop off, if kerbside collection is unavailable. A large focus on convenience and price sensitivity is expected with the extension of such Council services.

3.5.3 Resale Shop Expansion

Of the Community responses from the Waste Survey conducted by the Moorabool Shire Council, 91% of Postal responders and 89% of Online responders agree that it is a worthwhile idea to explore. Given the spirit of the

⁵ The effect of community characteristics on the frequency of illegal dumping, *Environmental Economics and Policy Studies*, 2011, p177-193

⁶ Metropolitan Waste Resource Recovery Group, 2019, Illegal dumping prevention kit framework

community, they would like Council to work in conjunction with Op Shops, to avoid cannibalisation of community led solutions and values.

3.5.4 Council to Constituent recycling communication

Approximately 50% of respondents from the survey stated a need for expanded communication on what can and can't be recycled within the Shire.

4. RESALE SHED AND REPAIR SHOP

4.1 CASE STUDIES

Denmark Tip Shop, Hay, Western Australia

Established on the MacIntosh Road waste transfer station in 2001 by Green Skills, a non-profit organisation committed to developing and managing environmental projects that assist communities to effectively implement a vision for a sustainable future and with the approval of the Shire of Denmark, it diverted 100 cubic metres of waste from landfill in its first year of operation. It supports low-income families and community projects and operates with the support of six part-time paid employees, two 'work for the dole' workers, eight occasional volunteers, funding and in-kind support.

Serving a population of around 5500, the facility has undergone a few expansions with construction of an additional undercover area in 2003 and a new shed in 2009 to house larger items like furniture and whitegoods.

The site also houses a demountable building used as a recycling education facility with a classroom, secure storage area and kitchen and has an appropriate technology section that holds demonstrations for the use of worm farms and other technology such as a demonstration solar dryer, that will reduce waste and enhance sustainability.

In 2011, the facility indicated, through collected data, that 300 cubic metres volume of material was diverted from landfill. Other data recorded by Green Skills includes volume out (sales), volume to waste transfer area, and volume from waste transfer area, financial income for the day, number of batteries recycled.

Green Skill operates the Denmark tip shop on an operational budget of about \$40,000 per annum, but with funding totalling about \$150,000 for facilities and education programs over the past decade. During 2011 there was approximately \$75,000 spent on new infrastructure and educational programs and \$40,000 on operational costs. Assuming waste disposal costs of approximately \$150/tonne, this means that the facility approximately breaks even based on the diversion of materials from landfill, with any revenue from sales being profit or funding improvements.

Anglesea Waste and Resource Recovery Facility

The Surf Coast Shire is home to 37,000 people with the median age being 43 years. It's Anglesea RRF was established in 2013, diverts an estimated 144 tonnes annually of non-organic material from the waste stream. Facility has raised over \$200,000 for 20 local community groups and utilises 500 volunteers to help manage operation. The resale shed is run by the Anglesea Community House with the Anglesea and District Men's Shed typically staffing the "tip shed" at least once per quarter. Anglesea Resale Shed is open 10am-2pm Fridays, Saturdays, Mondays and Tuesdays.

The resale shed aims to: capture and sell reusable items that would otherwise end up in landfill, provide an ongoing source of income for local community groups, educate and strengthen the concept of sustainability within the community and complement the second-hand sales shops that currently operate in the region.

The diverted goods comprise approximately of:

- 50% Furniture – beds, couches, dressers, tables, chairs, wood heaters etc.
- 20% appliances – fridges, washing machines, dishwashers etc.
- 10% miscellaneous – bikes, toys, picture frames, canoes, car-trailers, surfboards etc.
- 10% building materials – window frames, tiles, flooring, timber, roofing, doors etc.
- 10% unique items – jet ski hulls, boat hulls, aircraft luggage containers, spa tubs etc.

The success of the site's operation and management hinges on the number of locals who have a good working relationship with the council; people who frequently engage with the community groups and ensure the shed is staffed effectively.

The benefits for the community of the resale shop include extending the life of the landfill through diversion of bulky items, alternative funding source for community groups, offering affordable items to community members in need and reducing carbon dioxide emissions from the landfill as well saving energy and water from the manufacturing of new materials.

4.2 BUSINESS FEASIBILITY

4.2.1 Porter's Five Forces

It's important to understand both physical parameters for site plans of a resale shop, but also business viability. An analysis of Porter's Five Forces Framework allows for understanding key sources of competitive pressures of an industry. These forces include, competitive rivalry, supplier power, buyer power, threat of substitution and the threat of new entry into a market.

4.2.1.1 *Competitive rivals*

Op shops within the Shire exist in both Ballan and Bacchus Marsh. Additionally, constituents that live within the far western and northern regions utilise Op shops and Resale shops attached to Transfer Stations outside of the Shire boundaries, most notably Ballarat and Trentham.

4.2.1.2 *Potential for new entrants*

A Resale Shop could be replicated and is a common feature of many communities, however a Resale Shop at a transfer station has advantages in the supply of material. Therefore, while the barriers to entry are low, there are potential advantages that a Resale Shop has that limits the potential for new entrants that do not already have an established source of materials to sell.

4.2.1.3 *Supplier Power*

The exercise of supplier power includes factors such as flow of materials from constituents of the shire, and making sure that stock is turned over and supply is sufficient. To assist, sellable goods from other Transfer Stations in the Shire could be transferred to the Resale shop site.

4.2.1.4 *Buyer Power*

Factors influencing buyer power include the ability for customers to find what they are looking for in locations such as Facebook Marketplace, "Buy, Sell, Swap" groups and existing Op Shops within the region. Potential buyers will include those who are already coming through the Transfer Station, but traffic flow will need to remain high enough and the trip needs to be convenient enough for long term viability.

4.2.1.5 *Threat of Substitutes*

Like Competitive Rivalry, the threat of substitutes refers to the likelihood of customers finding an alternative way of achieving the same outcome as proposed by the resale shop. This arises when potential customers find it easy to switch to another alternative if you are no longer meeting their needs. Potential substitutes include Facebook Marketplace, "Buy, Sell, Swap" groups and existing Op Shops although these can be addressed in innovative ways, such as Hepburn Shire's use of Facebook (see below).

4.2.2 Unique Selling Proposition

The Unique Selling Proposition concept reveals a clear distinction between competitors and justifies a product to a potential buyer, in contrast to other avenues.

The resale shop needs to distinguish itself through concept and make it clear to potential buyers why they are better than the competition/worth travelling to other than out of convenience given its proximity to the Transfer Station.

Unique selling propositions identified within the Community Feedback show that Op shops within the area hold limited space and refuse large furniture items. This gap in the market would allow the Council Resale shop to have a unique foothold in the market. However, furniture requires large areas of space for storage and display and would need to be considered when selecting an appropriate site.

4.2.3 Pricing Structure/Strategy

Recovery and repair centres would do best to adopt an economy or medium-value pricing strategy. Price and quality will be considerations for any potential customers and is imperative to marry customer expectations of price with quality of goods. If operating as a competitor or alternative option to the existing Op shops within the Shire, then pricing needs to be fair to cover costs but also to remain competitive.

4.3 OPERATIONAL NEEDS

Ongoing operational logistics and costs will need to be accounted for, for the running of the retail shop. The need to address the market gap for furniture items means that the facility will need a large (500-1000m²) covered area, preferably indoors. There are examples internationally of facilities that function as a resale shop for building materials (similar to a demolition yard but run from donations). This may also be a useful market gap. In addition, the site will need a space for vehicles with trailers to park, both for drop off and for purchase.

The site will need to accommodate a “back of house” drop off/donations function, which will also cater for minor repairs or cleaning. This area will also be required to allow materials to be transferred to the landfill bins at the transfer station area for unsaleable or damaged items.

As all donations will need to be inspected to ensure that they are of sufficient quality to be resold, staffing at the site will need to include at least one staff member receiving and processing donations and at least one staff member at the retail function. It is therefore suggested that the Resale Shop will require a minimum of three staff.

In addition to this, where a Resale Shop is integrated with a Mens Shed and/or Repair Café, the repair functions will also require space and staffing. Repair Café Ballarat⁷, as a local example, holds repair events monthly. It is anticipated therefore that the repair functions should be ancillary to a Resale Shop, which will require regular, accessible and predictable opening hours that allow the general public to access the facility outside of working hours (i.e. weekends) as well as some weekdays.

Finally, if selling used electrical goods, there are requirements regarding labelling, defined by Energy Safe Victoria (ESV). These are slightly different to the test and tag requirements for electrical equipment in use. ESV's website⁸ provides a summary of the requirements.

If the item of electrical equipment is tested for safety, the requirements set out in AS/NZS 5761 apply and the item must be tagged as per the requirements of AS/NZS 5761 (see below);

SECOND-HAND EQUIPMENT
COMPLIES WITH AS/NZS 5761:2011
Testing performed by
Date
Instructions provided – Yes/No (Delete non-applicable option)

If the item of electrical equipment is not tested for safety, that the item of in-scope electrical equipment is—

- labelled or tagged as second-hand equipment or with the word “used”; and
- accompanied by information stating that the item of in-scope electrical equipment has not been tested for safety.

Second hand dealers require registration with Consumer Affairs, however charitable, benevolent or philanthropic organisations are exempt, in accordance with the *Second-Hand Dealers and Pawnbrokers (General, Exemption and Record-Keeping) Regulations 2018*. Sale of the following items are also exempt from the provisions of the Act:

- clothing, including footwear.
- kitchenware, including pots, pans and crockery (but you must be registered to trade in electrical or electronic appliances).

⁷ <https://repaircafeballarat.com.au/>

⁸ <https://www.esv.vic.gov.au/industry-guidance/electrical/appliances-equipment-and-manufacturers/selling-appliances-and-equipment>

- most domestic whitegoods including refrigerators, freezers, washing machines, clothes driers, ovens and ironing presses (but not including portable or camping refrigerators or microwave ovens).
- cutlery and glassware, including bottles, where the price paid for the goods by the second-hand dealer is not more than \$100.
- goods collected under a local government recycling scheme.
- cans of any kind.
- waste plastic and waste paper materials.
- salvaged building materials including doors, window frames, tiles, bricks and timber.
- factory seconds.
- books, magazines and periodicals.

These exemptions notably do not include furniture, however in this case the “goods collected under a local government recycling scheme” item may apply. The *Second-Hand Dealers and Pawnbrokers Act 1989* also requires second-hand dealers to retain some goods for seven days before selling them, to assist police to track and locate stolen goods.

The development of a Resale Shop is a specific skillset often found in social enterprises. Outlook Environmental are one example of specialist operators. Many Councils partner with local charities and Non-Governmental Organisations (NGOs) to ensure that the Resale Shop functions benefit the local community. As there are many potential partners, and many potential benefits to the Resale Shop functions, it is suggested that MSC consider the preferred purpose of the facility, including defining the preferred social and environmental outcomes (for example, maximising product repair, or providing employment support for people with disabilities). This will help to limit the scope of the facility and enable a focussed procurement for the service.

4.4 RECOMMENDED INVESTMENT

Given that there is a potential market gap for the resale of bulky items, it is recommended that MSC pursue a Resale Shop that targets this market. This would also ensure the maximum impact on reducing landfill volumes at the transfer stations. However, this strategy would also require the construction of a large undercover, probably indoor, facility. The target market for operators of this facility will be social enterprise, who often do not have access to funding or capability to construct such a facility.

It is therefore suggested that MSC develop a location for the facility, including addressing any planning permission issues, followed by pursuing a partnership with a Social Enterprise for the establishment and operation of a Resale Shop.

The future capacity issues at the Bacchus Marsh TS need to be considered, and a replacement location for this site could be an opportunity to establish a successful Resale Shop.

5. OTHER IMPROVEMENT OPPORTUNITIES

In an effort to transition to a circular economy and achieve the goals to avoid waste creation, recover more materials, and protect the environment and community, the Moorabool Shire council requires an implementation of solutions that harness existing leverage points within their waste system and expand offerings that give extrinsic value to the community and the environment, with the purpose of 'shared meaning making' as a conduit for large-scale community change. How the people perceive, value and interact with the natural world will fundamentally shape the goals and paradigms that underpin the existing waste system.

Interventions are also contingent on the need to future-proof the Shire's environmental targets despite external factors such as change in government, population growth, or a change in tender contractors. As such, our recommendations are divided by overarching goals and aim to engage both shallow and deep leverage points that target the parameters, design, and intent of Moorabool's greater waste system.

Many of the interventions are based around process rather than technology, working with community and contractors to make the most of the existing facilities and services.

5.1 SUBSIDIES ON WORM FARMS, HOME COMPOSTING FACILITIES, AND CHICKENS

Worm farms, home composting and the purchase of chickens are alternative public-led interventions for those both with and without the kerbside collection option of FOGO. Subsidisation of new household infrastructure that rewards constituents for expanding their personal sustainability efforts could assist in reducing waste generation.

The UrbanHenTO Pilot program has been an example of an international initiative with a trial conducted across four boroughs of Toronto began in 2019. The program has been extended and was completed in late March 2023. A participant feedback survey has been conducted that will help inform a staff report due in April 2023. Majority of stakeholders and residents have already indicated support for a city-wide expansion of the program provided that additional requirements were in place to support animal health and welfare and reduce public health risks.

In Australia, Canterbury-Bankstown Council in New South Wales undertook a "Household chicken and food waste" trial in 2020. Partnering with City Chicks Sydney and screening participants with eligibility criteria that ensured the wellbeing of the chickens, Council provided participating households with two chickens, a chicken coop, pellet and scratch mix and a food caddy to collect food scraps. Participants also agreed to attend training to care for the chickens. So far, feedback has been positive.

It should be noted that these pilot programs have operated in high density urban areas. The dispersed population of Moorabool could work advantageously given the peri-urban setting and increased space. Some residents may also already utilise chickens at home as a mediation for food scrap waste. A pilot program is suggested, in line with MSC's Waste Management Strategy.

5.2 WASTE CONTAMINATION LEVELS

Waste contamination levels as outlined in the MSC Waste Services Operations review reveal that there is a relatively high level of organic material contamination found in the kerbside garbage bin. The implementation of FOGO services for kerbside collection will ultimately aim to reduce a considerable amount of organic material from entering landfill. In addition to new services, continued education that leverages the new standardised templates for bin types and materials should assist in reducing contamination across all bin types by ensuring consistent and clear communication to residents.

5.3 FUTURE FOGO PROCESSING

Food Organics storage onsite at all transfer stations is underway with the construction of open wall shelters on all existing Transfer Stations. The aim for these shelters will be to store FOGO from residents before transfer for processing offsite. Organics are the primary material landfilled in the waste stream in the Moorabool Shire and requires focus to ensure that the upcoming transition to kerbside FOGO services is successful. The presence of dedicated locations in all Transfer Stations will assist with this.

5.4 BICYCLES

The mixed materials of bicycles make stripping parts difficult and inconvenient for constituents using the transfer stations for proper disposal, and so many end up in landfill. Bikes4Life or Bicycles for Humanity take donations for bicycles that are in working order or easily fixable though rusted bikes would not be accepted. Other options include ReCranked in Ballarat; an initiative specialising in revamping old, unwanted, unused or broken bicycles. Suitable bicycles could be set aside and held for collection. These could alternatively be resold through a Resale Shop.

5.5 CONCRETE AND BUILDING RUBBLE

Currently, none of Moorabool's transfer stations operate to accept concrete as a waste stream. In line with the waste data audit, no concrete has been reported at any of the three transfer station sites, however rubble has been. Despite communication within the waste strategy, it is feasible that customers may still dump unallowable materials at the transfer stations due to poor communication, lack of oversight from site staff or carelessness. To combat this issue, we advise a multi-pronged approach that utilises existing concrete recyclers in the area such as Ballarat Concrete Recyclers. This should be communicated to the Moorabool residents. Additionally, updating tender contract specifications to ensure unacceptable materials are disposed at the cost of the contractor could add legal buffer to proper waste disposal on site. Finally, adding a location for receipt of this material may be beneficial. Paying landfill fees for heavy materials that have no alternative disposal location on site could be avoided. Further investigations into the viability of diverting this material to recycling should be undertaken.

5.6 BUILDING MATERIALS

The receipt of building materials such as timber, plasterboard, plastics and metals as a dedicated stream is an opportunity to further divert materials. Many of the surrounding transfer stations take building offcuts and offer them for resale, while a dedicated stream of construction/demolition material would be highly recoverable, if separated from other waste at the transfer stations.

5.7 ELECTRONIC/ELECTRICAL ITEMS

The recovery of electronic items (E-waste) is already underway at MSC's transfer stations. Further recovery of electrical items is typically undertaken by treating these items as scrap metal (e.g. microwaves, toasters etc). In order to progress this stream to a higher order of recovery, these items could be diverted to a resale shop (subject to the safety and compliance measures identified in **Section 4.3**).

5.8 GARDENING TOOLS

There are a range of garden tools, from highly durable steel and wooden implements through to electrical equipment. While these may be resaleable, care must be taken with batteries on electrical equipment. Older and vintage gardening tools and agricultural equipment could simply be diverted to a Resale Shop if available, as could many electrical items.

5.9 CLOTHING AND TEXTILES

Adding clothing bins on Transfer Station Sites can keep clothing and textiles out of landfills. MSC could consider partnering with a stewardship program like King Cotton Australia or Upparel, who provide onsite bins that will take both wearable and non-wearable textile waste.

Alternatively, Textile Recyclers Australia are based in Ravenhall and offer services for both second life and end-of-life cycle opportunities for textiles. The effectiveness of this process will be dependent on the level of supervision and customer compliance, and separation of second life vs end-of-life textiles would be helpful. Anecdotally, less than 20% of the material placed in charity bins is resaleable, with the vast majority requiring reprocessing or disposal.

5.10 DETOX YOUR HOME EVENT

The annual Ballan Detox-your-home event allows all Moorabool residents to drop off hazardous chemicals free of charge for processing. A business case could be developed to determine appetite for permanent need. This would need to include analysis of online registrations, actual turn out and amount of chemicals recycled versus costs of onsite collection and transfer. However, given the location of a permanent site at Ballarat it is considered unlikely to provide significant additional value compared to ad-hoc events as currently happens.

5.11 MULCH COLLECTION SERVICES

Stockpiles of mulch, created from the processing of green waste from storms, sits on the Ballan transfer station site. With sufficient management of quality, this could be advertised for public pick up.

5.12 FUTURE GLASS PROCESSING

Though glass accounts for only between 1% and 3% of total waste collected at each Transfer Station site, it's fate percentage to landfill is over 50% for all Transfer stations. The introduction of a Glass Bin for kerbside collection in existing collection areas will inevitably reduce the levels of glass in high density areas. The Victorian CDS is planned to be rolled out in 2023 and will not include all glass types. Avenues for handling glass outside of the CDS could include local glass-crushing or exporting residual glass to a processor outside the Shire boundaries. Following introduction of glass services, a feasibility study into local re-processing of non-CDS glass should be considered.

5.13 CONTAINER DEPOSIT SCHEME

The future container deposit scheme that is to be implemented across Victoria will see Moorabool Shire Council needing to manage the integration of CDS depots across the community for collection of eligible containers. The utilisation of the Transfer Stations as hubs for such a scheme, alongside alternatives like areas with high foot traffic will drive constituents to collect the monetary value of their containers. Utilising the CDS scheme within a Transfer Station will create a Community Hub, with the aim of enticing customers to the transfer station while concurrently altering behaviours to utilise the other services of the Transfer Stations.

5.14 EXPANDED POLYSTYRENE

Some councils have had successes with EPS collections and reprocessing. City of Moonee Valley recently researched the feasibility of establishing an on-site circularity solution for recycled EPS with good results. The main challenge is the need for a large, enclosed area to receive and process such a light-weight material that is easily wind-blown. City of Yarra operate a successful melter for EPS, which requires an indoor area and 3-phase power, however substantially reduces the storage volume required and minimises litter. The new transfer station being developed by City of Melton will also employ this technique.

5.15 TRANSFER STATION LAYOUT REDESIGNS

The existing transfer stations within the Moorabool Shire, though spacious and well organised, can be improved by the reshuffle of recycling amenities that reinforce Transfer Station user behaviours. Most notably, Bacchus Marsh, Ballan, and Mount Egerton are limited by either spatial constraints or poor layout management that doesn't intuit customers to sort recycling first from other waste. There are opportunities to create "stations" for users that encourage rapid source separation from a single location rather than having to carry waste or move a vehicle between dropping off different material streams.

5.16 COMMUNITY EDUCATION

Integrated, systems-oriented thinking requires the attention of human actors and their social, and political behaviour to navigate social-ecological complexity. How people perceive, value and interact with the natural world fundamentally shapes the goals and paradigms underpinning how an average person operates within that system. The reinforcement of connection between person and nature is imperative to long-term shared goals of the population of the Shire.

Though some residents of the Shire are granted exemptions to burn waste, the practice increases environmental inequalities through the dispersion of emissions, increases the risk of fires and stymies the progression of more sustainable waste management alternatives.

A program to develop and normalise resource recovery at transfer stations focussing on connection and leveraging the education resources developed by Sustainability Victoria is suggested.

5.17 ESTABLISH COMMUNITY-COUNCIL ENVIRONMENTAL INITIATIVES

Stewardship programs like ‘Detox your Home’ are already established within the Shire, but new programs that establish a shared outcome between Council and constituent will be necessary to achieve environmental outcomes. This could include sharing resources recovered with community groups (for example, Central Goldfields Shire residents are entitled to one free bag of compost annually), and it is a potential model for the Resale Shop.

5.18 COMMUNITY-LED ENVIRONMENTAL COMMITTEE

Similar to other Victorian LGAs such as Monash, Yarra Ranges, and Maroondah, have a community environmental committee, the Moorabool Environment and Sustainability Advisory Committee. This could be used to increase impact of Environmental targets by further utilising the bridging the gap of knowledge between community expectations and knowledge of environmental and sustainability issues as well as acting as advocates and conduits between the broader community and Council activities and objectives.

5.19 INVIGORATE THE COMMUNITY

Establishing a community-led environmental committee will aim to restructure the flow and access of information. This will aid in refocussing the intent of the waste system and help establish shared goals for the future development of both the waste and environmental systems. As part of the Grampians Central West Regional circular economy plan, the implementation of behaviour change programs within the community is a priority for the Moorabool Shire.

The Moorabool Engagement Hub aims to foster this type of two-way communication already by involving community feedback on development projects. Likewise, the creation of the Growth Management Committee and Development Assessment Committee goes some way in harbouring community relationships. It is advised that Council adopt a similar approach for the transfer station network. Engaging with local environmental and social non-government organisations may also be beneficial, particularly in establishing a Resale Shop.

We understand that this recommendation is time intensive, and its establishment and effectiveness will be contingent on long-term investment on Council’s part.

5.20 AMEND TRANSFER STATION OPERATIONS

Deeper system characteristics like the inclusion of community input will help shape and constrain the types of interventions available on shallower levels that effect the parameters of the existing waste network.

Practical recommendations that are advised include the reorganising of the Transfer Stations to better segregate recyclable materials and landfill materials. With existing infrastructure, full layout overhaul is impossible, yet available, incremental changes may yield better adherence to best practice. Considering the amount of paper and cardboard materials failing to be properly recycled across all MSC’s transfer stations, innovation to optimise customer behaviour change is an appropriate measure. This would involve moving cardboard bins in line or before the sawtooth bins, which does not occur at any of the sites. The changes could also include establishing multiple “stations” for dropping off materials including cardboard, recyclables, E-waste and small appliances/metals. Display of the recyclable bins will aim to lower the ‘afterthought’ for customers who may be inclined to ‘dump and go’ (see **Figure 3-10**). Additionally, communicating to customers a request to separate their recyclables prior to transporting it to the transfer station with the expressed benefit of ‘reducing their costs’ would be a beneficial approach to reducing landfilled recyclables.

There is potential to include separation of wood/timber and textiles in these “station” setups, as key materials with existing routes for resource recovery. Recovery of textiles in particular could include partnering with NGOs.

5.20.1 Change in Allowable Materials

Generally, we advise Moorabool Shire Council to not expand their existing list of Allowable materials in the short term and instead continue to rely on neighbouring Council waste networks to continue processing these types of waste. There are substantial networks nearby including assets in Ballarat, Melton and Wendouree that perform the function of accepting a broader range of materials. We also advise to update customers and constituents regularly with a transparency of waste processes that the Council undertake. The Shire needs to establish a robust network of information sharing that clearly defines where constituent waste goes as well as communicating recommendations of alternative avenues for waste streams that the Council does not accept.

However, given the large amount of masonry waste being accepted to the Moorabool transfer stations, it may be advised to introduce a commercial and industrial bin on all sites. Existing, neighbouring channels are not being utilised by customers and whether it's an issue of communication or oversight, large amounts are still being recovered and landfilled. Recovery of these materials could be mitigated by better staffing of the sites, however, an alternative could be increasing the recovery on councils end by introducing a bin for rubble, concrete and bricks.

5.20.2 Pricing Structure

Despite community feedback outlining the want for reduced fees at the Council transfer stations, we advise that Moorabool Shire Council keeps the existing pricing structure including charging incoming waste by the size of the vehicle rather than moving to a metre cubed pricing structure. Pursuing a change may affect overall customer satisfaction with the Shire's Transfer Station sites and perceived value of the service. The data from the audit shows that there is sufficient flexibility in the current pricing scheme to account for the variation in volumes and weights being delivered, and the current pricing structure also maintains ease of use for residents who can have confidence in the cost of their visit without having to understand the volume/capacity of their vehicle. There is potential to include a "Large Ute" category to account for the increase in vehicle sizes in the market, however there was limited evidence of large utes being a significant segment, with only one of this type of vehicle being observed during the audit. Initiatives that subsidise high-impact or high-volume waste at certain periods of the year are a successful strategy. Like the November 'free green waste' initiative, Council could implement an approach to tackle tyre waste, which makes up a large portion of the illegal dumping volume.

5.20.3 Updating Tender Specifications Contracts

Finally, we advise Moorabool Shire Council to re-evaluate tender agreements with Transfer Station contractor. With less than two years before the existing contract's expiry, it is in Moorabool Shire councils' best interest to modernise the Management and Operation of Transfer Station tender agreements to incorporate Sustainability requirements including environmental considerations, circular economy, and innovation requirements from the contractor. Additionally, Tender agreements that enforce the cost of disposal of unacceptable materials on the contractor will create a financial incentive to adhere to proper waste processes.

5.20.4 Increasing staffing onsite

Staffing onsite at all transfer stations are minimal. Bacchus Marsh has two full time staff onsite with one at the tipping face and one stationed at the office. Ballan and Mt Egerton both only have one staff member onsite during operating hours. Efficiency, especially in peak period times, is low at Bacchus Marsh. In addition, further supervision of materials disposal at both Ballan and Mt Egerton would assist in improving recovery rates.

5.21 ALTER HARD WASTE COLLECTION

Baw Baw Shire Council aimed to replace their hard waste service from previously issued hard waste vouchers with rates notices to a free annual 'at call' kerbside hard waste collection service and free transfer station drop off for all residents. It is recommended for MSC to adopt a similar approach that allows for up to two cubic metres of acceptable hard waste. This option could only be available for residents with existing kerbside collection services though households that don't have a kerbside collection service should be eligible for Do-it-Yourself Transfer Station Delivery for up to two cubic metres of hard waste that will be accepted for free at any Council operated transfer station.

Paid 'at call' hard waste kerbside collection as an additional service could also be considered by the Council for any eligible resident. A nominal fee can be charged with a discount rate for pensioners and concession

card holders. The Community Feedback suggests mixed results for dealing with hard waste, though with the changing landscape of waste solutions, it is imperative that the Council aim to provide equitable services for an aging population and those constituents with mobility difficulties.

The service model for a hard waste contract should reflect the needs and aspirations of the local community and align with council's policies for service provision and waste and resource recovery objectives. Clear linkages showing how a kerbside hard waste collection service can be implemented as a broader strategy to reduce the incidences of illegal dumping, and providing clear instructions to residents about how much hard waste they can place out for collection, how it should be presented, and what they can't place out as hard waste is a key step that should be taken to discourage dumping behaviour.

We understand that this proposed change is significant, and it is recommended that financial costings be evaluated alongside a cost/benefit analysis beyond the financial impact.

6. TRANSFER STATION NETWORK STRATEGY

The current transfer station network is focussed around the larger population centres. This is generally suitable, with Mt Egerton located to service the rural west of the Shire. Additionally, surrounding Council facilities in Melton, Ballarat and Wendouree as well as some smaller centres provide sufficient coverage for the Shire. However the Bacchus Marsh facility, which manages the majority of the population, is space constrained and under pressure from population growth in the catchment.

It is recommended that Moorabool Shire consider strategies to mitigate the pressure on this site, including planning for establishing a new site to service growth, as well as investigating opportunities to utilise the Ballan transfer station more effectively, given its available space. The Ballan site is approximately 20 minutes' drive from Bacchus Marsh which is not ideal for encouraging use of the site. Where facilities are too difficult to use, illegal dumping may become more common. This will also become a factor as the Bacchus Marsh site becomes busier with the anticipated new developments occurring.

It is suggested that the current suite of services provided by the Transfer Stations is sufficient, however effort could be expended in maximising resource recovery within the current scope. The most likely method for achieving this is to establish clear expectations and KPIs in a transfer station operating contract. There are two years remaining on the existing contract, suggesting that it is time to commence planning for a new procurement approach.

There are a range of developments occurring externally that MSC will be required to consider. The introduction of FOGO and glass collections has required investment in the transfer stations already, and the imminent introduction of the Container Deposit Scheme will also provide an opportunity to host return locations. Other than these changes, any additional recovery of material streams should be opportunistic (e.g. locating textile bins at Transfer Stations) and aligned with changes to the layout of the sites.

Ricardo suggests using the period between the current and future transfer station operating contracts to trial layout changes including moving cardboard skips closer to the front of site, reversing the traffic flow at Mt Egerton and trialling "stations" where residents can pull up surrounded by the necessary bins to dispose of recyclables.

Finally, progressing the opportunity for a Resale Shed will require a planning assessment, including potentially re-zoning the Ballan site, or a part of it, to enable the activity to occur. This should be followed by consultation with potential partner social enterprises to identify the appropriate size and type of building for a Resale Shop, which can then be constructed by MSC.

6.1 DELIVERY MODEL

The majority of the opportunities identified in this report relate to the optimisation of the operational processes at the transfer station sites, as well as ensuring that communication is conducted effectively in relation to waste management at the transfer station sites. These changes can be conducted within the current delivery models, however it is recommended that the specification for the Transfer Station operations contract be rewritten to cater for a range of changes including:

- Acceptance of FOGO and the associated requirements to manage residence time of this waste.
- Potential for the integration of CDS receipt at the sites

- Incentives for operators to introduce new streams and minimise waste to landfill.
 - These could include materials with existing product stewardship schemes or collection infrastructure, as noted.
- Likely scenario of a separate Resale Shop function on one of the sites
- Potential introduction of a new location (either replacing or supplementing the Bacchus Marsh site)

The increase in resource recovery entailed in these improvements will improve the financial performance of the transfer stations as well, as the second highest cost for all sites (following the operations contract cost) was the disposal of residual waste. Most, if not all, of the diversion activities have a lower cost than sending material to landfill.

Given that there are already budgetary pressures on Council's operation of the Transfer Station network, and the evidence presented in Section 2.1.2, there is no substantial reason to move to a metre cubed pricing structure rather than charging incoming waste by the size of the vehicle. Pursuing a change may affect overall customer satisfaction with the Shire's Transfer Station sites and perceived value of the service. The data from the audit shows that there is sufficient flexibility in the current pricing scheme to account for the variation in volumes and weights being delivered.

There are two activities that will require consideration of a specific delivery model:

1. Establishing a resale shop
2. Supplementation of the Bacchus Marsh site

6.1.1 Resale Shop

Feasibly, the Ballan Transfer Station would be the most appropriate site for the location of a Council run 'tip shop'. Given its current infrastructure and space, the Ballan site is a central location to the Shire, houses existing, transferable infrastructure, and operates publicly six days of the week. The Mount Egerton site, though spacious, is untenable due to low visitor numbers and its isolated geography within the Shire. Bacchus Marsh Transfer Station, though localised to a high-density area, suffers from cramped spacing.

A Resale Shop at Ballan is limited by the existing planning and zoning arrangements for the site. There are three options to enable the site to house a Resale Shop.

To pursue the ability to incorporate a "tip shop" onsite as ancillary to a transfer station, it is advised that Moorabool Shire Council should obtain a legal opinion which can be lodged in support of the application, as it may be unlikely to succeed if the use is specifically prohibited in the zone.

To work around the limitations in the current zoning, another possible option is to apply for a materials recycling use on the site (which can include retail). This would enable retail to be added as a secondary use. If necessary, this use could occur on part of the site with the balance of the site being used for transfer station. This use would provide flexibility for Moorabool to process a variety of wastes for retail and other outlets, rather than solely transfer the waste as currently occurs.

Finally, Council can apply for planning rezoning of the Ballan Transfer Station site. Altering the site to a Special Use Zone or similar will allow for Moorabool Shire Council to eventually expand the site's capability to engage as also a retail premises.

The establishment of a Resale Shop will require engagement with social enterprise. the skills associated with operating a facility are different to project managing the construction of infrastructure. While it would be possible for MSC to request that the private sector establish a facility, the participants in such a tender would be limited and may include a small number of larger social enterprises such as Outlook Environmental. It is therefore suggested that the following process be followed:

- 1) Conduct targeted engagement with resale shop operators in surrounding municipalities.
- 2) Establish the required building size and characteristics that would attract a wide range of potential operators.
- 3) Pursue planning permission to enable the facility to be constructed at Ballan.
- 4) Procure the construction of the facility.
- 5) Run a multi-stage tender for the facility operations, with the ability to source material separately to, or directly from, the transfer station network

- a) Include assessment criteria relating to social and environmental benefits.

6.1.2 Supplementation of sites

It is suggested that MSC commence planning for the supplementation of transfer station capacity in Bacchus Marsh. This could include:

- Identification of suitably zoned sites in new development areas
- Review of existing Council landholdings, including depots, to identify whether there are sites that are suitable or that could be augmented to provide a site.

It is not yet necessary to establish a procurement model for this site as the model will depend on the site's location and potential co-benefits, whether it replaces or supplements the Bacchus Marsh site (i.e. the scale of the facility) and also whether the facility can be established in conjunction with other industry (e.g. CDS, glass reprocessing etc) which may enable a circular economy precinct to be established similar to the mooted facility at City of Ballarat.

As part of this strategy, consideration should be given to the potential to increase the number of sawtooth bays at both Bacchus Marsh and Ballan, The addition of more locations to drop garden waste, and/or easier options to drop cardboard without lifting it into a bin, could increase the capacity of both sites and defer the need to replace or supplement the Bacchus Marsh site.

6.2 OTHER IMPROVEMENT OPPORTUNITIES

A summary of the improvement opportunities identified and endorsed in this report is provided in **Table 6-1** below.

Table 6-1 Summary of Improvement Opportunities

Opportunity	Priority 1-High to 3-Low	Action	Section
Other stewardship schemes	2	Nespresso, TreadLightly, Paintback,	2.1.4, 2.3.3
Signage	1	Redesign and replace any old/missing signage for customer ease at Mt Egerton Site	2.1.1.3
Emergency Waste allocation	1	Review site layouts and identify strategy to manage large volumes of Hard Waste, Putrescible waste (general household waste), Soil and Sediment, and Vegetative Waste	2.1.5
Gas bottles	2	Commence accepting gas bottles at the transfer station network	2.3.3.7
SOPs	2	Develop SOPs for emerging wastes	3.1.2
Stakeholder Engagement	3	Develop a stakeholder communications and engagement plan for future upgrades	3.1.2
Oil leaks and spills	2	Address and prevent oils leaks from motor oil facilities	3.2.4, 3.3.4
Litter and Illegal Dumping Action Plan	2	Address community culture educational deficits with long-term, considered advertising approach – consider removing some financial barriers to frequently dumped items/low socioeconomic constituents. Increase surveillance and reprimanding techniques.	3.5.1

Opportunity	Priority 1-High to 3-Low	Action	Section
Resale Shop strategy	1	Consider the preferred purpose of the facility, including defining the preferred social and environmental outcomes to shape procurement stages	4.3
Chickens, Worm Farms, Composting	1	Support households to access alternatives to managing food waste on the property, run a trial to determine the most effective intervention	5.1
Bicycles	3	Consider approaching a bicycle rescue initiative to canvass interest in picking up salvaged bicycles.	5.4
Concrete and building rubble	2	Investigate options to either not accept or not landfill these materials.	5.5
Wood	2	Consider salvaging for a Resale Shop	5.6
Gardening Tools	3	Consider salvaging for a Resale Shop	5.8
Clothing and Textiles	2	Consider partnerships with charities or other social enterprises to install and manage clothing bins.	5.9
Glass	2	Investigate feasibility of local re-processing of glass into sand or road base.	5.12
CDS	1	Review site layouts and prepare a strategy to host CDS locations, including space allocation and delivery model.	5.13
EPS Melter	2	Investigate EPS quantities received, consider siting a melter inside existing sheds.	5.14
TS Layout re-designs	2	Consider the traffic and waste flows across all sites and try to optimise these	5.15
Community engagement	2	Consider a targeted approach to engage stakeholders	5.19
Allowable materials list	3	Adjusting this list is best done in conjunction with a new contract cycle.	5.20.1
Tyre collection	2	Consider a “free tyre day” similar to the annual free greenwaste initiatives	5.20.2
Tender specifications	1	Commence redeveloping the contract specification for Transfer Station operations	5.20.3
Staffing	2	Trial the addition of staffing during peak periods	5.20.4
Hard waste collections	2	Investigate “at call” hard waste collections	5.21
Resale shop rezoning	1	Obtain legal opinion regarding the ability to apply for an ancillary use (i.e. retail shop) to support any planning permit process	6.1.1

Opportunity	Priority 1-High to 3-Low	Action	Section
Sawtooth bay expansion	1	Investigate the business case for sawtooth bay expansion at both Bacchus Marsh and Ballan	6.1.2

7. CONCLUSION

In order to futureproof waste operations in the shire, Moorabool Shire Council need to adopt a circular economy approach to waste infrastructure. While there is a large portion of material is currently disposed of as garbage, there is opportunity to increase resource recovery of materials as well as improve services to assist in reducing illegal dumping.

The Moorabool Shire Council currently operates a network of three transfer stations, at Bacchus Marsh, Ballan and Mt Egerton. These three sites cater for different areas of the shire, with Bacchus Marsh serving the suburban areas of the east of the shire, and Ballan and Mt Egerton in more rural locations.

In order to adequately service the projected population in the Bacchus Marsh transfer station catchment, by 2041 a duplication of this site will be required. As the site is currently highly constrained, a new site may be necessary. The growth in this catchment is driven by the development of the Parwan, Merrimu and Hopetoun Park areas as well as growth in the Bacchus Marsh township. While growth will only be approximately 17.6% by 2026, by 2031 the site is unlikely to be able to cope with the expected increase in patronage.

It is recommended that Moorabool Shire consider strategies to mitigate the pressure on this site, including planning for establishing a new site to service growth, as well as investigating opportunities to utilise the Ballan transfer station more effectively, given its available space. The Ballan site is approximately 20 minutes' drive from Bacchus Marsh which is not ideal for encouraging use of the site. Where facilities are too difficult to use, illegal dumping may become more common. This will also become a factor as the Bacchus Marsh site becomes busier with the anticipated new developments occurring.

While similar rates of growth are expected in the Ballan township, the transfer station there also services the surrounding rural areas. The site is also large and is likely to be able to service the growth in patronage.

The Mt Egerton area is not expected to show significant growth and therefore it is not suggested that this location will have any pressure on its capacity to service the surrounding area.

Analysis of the current waste streams across the three Moorabool Transfer Station sites reveal that approximately 30-40% of the material deposited is recovered. Key opportunities for recovery of additional streams include masonry and rubble, rubber and textiles and wood / timber. It is understood that masonry and rubble is not supposed to be received at the sites, however it was delivered at both Bacchus Marsh and Ballan according to the audit. This may imply that there is a demand for the receipt of this material of which could be mitigated through existing, local recycling networks as well as tender specification updates that allow this material to be received.

The loads delivered to the transfer stations were typically mixed, with only organic wastes and cardboard showing up regularly as "single stream" deliveries. Glass, Wood and Masonry (e.g. bricks and rubble) almost never showed up as single stream deliveries, while Metals, Electrical and Rubber/Textiles occasionally did. This suggests that dropping off organic wastes and cardboard are common drivers of a visit to a transfer station, as well as delivering a mix of materials (general waste or a few different recyclables).

It is suggested that the current suite of services provided by the Transfer Stations is sufficient, however effort could be expended in maximising resource recovery within the current scope. The most likely method for achieving this is to establish clear expectations and KPIs in a transfer station operating contract. There are two years remaining on the existing contract, suggesting that it is time to commence planning for a new procurement approach.

Progressing the opportunity for a Resale Shed will require a planning assessment, including potentially re-zoning the Ballan site, or a part of it, to enable the activity to occur. This should be followed by consultation with potential partner social enterprises to identify the appropriate size and type of building for a Resale Shop, which can then be constructed by MSC.

The establishment of a Resale Shop will require engagement with social enterprise. The skills associated with operating a facility are different to project managing the construction of infrastructure. While it would be possible for MSC to request that the private sector establish a facility, the participants in such a tender would be limited and may include a small number of larger social enterprises such as Outlook Environmental. It is therefore suggested that the following process be followed:

- 1) Conduct targeted engagement with resale shop operators in surrounding municipalities.
- 2) Establish the required building size and characteristics that would attract a wide range of potential operators.
- 3) Pursue planning permission to enable the facility to be constructed at Ballan
- 4) Procure the construction of the facility.
- 5) Run a multi-stage tender for the facility operations, with the ability to source material separately to, or directly from, the transfer station network.
 - a) Include assessment criteria relating to social and environmental benefits.

Finally, it is suggested that planning for the transfer station network should consider specific support for emergency wastes including:

- Hard Waste
- Overflow organic (garden) waste.
- Putrescible waste (general household waste)
- Soil and Sediment
- Vegetative Waste

7.1 SUMMARY OF HIGH PRIORITY ACTIONS

Table 7-1 High Priority Actions

Opportunity	Action
CDS	Review site layouts and prepare a strategy to host CDS locations, including space allocation and delivery model.
Signage	Redesign and replace any old/missing signage for customer ease at Mt Egerton Site
Emergency Waste allocation	Review site layouts and identify strategy to manage large volumes of Hard Waste, Putrescible waste (general household waste), Soil and Sediment, and Vegetative Waste
Resale Shop strategy	Consider the preferred purpose of the facility, including defining the preferred social and environmental outcomes to shape procurement stages
Chickens, Worm Farms, Composting	Support households to access alternatives to managing food waste on the property, run a trial to determine the most effective intervention
CDS	Review site layouts and prepare a strategy to host CDS locations, including space allocation and delivery model.
Tender specifications	Commence redeveloping the contract specification for Transfer Station operations
Resale shop rezoning	Obtain legal opinion regarding the ability to apply for an ancillary use (i.e. retail shop) to support any planning permit process



T: +61 3 9978 7823

E: plc.admin@ricardo.com

W: ricardo.com