

Recovered Resources Market Bulletin

February 2022

Victorian Market Intelligence Project (edition #19)



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Release date

February 2022

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Summary

This is the 19th of a series of monthly to quarterly bulletins that Sustainability Victoria (SV) and the Waste Management and Resource Recovery Association of Australia (WMRR) are distributing to the community, industry and government to provide an overview of the kerbside recycling markets in Victoria.

The bulletins provide an up-to-date picture of the health of resource recovery markets, ongoing challenges and opportunities in the sector, and details of the actions taken to improve the resilience and recovery performance of kerbside recycling.

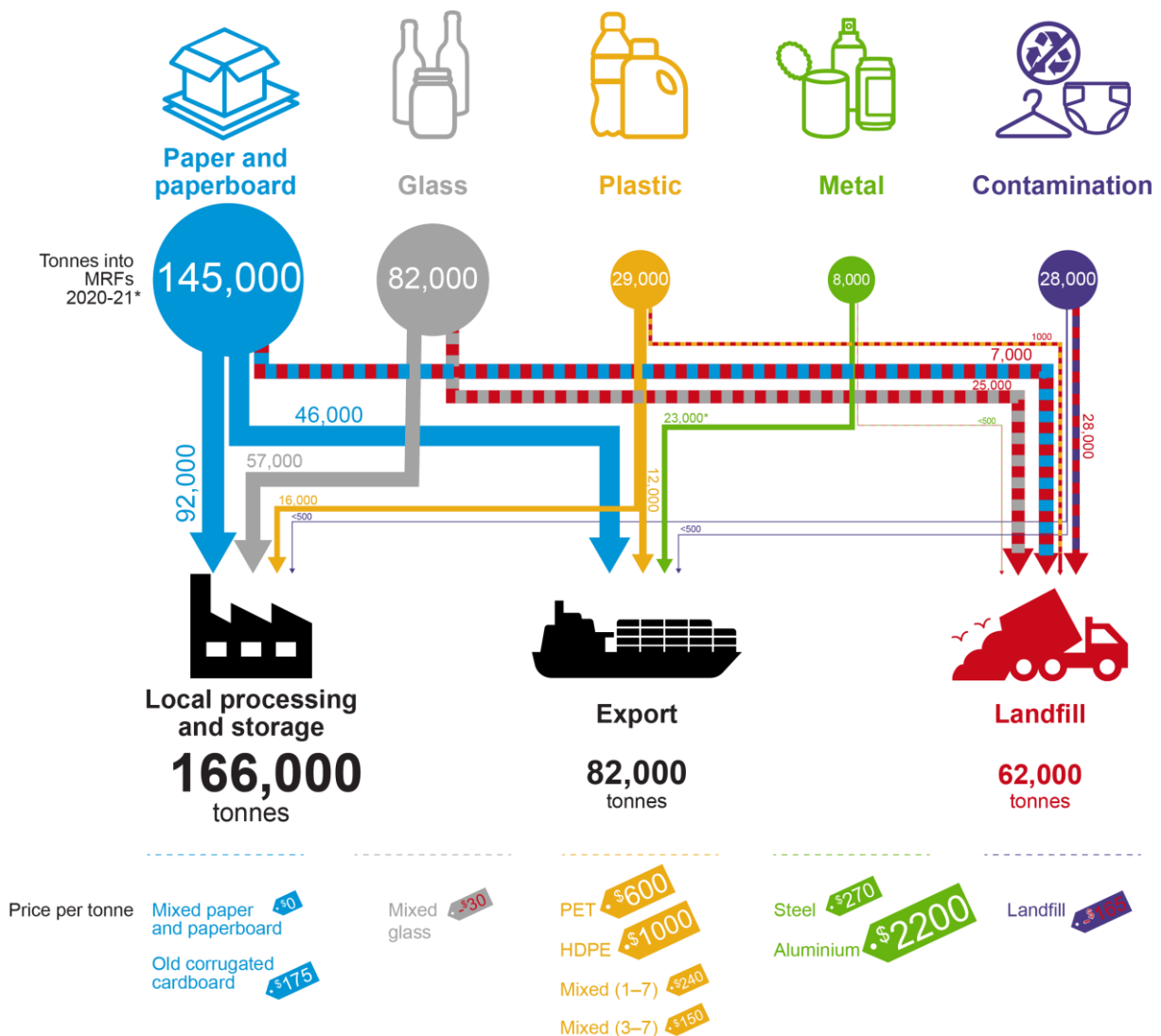
This bulletin includes export data to the end of December 2021, and pricing updates also to the end of December 2021.

Following a successful pilot program and evaluation of this publication, SV and WMRR are producing additional 'interim' bulletins while the development of a significantly enhanced publication format is completed. This bulletin is one of these interim bulletins. It is expected that the new publication format will be released mid-2022.

Market overview

Figure 1 below is an overview of the flows of kerbside collected recyclables over the 6-month period of July 2021 to December 2021. Prices are for December 2021.

Figure 1 – Flows of kerbside collection materials in Victoria collected during July 2021–December 2021*



Kerbside recyclable materials sent to landfill

Of the 589,000 tonnes of kerbside materials collected 464,000 tonnes or 79% were sent to downstream processing (including export of 169,000 tonnes), and 125,000 tonnes or **21% was sent to landfill** across January 2021 to December 2021.

The disposal rate to landfill represents an increase of 3–4% over longer term average of 17–18% of materials to landfill. Industry has reported the following reasons for the higher contamination rate:

- increased levels of gross contamination in kerbside bins material during the COVID-19 pandemic period (~10% contamination), combined with
- increased levels of landfilling of very low value sorted kerbside recyclables that do not have viable end-markets (~10% losses of recyclables, primarily glass fines and residual mixed plastics).

There are no reports of significant stockpiling at the Metropolitan MRF operators as of January 2022.

Kerbside materials exported

Victoria has a heavy reliance on the export of recyclable materials. In December 2021 Victoria's exports were:

- 22% of national exported post-consumer paper & paperboard (34,000 tonnes of 157,000 tonnes). Compared with *41% exported in December 2020*. The December 2021 export market share for Victoria was the lowest since May 2020.
- 39% per cent of national exported post-consumer plastic (3,800 tonnes of 9,900 tonnes). Compared with *43% exported in November and 50% in October*.

The exports outlined above include material sourced through commercial and industrial collections (in addition to municipal kerbside collected materials), and some interstate material (e.g. from Tasmania). However, the data illustrates the strong dependency of Victorian post-consumer markets on export markets, particularly with respect to plastics, and the continuing need for additional local remanufacturing capacity and demand in Victoria.

This is particularly the case in the context of the **unprocessed scrap export bans** which are being phased in over the next few years. From the 30 June 2021, exports of mixed polymer scrap plastics was banned, which did precipitate a 24% drop in the exports of plastics across July–December 2021 (22,000 tonnes) relative to January–June 2021 (29,000 tonnes).

Kerbside recycling markets: Recent developments

Market-wide developments

Development 1 – Recycled commodity prices continue to be generally good to very good. Across 2021 there have been continual significant increases in the commodity values for kerbside recovered paper, plastics and metals, but not for glass.

Development 2 – MRFs and reprocessors are generally operating as usual. There were no significant reported disruptions to major Materials Recovery Facility (MRF) operators or downstream reprocessors as of December 2021.

Paper & paperboard

Development 3 – China's outsourced packaging production continues to fuel recovered fibre prices in export markets. Consistent with the National Sword policy and the import bans, Chinese packaging manufacturers have outsourced production to satellite manufacturing nations. Many, led by Indonesian producers, have scrambled for recovered fibre supplies, helping to keep prices higher, at least until the market settles.

Development 4 – Low unemployment and workforce availability factors are reducing supply. Australia's low unemployment rate and the unavailability of many workers due to quarantine and isolation requirements has a clear impact on recovered fibre supply in the states constrained by the pandemic.

Development 5 – Virgin fibre pulp delivery delays contribute to recovered fibre shipments and prices. Global supply chain disruptions and supply/demand asymmetries have resulted in a slowdown in some pulp deliveries. Alternative fibre, including recovered fibre, are being widely sought, across all grades.

Glass packaging

Development 6 – Visy undertakes glass packaging beneficiation and glass packaging manufacture. Visy has commenced the expansion of a Laverton based beneficiation facility by 100,000 tonnes annually. As reported previously, Visy is also expecting to make a substantial investment into upgrading and increasing the capacity of glass packaging furnaces including at Spotswood in Melbourne. Media statements by Visy indicates a target to produce bottles from 60–70% recycled content (up from 30–35% in 2020). At present Visy are reporting they have achieved 43%.

Development 7 – Previously reported Cleanaway glass beneficiation facility has been postponed indefinitely. A major expansion of glass beneficiation was to be constructed by Cleanaway in Melbourne to process glass packaging from its MRF operations and other sources such as CDS sourced material.

However, the increased demand for beneficiated glass in Victoria is now considered likely to be fully supplied through the Visy and interstate beneficiation facility expansion plans. So Cleanaway has refocused on expanding existing crushing infrastructure to manage glass that is surplus to beneficiation capacity and new packaging demand, for the foreseeable future.

Development 8 – Increased beneficiation interstate. Polytrade is soon to begin operating a new glass beneficiation plant in Sydney. This will process glass packaging from NSW that is currently coming to Melbourne. This will relieve some of the constraints on beneficiation capacity in Victoria. The company is also making other investments to be able to increase capacity with the upcoming CDS and glass only bins.

Plastic packaging

Development 9 – Prices for recovered HDPE bottles have remained at a high level across 2021. Natural HDPE (e.g. milk bottles) packaging scrap prices have been very strong across 2021, and the material is highly sought after both locally and overseas. The high prices may be sustained across most of 2022, underpinned by the very strong local and international brand-owner demand for packaging grade rHDPE.

Development 10 – Prices for recovered PET bottles have remained at a high level across the second half of 2021. PET packaging scrap prices have steadily increased to around \$600–\$650 /tonne by the end of December 2021. These are some of the best prices since 2017. There are very strong potential end-markets for more rPET supply both locally and overseas.

Development 11 – There is significant new kerbside plastic packaging sorting and reprocessing capacity coming on-line in Victoria across 2022–2024. There are a number of Victorian based plastics reprocessors installing new PET, natural and coloured HDPE and PP. There are deep local end-markets for all these polymers, including coloured HDPE and PP when reprocessed to a high quality.

Metal packaging

Development 12 – Prices for recovered tin-plate steel cans and aluminium beverage cans have recovered strongly from mid-2020 lows. Prices aluminium beverage cans are now at the highest level seen for at least 5 years. Prices for steel cans fell in December 2021, but are still relatively good.

Development 13 – Exports of tin-plate steel cans and aluminium beverage cans dipped in the second half of 2021. Export markets for scrap metal packaging appear healthy and moving well. The high prices across 2021 probably reduced stockpiles of baled cans built-up by MRF operators and scrap metal traders during the period of very low prices across the 2020 calendar year. This stockpile draw-down is now complete and may have contributed to exports falling across the last quarter of 2021.

Development 14 – Container costs have been at record prices across the second half of 2021. Freight cost have been very high across the second half of 2021, putting downward pressure on exports even though metal prices are good.

Market implications and investment opportunities

Here we develop a future looking synthesis of the key implications of recent developments, and also provide a quick summary of some of the key investment opportunities that are potentially available. These include minor updates from those reported in bulletin #18.

Market implications

- **Recycled commodity prices are generally trending up:** Across 2021 there have been significant increases in the commodity values for clean cardboard (but less so for mixed paper & cardboard), plastics and metals. This is reducing financial stress on sorters, reprocessors and exporters.
- **Export freight costs are very high:** Across the second half of 2021 export container costs have increased dramatically, by a factor of 4–6 in some cases. For materials with a significant export exposure this single factor has had a big impact on the profit margins for exporters of sorted packaging materials.
- **Significant increases in reprocessing capacity and end-markets for kerbside mixed-paper are now on the longer-term horizon.** In April 2021 Visy and the Victorian Government announced a \$37 million joint investment for the installation of drum pulpers at Visy's Coolaroo mill. This will more than double the mill's capacity for processing kerbside mixed paper to around 150,000–200,000 tonnes/yr, or 60% of Victoria's kerbside mixed paper and cardboard collections.
- **Increases in reprocessing capacity and end-markets for kerbside mixed-plastics are in the pipeline.** Significant increases in reprocessing capacity for PET, HDPE and PP are either underway or under advanced consideration. Local end-markets for high quality processed rPET, rHDPE and rPP appear strong.

However, a gap exists between when this new capacity will be available to process MRF sorted plastic packaging, and the earlier event of the unprocessed plastics export ban due to come into force in July 2022.

Investment opportunities

Market-wide

- Ongoing education program to reduce kerbside contamination.
- MRF modifications for improved separation (of paper and plastics grades) and contaminant control, supported by improved packaging design to reduce incoming low value or problematic packaging.
- Community recycling drop off points with a focus on cardboard, EPS, and soft plastics.
- Safe undercover bale storage with fire management in place.

Fibre

- Large scale pulping capacity for recovered paper, either separately or integrated with virgin or recycled fibre manufacturing.

- Procurement of locally manufactured recycled products to encourage reprocessing investment.

Glass

- Implementation of new kerbside glass collection and CDS collected glass over the next couple of years.
- Glass kerbside bin purchase. Potential state/local government shared cost of rollout linked to uniform bins with maximum recycled content, purple lids and hot stamped education message.

Plastics

- Updated recycled plastics specifications.
- Reprocessing equipment for HDPE and PP from consumer sources. Preferably into high-quality recycled resin that is virgin resin competing.
- Wash equipment for new and existing plastics recycling plants.
- Separation equipment for PET/PE/PP at MRF or reprocessing sites.

1. Introduction

1.1 About this bulletin

This is the 19th of a series of monthly bulletins that Sustainability Victoria (SV) and the Waste Management and Resource Recovery Association of Australia (WMRR) are distributing to the community, industry and government to provide an overview of the kerbside recycling markets in Victoria.

This bulletin includes updates related to ABS export data to the end of December 2021, and pricing updates also to the end of December 2021.

The bulletins provide an up-to-date picture of the health of the markets, the ongoing challenges and opportunities, and action taken to improve the resilience and recovery performance of kerbside recycling.

The bulletins are a synthesis of monthly updates of ABS export data and published market reports, and more in-depth quarterly updates informed by extensive consultation with industry, government and community stakeholders.

Each bulletin includes a monthly update that includes:

- market overview and current developments
- export data and receiving country updates
- commodity price tracking
- kerbside quantity flow approximations
- market developments and activity updates.

A deeper look at two special topics is provided. The special topics explored in Section 3 for this month are:

- **Is this the last dance for mixed recovered paper exports?**
- **Towards a harmonised kerbside collection system**

SV and WMRR are currently updating the format for the bulletin, with a shift to an online platform under development that provides a fresh look and more data interactivity. We will keep subscribers updated on the future of the Recovered Resources Market Bulletins.

Please contact SV if you have any comments or questions on this bulletin, or suggestions for future issues:

- Cate Turner – Manager - Data, Insights & Intelligence (cate.turner@sustainability.vic.gov.au)
- Tom Elford – Market Intelligence Officer (tom.elford@sustainability.vic.gov.au).

Who is this bulletin for?

This bulletin is for anyone with an interest in kerbside recycling in Victoria. It presents a holistic overview of material flows and related markets, through generation, sorting, reprocessing, re-manufacturing and end-product markets.

Structure of the bulletin

This bulletin has seven sections:

- **Market summary** – An overview of kerbside material flows, \$ values, and the key issues, opportunities and activities.

- **Introductory section** (this section) – A more detailed and integrated overview of kerbside material markets across all material types (paper & paperboard, glass packaging, plastic packaging and metal packaging).
- **Material specific sections** – Four sections on each material groups (paper & paperboard, glass packaging, plastic packaging and metal packaging). Each section provides: an overview of the material markets; the latest available information on prices, demand and supply; commentary on the key product end-markets for recovered materials; export and/or interstate market activity; and a summary of market risks, opportunities and developments.
- **Special topic areas** – A deeper look at one or two special topic areas each month.

History and context

Across the past decade there have been downturns in the recycled materials market caused by the:

- Global Financial Crisis (GFC) in 2009.
- New Chinese regulations in 2011 aimed at reducing the imports of highly contaminated post-consumer materials.
- Aggressive enforcement in 2013 by the Chinese of the 2011 regulations, through a campaign known as 'Operation Green Fence'.
- Aggressive enforcement from the beginning of 2018 by the Chinese of the 2011 regulations, through a campaign known as 'National Sword'. Around half the world's kerbside packaging was received by China until the end of 2017 and the enforcement of these regulations has reduced these imports massively.
- Global coronavirus pandemic starting in early 2020, and still ongoing, hampering international freight movements and country level manufacturing activity.
- In January 2021, an amendment to the Basel Convention came into force, specifically on the control of transboundary movements of plastic waste. The new rules stipulate that mixed plastic waste must be 'almost free from' contamination. Note that the impact of this Basel Convention amendment, on Australian exports of scrap plastics, does not appear to have been significant.

See [bulletin #1](#) for a more detailed outline of the history and context of the issues explored in these bulletins. All previous bulletins are available [here](#).

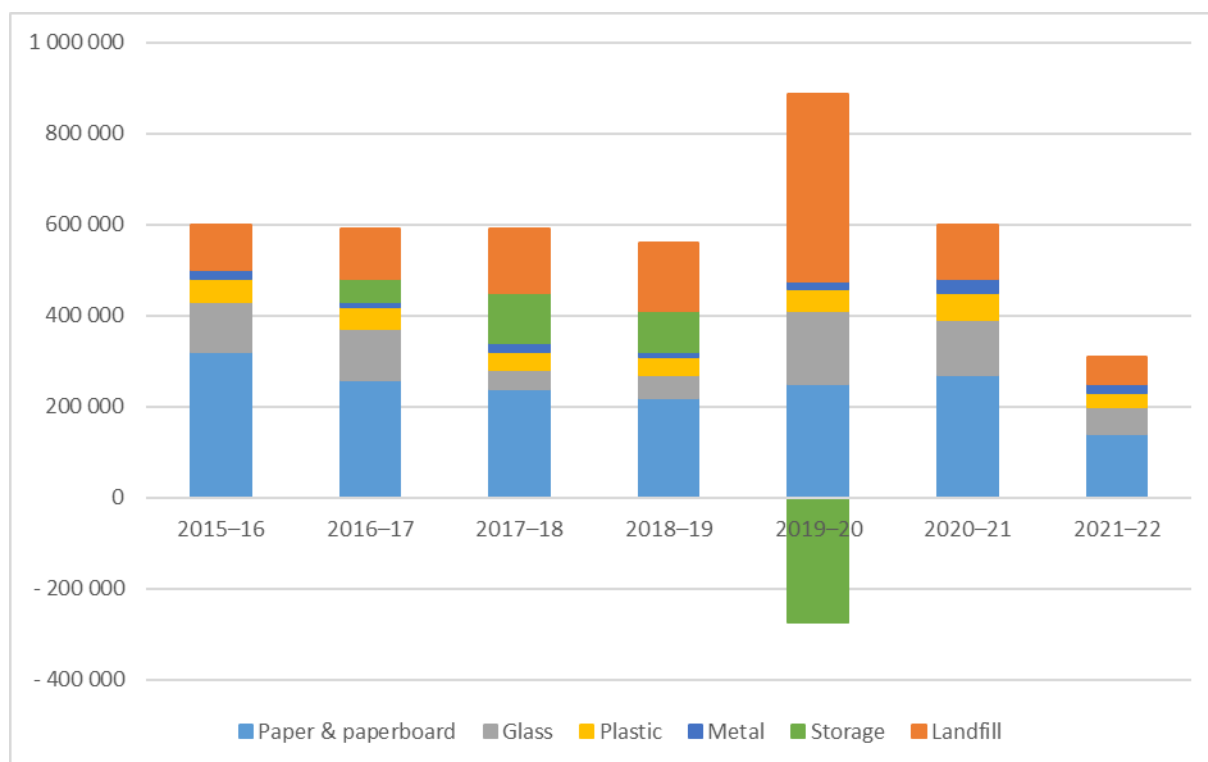
1.2 Overview of kerbside recycling flows

Victorian kerbside recyclables collection and sorting systems have been fairly steady over the past 5 years at around 550–600,000 tonnes per year. After operating losses of 125,000 tonnes (2021 estimate) of contaminant material and unrecovered recyclables an estimated 464,000 tonnes are available for reprocessing (2021 estimate). Paper grades and glass account for 85 per cent or more of this processed material by weight (after contamination).

For reasons explored in detail in previous bulletins the disposal to landfill of stored recyclables occurred at very high levels across 2019–20. However, this disposal was largely completed by May 2020, and there has been a significant change in MRF operators since this period.

Figure 1.2.1 and Table 1.2.1 provides estimates of annual MRF outputs. Note that 2021–22 data is part-year data for the 6 months across July 2021–December 2022 only. Also note that the reduction in storage during 2019–20 of 274,000 tonnes of stored material, which was mostly sent to landfill, contributes to the landfill (orange) quantity. Quantities of stored recyclables continue to be at the lowest levels since 2017 at least.

Figure 1.2.1 – Victorian MRF outputs by material category (tonnes)



Note: 2021–22 data is partial financial year across the 6 months July 2021–December 2021.

Table 1.2.1 – Victorian MRF outputs by material category, including stockpiled material estimates

Material category	2015–16	2016–17	2017–18	2018–19	2019–20	2020–21	2021–22
	(tonnes)	(tonnes)	(tonnes)	(tonnes)	(tonnes)	(tonnes)	(tonnes)
Paper & paperboard	330 000	280 000	250 000	220 000	250 000	270 000	140 000
Glass	100 000	110 000	30 000	50 000	160 000	120 000	60 000
Plastic	50 000	40 000	40 000	40 000	50 000	60 000	30 000
Metal	20 000	10 000	20 000	10 000	16 000	30 000	20 000
Storage ^a	0	50 000	110 000	90 000	- 274 000	0	0
Landfill ^b	100 000	100 000	140 000	150 000	410 000	120 000	60 000
Totals	600 000	590 000	590 000	560 000	612 000	600 000	310 000

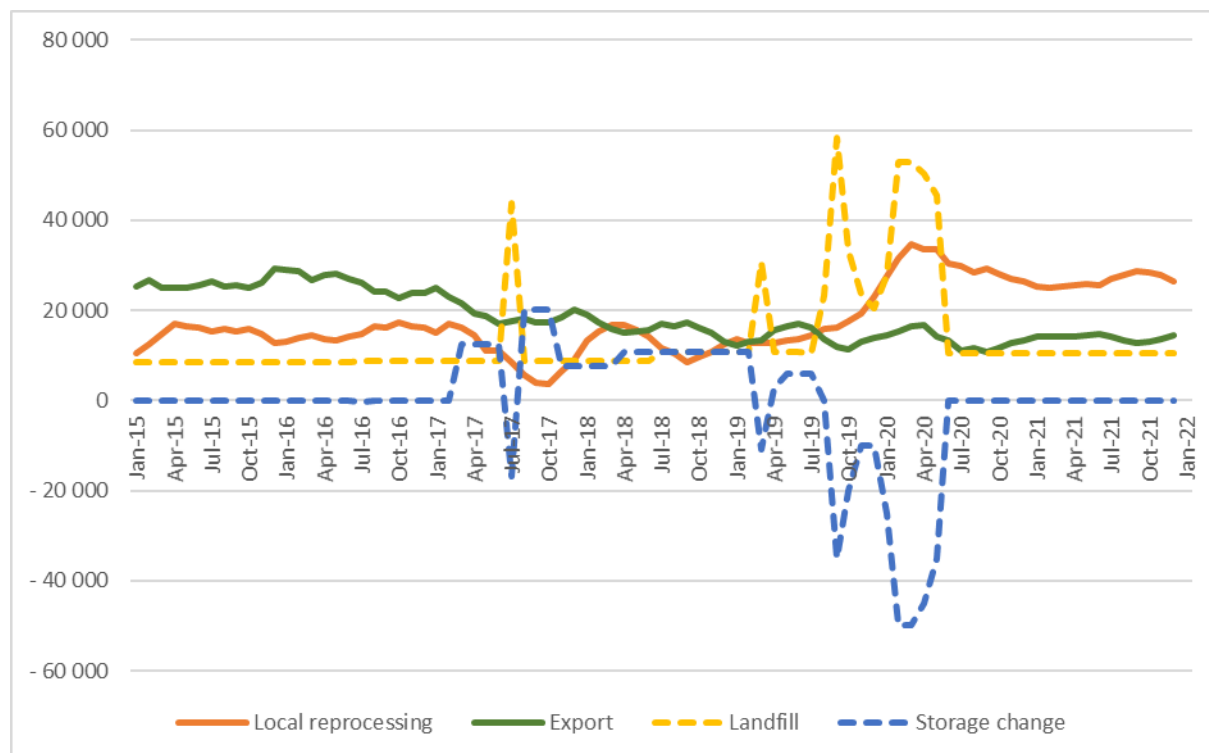
Source: SV (2017; 2018; 2019; 2020; 2021) and industry consultation.

a) Note the storage growth across 2015–16 to 2018–19, which reversed sharply in 2019–20.

b) Includes an estimated 30–40,000 tonnes of fire-related losses in July 2017, 20,000 tonnes of licence compliance related disposal in March 2019, and 220,000 tonnes of operational and safety related disposal in 2019–20.

Figure 1.2.2 presents indicative monthly data on the destinations of Victorian MRF outputs. Exports of kerbside materials fell in 2017 and then more sharply in 2018. Movement across 2019 to 2021 has been up and down, with some signs of an upwards trend from the low levels seen in the middle of last year.

Figure 1.2.2 – Destination of Victorian MRF outputs from kerbside sources (tonnes/month)



Note 1: Data in the figure above based on consultations and SV surveys. Some data is based on publicly available sources (e.g. abnormal losses to landfill).

Note 2: Historical total monthly MRF outputs have been approximated to enable comparison with monthly ABS customs export data. 'Local reprocessing', 'Landfill' and 'Storage change' estimates are indicative only.

Note 3: The 'Storage change' plot is an estimation of the change in material stored or stockpiled in that month.

Note 4: Storage includes estimates of both sorted and baled materials, and unsorted (but baled) materials. It excludes longer-term stored materials from before January 2015, which is most significantly legacy glass storage. It is understood that, as of the end of 2021, all legacy glass storage has been processed into construction materials.

Note 5: Landfill estimates include MRF licence compliance related disposal to landfill, and fire related losses to atmosphere. Landfill data presented are an approximation based on annual waste to landfill rates.

Source: ABS (2021) and Envisage Works.

1.3 Market risks, opportunities and activities

Of all the states/territories Victoria has historically had the heaviest reliance on exporting kerbside materials. In December 2021 Victoria made up an estimated 22% of Australian exports of post-consumer materials that might have a kerbside source, compared with 28% in November and 40% in December 2020. Averaged across the 2021–22 financial year to December Victoria made up an estimated 26% of Australian exports, an unusually low percentage for Victoria, compared with 33% for the previous six month period.

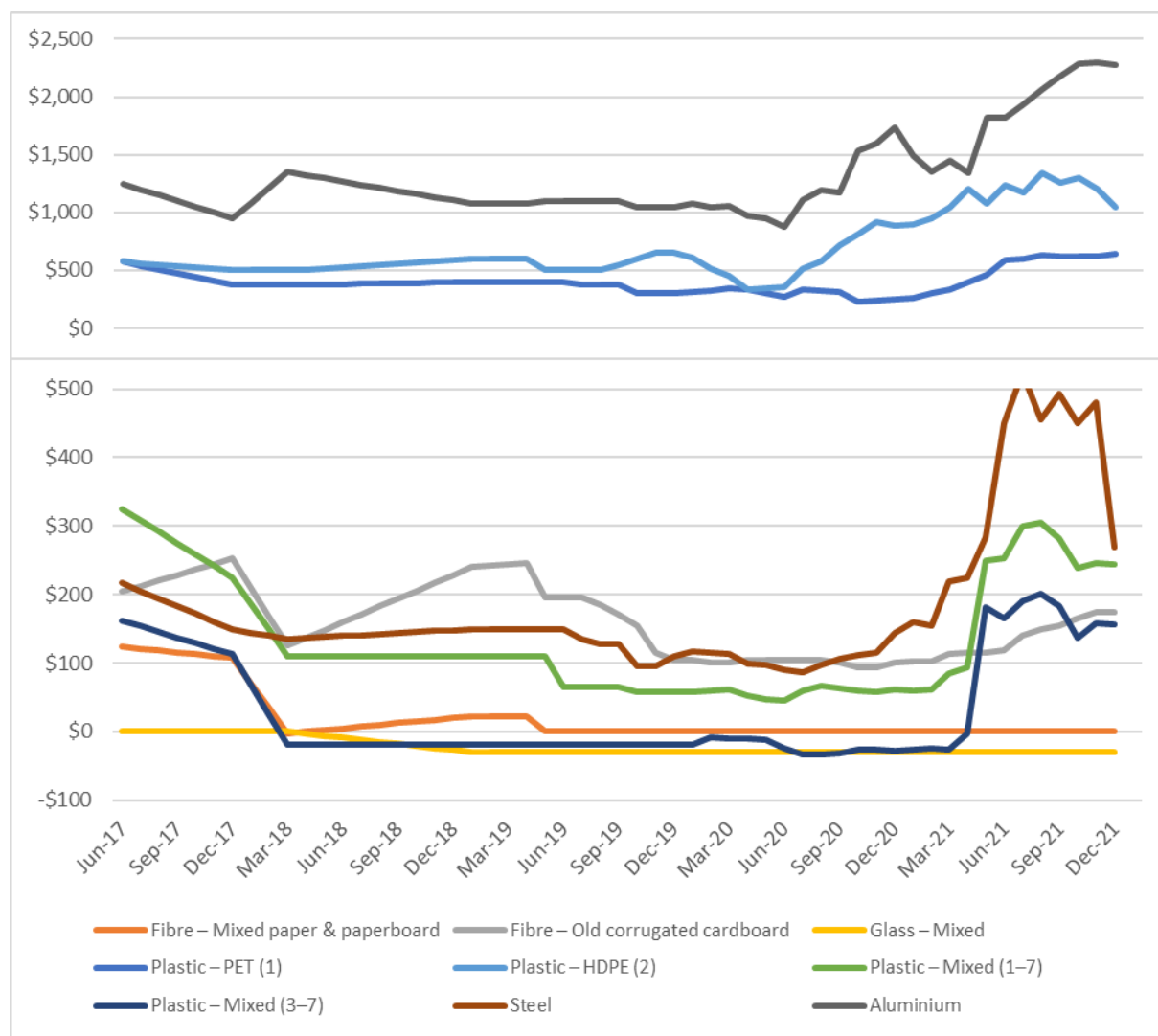
Recovered paper exports (including material from both C&I and kerbside sources) were down across July–December 2021 period at the lowest level for a six-month period since January 2015 at least. However, there were some signs of recovery in November and December.

Prices for kerbside grades of recovered paper and paperboard have remained poor over the July–December 2021 period, however, prices for corrugated cardboard (almost entirely

sourced from commercial generator rather than households) has seen some good price growth over the second half of the year.

Since September 2020, sorted PET and HDPE packaging, steel cans, and aluminium cans have all seen significant price increases, rebounding from the close to record lows seen during the pandemic period to some of the highest prices since at least mid-2017.

Figure 1.3.1 – Victorian recovered kerbside materials commodity values (\$/tonne)



Source: Industry consultation and published sources. Prices are approximated at the out-going MRF gate and to end-May 2021. Prices are indicative only.

Table 1.3.1 provides pricing on selected virgin material commodities that are (generally) competing with recycled material. It is important to note that the kerbside material commodity values presented in Figure 1.3.1 are estimated prices at the out-going MRF gate, and prior to any secondary processing (and the associated processing costs).

It is important to note that the very low or negative prices presented above are indicative only, as little or no spot market trading occurs.

Table 1.3.1 – Virgin material commodity values end-December 2021 (\$AUD/tonne)

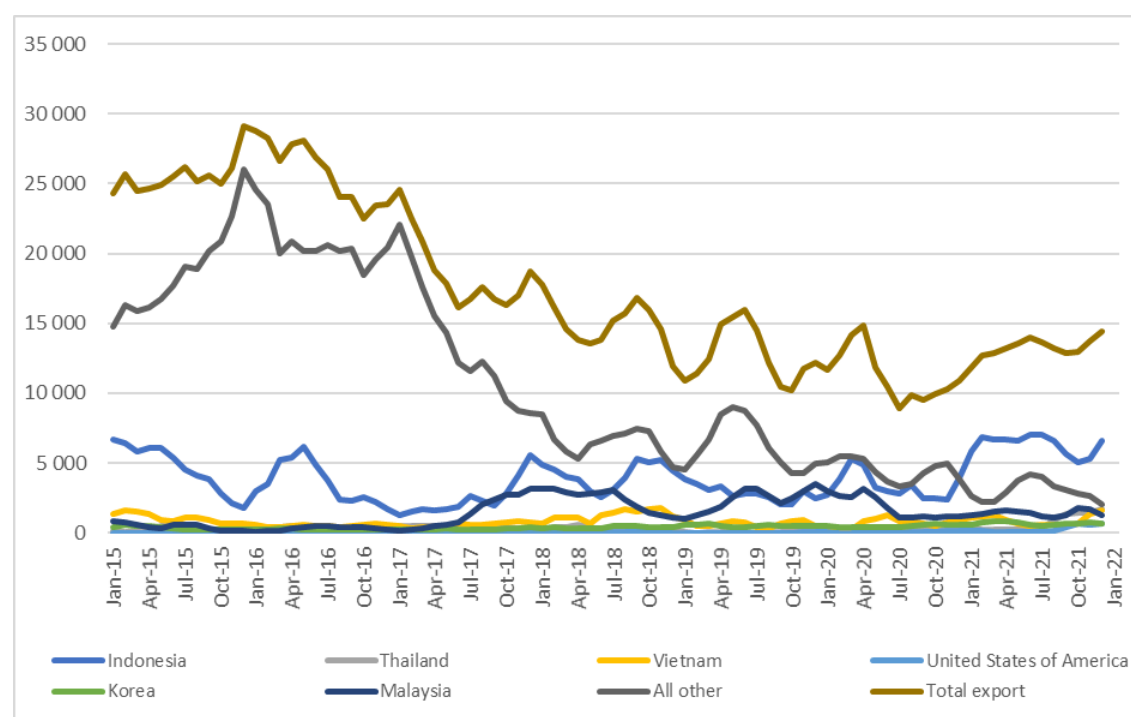
Material category	Value	Comments
Fibre – Bleached softwood kraft (BSK) pulp	\$1000–\$1100	BSK and BHK pulps are not directly competing with recycled fibre in the Australian market. Values provided to give some context on virgin pulp prices.
Fibre – Bleached hardwood kraft (BHK) pulp	\$750–\$850	
Glass – Virgin material inputs	\$600–\$700	Estimate based on typical flint glass composition.
Plastic – PET (1) virgin resin	\$1,300–\$1,400	-
Plastic – HDPE (2) virgin resin	\$1,600–\$1,700	-
Plastic – PVC (3) virgin resin	\$1,600–\$1,700	Unplasticised PVC.
Plastic – LDPE (4) virgin resin	\$2,000–\$2,100	-
Plastic – PP (5) virgin resin	\$1,800–\$1,900	-
Plastic – PS (6) virgin resin	\$1,900–\$2,000	-
Steel	\$600–\$700	London Metal Exchange (LME) post-consumer steel scrap price
Aluminium	\$3,200–\$3,300	LME aluminium alloy

1.4 Export market review

A summary of Victorian exports since January 2015 is provided in this section. In December 2021, Indonesia, Thailand and Vietnam were the dominate export destinations for Victorian recovered kerbside materials. See Figure 1.4.1 for Victorian exports of kerbside materials, by country of destination, across the period of January 2015 to December 2021.

Exports across the first 6 months of 2021–22 were an estimated 81,000 tonnes, compared to 59,000 tonnes across the corresponding 6 months in 2020–21.

Figure 1.4.1 – Victorian recovered kerbside materials, to export country (tonnes/month)



Source: ABS (2021) and Envisage Works

Table 1.4.1 provides annual Victorian exports of kerbside materials, by country of destination, across the period of 2015–16 to 2021–22. Indonesia has been by far the largest destination of exported kerbside materials from Victoria. Table 1.4.2 provides the monthly change in Victorian kerbside exports, by country, for November and December 2021.

Table 1.4.1 – Annual Victorian recovered kerbside materials, to export country (tonnes/yr)

Country ^a	2015–16 (tonnes)	2016–17 (tonnes)	2017–18 (tonnes)	2018–19 (tonnes)	2019–20 (tonnes)	2020–21 (tonnes)	2021–22 ^b (tonnes)
Indonesia	47 000	25 000	42 000	46 000	38 000	57 000	36 000
Thailand	4 000	5 000	4 000	1 000	2 000	4 000	7 000
Vietnam	8 000	6 000	10 000	13 000	7 000	10 000	5 000
USA	0	0	0	0	0	1 000	2 000
Korea	3 000	3 000	4 000	6 000	5 000	8 000	4 000
Malaysia	3 000	5 000	32 000	23 000	33 000	15 000	8 000
All other	257 000	221 000	101 000	82 000	62 000	43 000	18 000
Total	322 000	265 000	193 000	171 000	147 000	138 000	80 000

Source: ABS (2021) and Envisage Works

a) Countries ranked by average of last three months of exports.

b) Partial year across July 2021 to December 2021.

Table 1.4.2 – Most recent monthly exports in Victorian recovered kerbside materials, to export country

Country ^a	November 2021 (tonnes)	December 2021 (tonnes)	% change (%)
Indonesia	5 300	6 600	25%
India	1 500	1 700	13%
Malaysia	1 400	1 600	14%
Taiwan	600	600	0%
Vietnam	700	700	0%
Korea	1 700	1 200	-29%
All other	2 600	2 000	-23%
Total	13 800	14 400	4%

Source: ABS (2021) and Envisage Works

a) Countries ranked by average of last three months of exports.

1.5 Overview of status of countries with post-consumer import restrictions

Provided here is an overview of the status (as of December 2021) of countries that receive major kerbside related post-consumer exports from Australia, with a focus on the implications for Victorian exports. There have been no major changes in status since the last bulletin.

Bangladesh

No identified changes in import conditions. There have been no specific import restrictions identified for paper and paperboard, and the identified requirement for post-consumer plastics imports is that they do not contain any toxic or radioactive substances.

China

Existing restrictions on post-consumer plastic, paper, metals, and other types of post-consumer materials. No change to the import restrictions which began in March 2018 and became more extensive at the end of 2018. The contamination threshold is currently 0.5 per cent. Import licences for scrap are now issued on a restricted and shorter term national needs basis.

On the 29 April 2020 China's National People's Congress Standing Committee approved legislation to move China towards "gradually realising zero import of solid waste". Under the new legislation announced and approved in April 2020 and implemented in January 2021 China has banned the imports of all solid wastes, but with exemptions for recovered materials that are defined as resources rather waste. Examples of these exempted materials include scrap metals, high quality grades of scrap paper and cardboard, and processed plastics.

India

India announced bans in March 2019 prohibiting post-consumer 'solid plastic' from being imported into the country, including in special economic zones. However, this ban was lifted in January 2021.

It was reported in January 2020 that India is planning on tightening its quality standards and imported mixed paper will be allowed a maximum of 1% contamination. Increased inspections are also reported, and this is elevated inspection regime is understood to be ongoing.

Indonesia

A contamination threshold (impurity limit) was set to 2 per cent in May 2020 for scrap paper and plastics imports, which is significantly higher than the 0.5 per cent for China. However, due to the importance of the recycling industry to Indonesia's economy it is understood that this threshold is being lightly or little enforced by government.

Korea

In January 2021 Korea announced bans or restrictions on scrap plastics and scrap paper imports, with the bans or restrictions to come into force in 2022.

Malaysia

Restrictions implemented from July 2018, with a significant impact on post-consumer plastics imports. Many import permits were revoked following these restrictions coming into force. In May 2019, reports circulated in the media regarding further import restrictions for waste plastics. Malaysia sent small quantities of kerbside materials back to Australia in 2019, but nothing significant has been observed since. Malaysia is reported to have reduced on plastic waste imports in 2021, supported by the January 2021 Basel Convention amendment on plastics waste.

Taiwan

Restrictions on post-consumer paper and plastics implemented from October 2018, with only OCC and other higher quality grades accepted. There are also restrictions on post-consumer plastics. Little material from Victoria has been shipped to Taiwan.

Thailand

Restrictions on post-consumer plastics implemented from August 2018, which escalated over the next two years. Low quality plastic waste imports are to be phased out over the period of 2022–2026 through a 20% reduction in imports per year, leading to a total ban in 2026 .

Vietnam

Restrictions on post-consumer plastic, paper, metals and other types of post-consumer scrap products implemented from around August 2018, with further tightening of post-consumer imports from late February 2019. Low quality plastic waste imports may be banned from 2025.

In September 2020 Vietnam published new directives on the import of various wastes, which included a ban on unsorted scrap paper imports by the end of 2021.

2. Resource markets

2.1 Kerbside recovered paper & paperboard

Market developments this period

Development 1 – China’s outsourced packaging production continues to fuel recovered fibre prices in export markets. Consistent with the National Sword policy and the import bans, Chinese packaging manufacturers have outsourced production to satellite manufacturing nations. Many, led by Indonesian producers, have scrambled for recovered fibre supplies, helping to keep prices higher, at least until the market settles.

Development 2 – Low unemployment and workforce availability factors are reducing supply. Australia’s low unemployment rate and the unavailability of many workers due to quarantine and isolation requirements has a clear impact on recovered fibre supply in the states constrained by the pandemic.

Development 3 – Virgin fibre pulp delivery delays contribute to recovered fibre shipments and prices. Global supply chain disruptions and supply/demand asymmetries have resulted in a slowdown in some pulp deliveries. Alternative fibre, including recovered fibre, are being widely sought, across all grades.

Material overview and market summary

In the second half of 2021, despite global virgin pulp prices declining from record peaks in the first half, pulp prices entered a period over which there was a plateau, rather than expected continued falls. For the most part, this arose because of inventory and stock levels falling below preferred levels, in particular in China.

Recovered fibre prices responded as the material filled supply gaps for virgin fibre pulp. The consequence was sustained prices for all recovered fibre, in most markets, both international and domestic.

While the target product for domestic manufacturers is OCC for corrugated packaging, the reality is that an ever increasing proportion of that supply is making its way into the kerbside and mixed recovered paper streams, rather than arising from single material commercial sources. MRFs have an increasingly strong business case to supply OCC demand using kerbside sources.

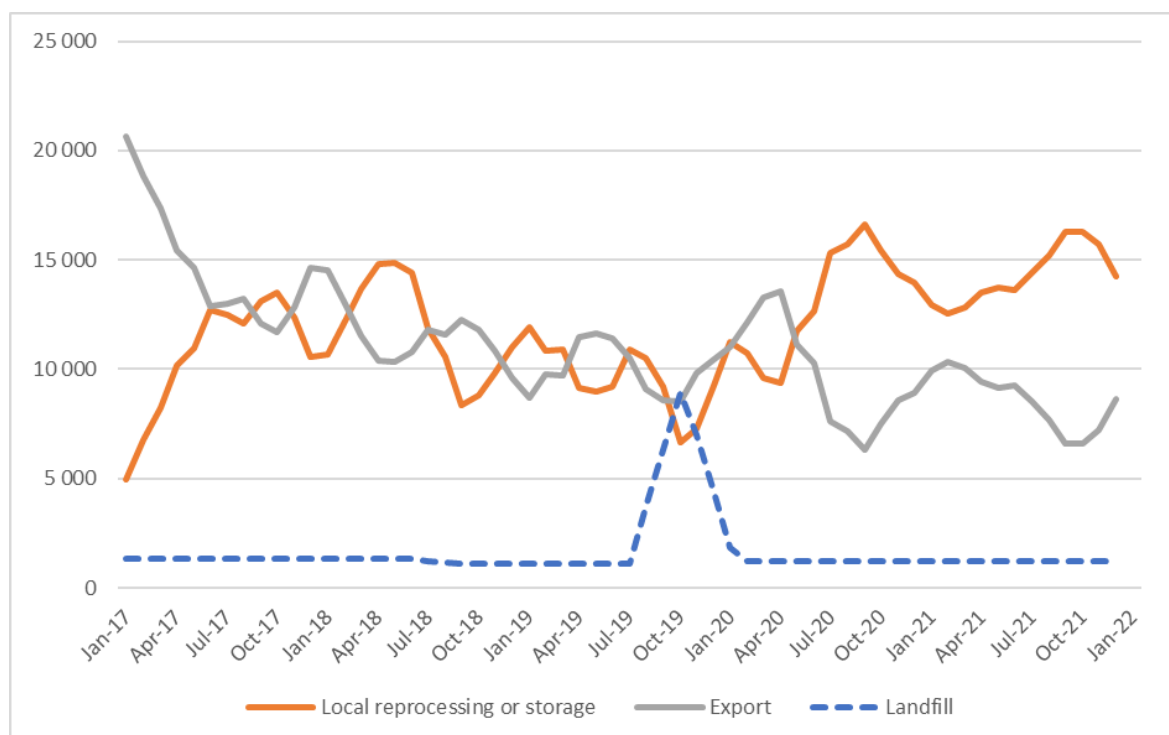
There is some sorting occurring of kerbside mixed paper, but that remains patchy and is related to specific market opportunities. Even at higher prices, the challenges of sorting includes labour shortages and with higher labour costs as a result.

Demand and supply pressures will determine if kerbside mixed paper prices are able to rise consistent with the higher costs. If higher prices are not achieved, some sorting will end.

While the core of interest is OCC on the one hand, with growing interest in kerbside mixed paper on the other, it may be that future value of the whole will be tied into the value extracted from the marginal products.

Efforts to access white office paper, ONP and even high wet strength packaging papers and other products for very specific purposes may be the best hope for positive sorting of kerbside mixed paper to be funded. There are continued discussions in this respect, in Victoria and across Australia.

Figure 2.1.1 – Destination of Victorian MRF outputs (tonnes/month) – Kerbside paper & paperboard



Note 1: Historical total monthly MRF outputs have been approximated in Figure 2.1.1 to enable comparison with monthly ABS customs export data. The overall trends are the key aspect of the figure.

Note 2: The combined 'Local reprocessing or storage' estimate is indicative only, and these fates will be presented separately if this level of data becomes available. Landfill excludes disposal from storage and is an approximation based on annual waste to landfill rates.

Source: ABS (2021) and Envisage Works.

Prices, demand and supply

Improvements in recovered paper prices in Australia and globally have largely paralleled the trends in global pulp price increases. These appear to have flowed through – for some supply at least – to the domestic market, where the only openly traded products is OCC. The reality is that OCC prices will largely be bound by the prices being achieved for packaging products.

Packaging prices are increasing, but whether they will rise sufficiently to support increased sorting and cover the costs of that on any consistent basis remains unclear.

Key end-markets and related specifications

There are no new end-markets for kerbside recovered paper. The greatest competition in recovered paper markets continues to be experienced for recovered office papers. Local paper producers in packaging, recovered paper and tissue products (noting that tissue products cannot go into kerbside collections) all seek the office papers for different purposes, but the volumes available have collapsed during the pandemic due to so many people working from home. The likelihood is that this market will not recover.

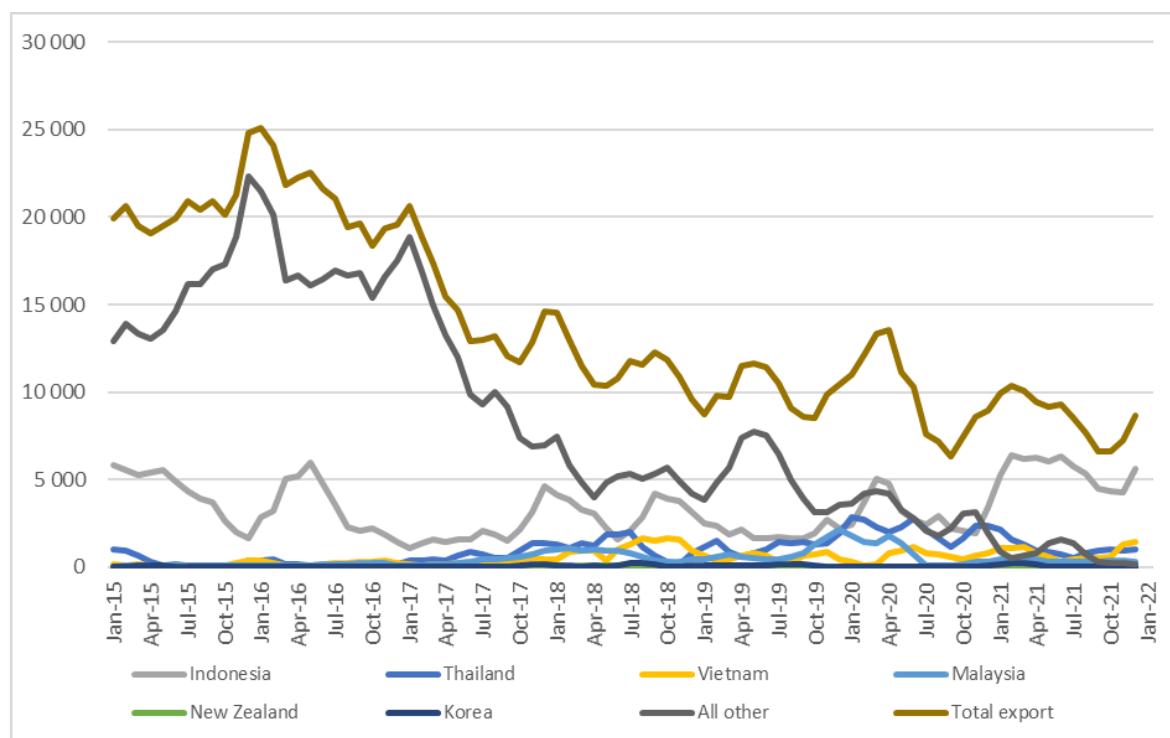
Due to supply-chain related shortages of virgin fibre, there is increased interest in highly specific grades of recovered paper, including high wet-strength papers (e.g. six pack beer wraps). Though more difficult to pulp, these are grades of paper that for recycling back into their original products have unique properties and in most cases are sought after by the original producers, as almost no other processor has interest in them.

Export and interstate market review

Victorian recovered paper export volumes softened in the second half of 2021, but with some recovery in November and December. This is in line with developments across Australia, especially in NSW and Victoria, where the pressures of the repeated lockdowns and the quarantine and isolation requirements have had a significant impact on labour availability across the supply chain.

Average export prices from these states have been little short of stratospheric and reflect a core export volume that some international buyers feel they have simply no option but to pay. To be explicit, those average export prices cannot be sustained.

Figure 2.1.2 – Victorian recovered kerbside paper & paperboard, to export country (tonnes/month)



Source: ABS (2021) and Envisage Works

Table 2.1.1 – Annual Victorian recovered kerbside paper & paperboard, to export country (tonnes/yr)

Country ^a	2015–16 (tonnes)	2016–17 (tonnes)	2017–18 (tonnes)	2018–19 (tonnes)	2019–20 (tonnes)	2020–21 (tonnes)	2021–22 ^b (tonnes)
Indonesia	45 000	22 000	34 000	32 000	34 000	51 000	30 000
Thailand	2 000	4 000	14 000	11 000	24 000	19 000	5 000
Vietnam	2 000	3 000	7 000	12 000	7 000	9 000	5 000
Malaysia	1 000	2 000	10 000	6 000	16 000	4 000	2 000
New Zealand	0	0	1 000	0	0	0	0
Korea	0	0	1 000	1 000	1 000	1 000	0
All other	215 000	186 000	82 000	68 000	48 000	20 000	3 000
Total	265 000	217 000	149 000	130 000	130 000	104 000	45 000

Source: ABS (2021) and Envisage Works

a) Countries ranked by average of last three months of exports.

b) Partial year across July 2021 to December 2021.

Table 2.1.2 – Most recent monthly change in Victorian recovered kerbside paper & paperboard, to export country (tonnes/month)

Country	November 2021 (tonnes)	December 2021 (tonnes)	% change (%)
Indonesia	4 300	5 600	30%
Thailand	900	1 000	11%
Vietnam	1 300	1 500	15%
Malaysia	400	300	-25%
New Zealand	100	0	-100%
Korea	0	0	n/a
All other	200	200	0%
Total	7 200	8 600	19%

Source: ABS (2021) and Envisage Works

Market risks, opportunities and activities

The febrile nature of the market for recovered paper – especially internationally – and the range of factors disrupting it, over which local markets have no control, means there are few market signals to rely on into the future, whether on the upside or the downside.

As markets become more refined and precise as to recovered fibre specifications, work which is ongoing, the reliance on longer-term supply contracts is increasing. This is an opportunity for some, but for those who consider the spot or commodity market is the pathway to success, the risk is that recent high prices will fall significantly, rendering their operations less sustainable.

Likely supply-chain consolidation will tighten the recovered paper supply chain over the course of 2022, increasing the prospects for higher levels of domestic recovered fibre processing, including in Victoria.

2.2 Kerbside recovered glass packaging

Market developments this month

Development 1 – Visy undertakes glass packaging beneficiation and glass packaging manufacture. Visy has commenced the expansion of a Laverton based beneficiation facility by 100,000 tonnes annually. As reported previously, Visy is also expecting to make a substantial investment into upgrading and increasing the capacity of glass packaging furnaces including at Spotswood in Melbourne. Media statements by Visy indicates a target to produce bottles from 60–70% recycled content (up from 30–35% in 2020). At present Visy are reporting they have achieved 43%.

Development 2 – Previously reported Cleanaway glass beneficiation facility has been postponed indefinitely. A major expansion of glass beneficiation was to be constructed by Cleanaway in Melbourne to process glass packaging from its MRF operations and other sources such as CDS sourced material.

However, the increased demand for beneficiated glass in Victoria is now considered likely to be fully supplied through the Visy and interstate beneficiation facility expansion plans. So Cleanaway has refocused on expanding existing crushing infrastructure to manage glass that is surplus to beneficiation capacity and new packaging demand, for the foreseeable future.

Development 3 – Increased beneficiation interstate. Polytrade is soon to begin operating a new glass beneficiation plant in Sydney. This will process glass packaging from NSW that is currently coming to Melbourne. This will relieve some of the constraints on beneficiation capacity in Victoria. The company is also making other investments to be able to increase capacity with the upcoming CDS and glass only bins.

Material overview and market summary

There are currently two glass beneficiation plants operating in Victoria (Visy and Polytrade) taking glass packaging from kerbside collections and making this material furnace ready for use in manufacture of new glass bottles. The combined annual throughput of these plants is just over 100,000 tonnes at the current time.

This is insufficient to handle the total volume of glass collected in kerbside recycling bins in Victoria, which is in the order of 170,000 tonnes (into MRFs). It is also important to note that around 280,000 tonnes/yr of end-of-life glass packaging is generated, mostly from households, but some from commercial sources.

Some of this 170,000 tonnes of glass is going into road base and a range of other applications through companies such as Alex Fraser and Repurpose-It. This glass is washed and crushed, and can go into a wide range of built environment applications.

Currently much of the glass collected through MRFs continues to be destined for road construction or landfill remediation, as CDS generated glass is preferred for new packaging manufacture. The demand for packaging glass-based sand replacement product is high in Victoria as it competes well on price and quality with quarried sand. In recent months this demand has increased further and the commercial value of the recycled glass has improved.

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.

The ability of both Visy and Polytrade to increase their capacity for utilising most of the glass in packaging is a further boost to glass recycling markets. The expansion of capacity is timed to coincide with the move to glass separate collection and the Victorian Government's 2023 introduction of CDS in Victoria.

The growing market demand for recycled glass reported by industry sources, is likely to flow through to higher value commercial rates for sorted glass.

There is also higher prices being offered for sorted glass into the export market. As yet no significant export is occurring, and shipping constraints will likely prevent this in the near future. Overall, the market for sorted glass packaging is much stronger than it has been in recent years. A challenge will be to ensure the maximum amount of glass gets recycled back into more bottles and jars, rather than downcycled into road base outcomes.

The glass packaging collected through glass separate kerbside collections is of a good quality for recycling back into bottles. The CDS sourced glass will also be of a much higher quality than the material coming through commingled collection systems as sorted by MRFs.

Visy has committed to lifting the recycled content of its glass packaging from ~30% to 70% in line with the growing beverage producer preference for higher recycled content.

As reported widely, the Victorian Government announced the statewide introduction of a separate glass recycling service from 2021. State government support for local government introduction has been announced.

A summary of the latest information on new glass bin service configurations is provided in the following table. This table will be updated as more services commence across the state.

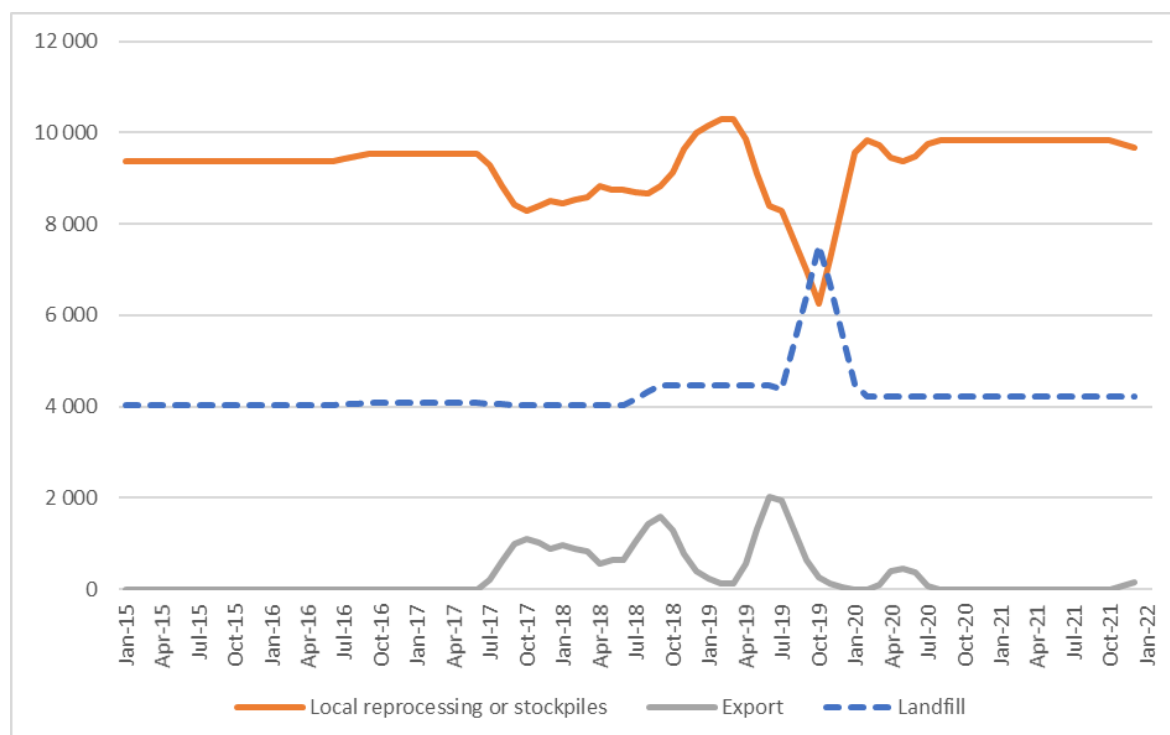
Table 2.2.1 – Glass bin (separate) service configurations

Council	Frequency	Bin size (L)	Glass destination / Comments
Central Goldfields	N/A	N/A	Five glass drop-off locations provided around the council area.
Hobsons Bay	Monthly	120	Currently Alex Fraser Group and construction. Seeking beneficiation capacity.
Macedon	Monthly	140	Currently Alex Fraser Group and construction.
Moyne	Monthly	120	Fulton Hogan Warrnambool for local roads.
Surf Coast	Monthly	140	Unknown
Warrnambool	Fortnightly	120	Fulton Hogan Warrnambool for local roads.
Yarra	Fortnightly	80	Alex Fraser Group, but with the intention to switch to packaging use when possible. Full service to start in November.

Source: SV.

Figure 2.2.1 provides data on movements in export and local destinations of kerbside collected glass since the beginning of 2015. Exports of kerbside glass are generally low and sporadic, and none occurred from May 2020 to October 2021. However, there was a couple of hundred tonnes exported in November and December 2021.

Figure 2.2.1 – Destination of Victorian MRF outputs (tonnes/month) – Kerbside glass



Note 1: Historical total monthly MRF outputs have been approximated in Figure 2.2.1 to enable comparison with monthly ABS customs export data. The overall trends are the key aspect of the figure.

Note 2: The combined 'Local reprocessing or storage' estimate is indicative only, and these fates will be presented separately if this level of data becomes available. Landfill excludes disposal from storage and is an approximation based on annual waste to landfill rates.

Source: ABS (2021) and Envisage Works

Prices, demand and supply

Gate fee rates for MRFs sending material for beneficiation can vary, based on quality and quantities. Gate fees of \$0 /tonne at the outgoing gate of the MRF (EXW MRF) to -\$30 /tonne are reported if the glass is going to beneficiation. Prices are even lower if the glass is going into other applications (such as road construction), as the competing gate fee is straight to landfill.

The cost of beneficiation for food grade packaging is estimated at around \$150–\$200 /tonne but is dependent on the source and processing requirement of the incoming glass.

Following beneficiation Visy Glass then receives the glass cullet from beneficiation plants in most major cities nationally, including Melbourne at its Spotswood facility. The price paid at these facilities has remained largely unchanged in recent years.

The limited beneficiation capacity has restricted the amount of glass suitable for production. There is an increased focus on addressing this shortfall in beneficiation capacity, both in Victoria and in other states.

Delivered MRF sorted mixed glass destined for road base or asphalt production incurs a gate fee that is greater than the fee into beneficiation, but less than a landfill gate fee. On average it is expected to be around -\$50 to -\$80 /tonne (so a significant cost to the MRF operators).

Victoria regularly receives reasonably substantial kerbside glass imports from New Zealand. This was 300 tonnes in November and 900 tonnes in December 2021, and a total of 8,300 tonnes over the 2021 calendar year. The fate of this glass is not known.

Key end-markets and related specifications

Beyond taking used glass packaging back into packaging production, for which there may only be a future national demand of 0.6 million tonnes nationally (leaving 0.7 million tonnes requiring alternative uses), there are a range of other secondary markets that can be used, but these do not offer a high market price. These include the major market of glass into asphalt, road base material and sand for construction, and smaller markets for abrasives, and filter media.

Export and interstate market review

Glass cullet is generally not exported in significant volumes due to its low value and significant weight relative to shipping costs. However, this market may develop if large quantities of high-quality beneficiated glass grow in availability. Previous exports of glass cullet from Victoria have been almost entirely to either Malaysia or Bangladesh. From January 2021 all exports of glass packaging will require a license, with unprocessed glass not eligible for export.

Market risks, opportunities and activities

There are two major risks to glass recycling, the first of which relates to the fact that there is significantly more glass in supply than there is beneficiation capacity. This is being addressed in part through the announced Visy and Polytrade beneficiation facilities.

The second major risk relates to national glass demand back into packaging, which cannot absorb all the packaging glass supply even if beneficiated, and so significant non-packaging end-markets for recovered glass will continue to be required, or exports markets for the beneficiated glass could be an environmentally positive fate.

Other end-markets for the glass, such as the construction sector, are needed even though this results in the glass being down-cycled into construction materials.

2.3 Kerbside recovered plastic packaging

Market developments this month

Development 1 – Prices for recovered HDPE bottles have remained at a high level across 2021. Natural HDPE (e.g. milk bottles) packaging scrap prices have been very strong across 2021, and the material is highly sought after both locally and overseas. The high prices may be sustained across most of 2022, underpinned by the very strong local and international brand-owner demand for packaging grade rHDPE.

Development 2 – Prices for recovered PET bottles have remained at a high level across the second half of 2021. PET packaging scrap prices have steadily increased to around \$600–\$650 /tonne by the end of December 2021. These are some of the best prices since 2017. There are very strong potential end-markets for more rPET supply both locally and overseas.

Development 3 – There is significant new kerbside plastic packaging sorting and reprocessing capacity coming on-line in Victoria across 2022–2024. There are a number of Victorian based plastics reprocessors installing new PET, natural and coloured HDPE and PP. There are deep local end-markets for all these polymers, including coloured HDPE and PP when reprocessed to a high quality.

Material overview and market summary

Plastics collected through kerbside collections are generally sent to MRFs and sorted from commingled recycling into either a single mixed plastics grade (1–7 plastic-polymer mix), or more commonly three or four grades, which are PET, HDPE and the residual mixed plastics grade (a 3–7 plastic-polymer mix, but with some residual quantities of PET and HDPE still present).

Two of the three major Victorian MRF operators are also positively sorting a PP stream, which is a highly sought-after product, and nationally all the major MRF operators are understood to be moving towards positively sorting a PP stream. Typically the recovered PP is not reused in consumer packaging, but is incorporated into more durable goods such as plant pots.

PVC and PS are now being proactively phased out from use in packaging by many brand-owners, and the quantities of these polymers in kerbside collections are already low and continues to fall. This is discussed in more detail below.

Figure 2.3.1 provides data on the change in exports of kerbside recovered plastic packaging since the beginning of 2015. The clear trend in exports across the second half of 2020 and to May 2021 has been recovery from the near historical lows seen in mid-2020. However, this appears to have plateaued somewhat across the second half of 2021.

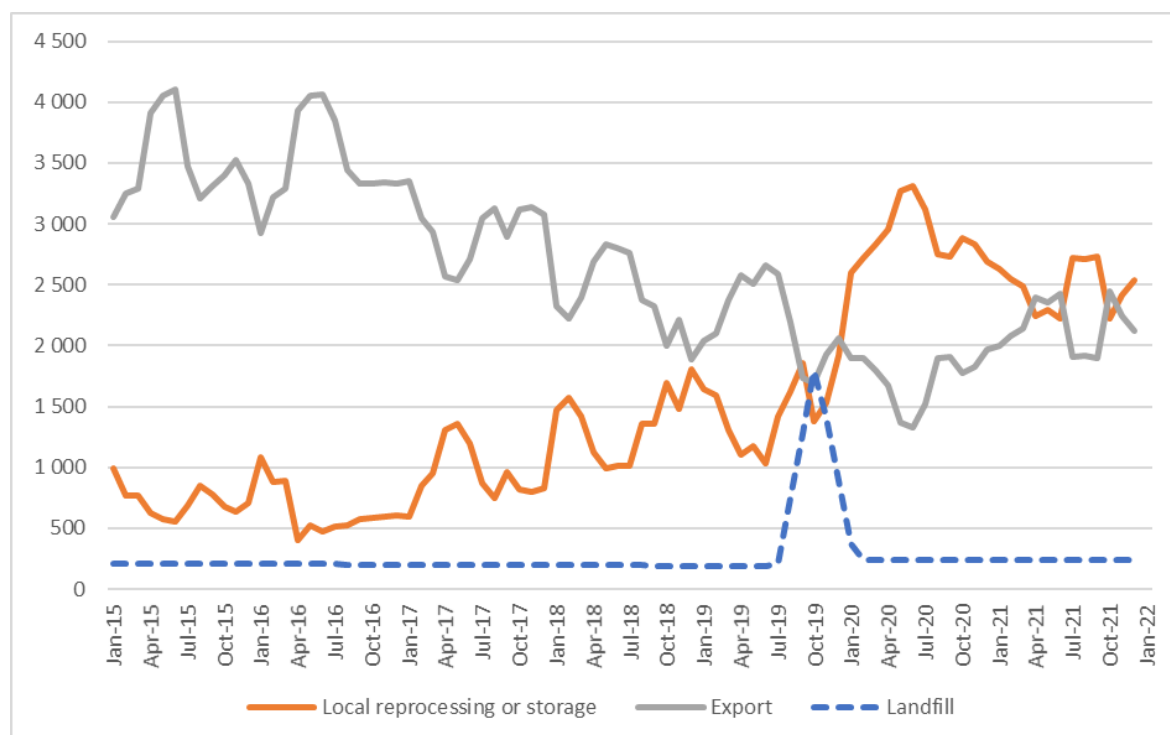
From 1 July 2021 the first round of Australian scrap plastic export restrictions came into force. These restrict the export of plastics to those that have been either:

- sorted into a single resin or polymer type
- processed with other materials into processed engineered fuel (not currently exported from Victoria).

The impact of these export restrictions are likely visible in the export data with the drop in July 2021 exports, following what was mostly 12 months of solid growth. This drop, while noteworthy at around 500 tonnes/month, appears to have recovered somewhat to December 2021.

Currently local reprocessing and export for reprocessing are about equal. However, the second round of exports ban on all unprocessed plastics (including those sorted into a single polymer type) from July 2022 is expected to drive exports down again, potentially quite sharply.

Figure 2.3.1 – Destination of Victorian MRF outputs (tonnes/month) – Kerbside plastic packaging



Note 1: Historical total monthly MRF outputs have been approximated in the figure above to enable comparison with monthly ABS customs export data. The overall trends are the key aspect of the figure.

Note 2: The combined 'Local reprocessing or storage' estimate is indicative only, and these fates will be presented separately if this level of data becomes available. Landfill excludes disposal from storage and is an approximation based on annual waste to landfill rates.

Source: ABS (2021) and Envisage Works

Prices, demand and supply

There continues to be strong local and export markets for clean PET bales that are collected and sorted to specification. Prices had fallen to around \$230 /tonne in October 2020, the lowest price for perhaps a decade. However, prices have steadily increased since to around \$600–\$650 /tonne by the end of December 2021. These are some of the best prices since 2017.

The price of recycled resin is linked to the price for virgin resin. PET resin prices are experiencing the impact of long-term downward pressure due to massive new resin manufacturing capacity gradually coming online globally. However, there appears to be a degree of 'decoupling' of the virgin PET and recycled PET (rPET) prices that has been observed over the last 2 years, as brand-owners chase packaging grade rPET and rHDPE to meet targets on the use of recycled content in packaging.

The AUD/USD exchange rate has increased by 5% since the beginning of 2020 to December 2021. An increasing Australian dollar creates an environment for virgin PET resin prices to be cheaper in AUD, decreasing the competitiveness of rPET with virgin PET. However, unless the AUD appreciates markedly against the USD, it is not expected that exchange rates will have any medium term impact on the competitiveness of rPET (or rHDPE) relative to virgin polymers.

With respect to HDPE, the global prices for washed and flaked material have increased even more strongly than for PET, from \$400–\$450 /tonne in September 2020, to the \$1,000–\$1,100 /tonne range for good quality natural HDPE bottles across most of 2021. These unusually high prices can no longer be considered a blip and it is suspected that they may be sustained across most of 2022, underpinned by the very strong local and international brand-owner demand for packaging grade rHDPE.

Key end-markets and related specifications

Exported plastics packaging has specifications relating mostly to contamination levels. The positive sorting of PET, HDPE and PP that is undertaken at MRFs allows the baled material to generally meet these specifications without major difficulty or manual sorting input. However, as outlined above, from July 2022 these single-polymer sorted bales will need to be reprocessed (chipped and washed at a minimum) to be exportable under the bans.

Export and interstate market review

Previously plastics packaging has been overwhelmingly exported to China, until the latest round of restrictions in 2018. During the 2018–19 financial year Indonesia was the major destination. Since September 2019 Malaysia has usually been the largest destination for Victoria kerbside plastics by a significant margin.

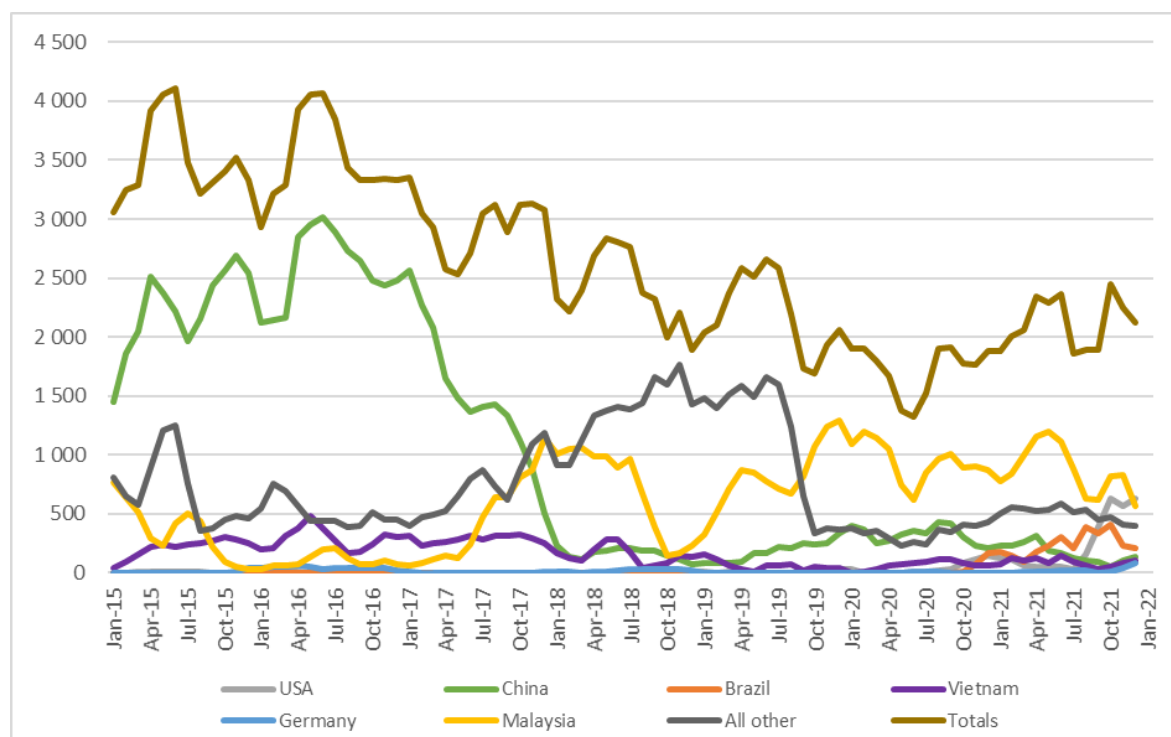
Interestingly, exports to the USA have grown significantly over the October–December 2021 period. This material is all HDPE, and is possibly high quality milk bottle material that is being purchased by packaging manufacturers in the US, driven by the increasing recycled content targets of brand-owners in the US.

Across 2021 exports to Brazil have also grown. This material is all rPET, and is possibly being purchased for blending into combined virgin PET and rPET resin grades, which are then sold to packaging manufacturers internationally. Again, this activity will be driven by the recycled content targets of brand-owners in Brazil and internationally.

Post-consumer plastic imports into Malaysia from Victoria were fairly steady since the beginning of 2019 to December 2021, averaging around 800 tonnes each month, albeit with a fair degree of month-to-month variability. Over April–June they have increased, possibly in preparation for the export bans, and have dropped off in the second half of the year.

The falls since the 2016–17 year were driven almost entirely by lost sales to China, with exports to Indonesia and Malaysia taking up some of this material, but Indonesian exports also collapsed at the end of 2019. The loss of the Chinese markets, and the saturation and restriction of imports into Indonesia has left Victoria highly exposed to Malaysian import conditions, albeit at a lower level than the historical level of exposure to China. The possible emergence of new overseas markets, such as the US and Brazil, is an encouraging development to be watched.

Figure 2.3.2 – Victorian recovered kerbside plastic packaging, export country (t/month)



Source: ABS (2021) and Envisage Works

Table 2.3.1 – Annual Victorian recovered kerbside plastic packaging, to export country (tonnes/yr)

Country ^a	2015–16 (tonnes)	2016–17 (tonnes)	2017–18 (tonnes)	2018–19 (tonnes)	2019–20 (tonnes)	2020–21 (tonnes)	2021–22 ^b (tonnes)
USA	0	0	0	0	100	800	2 400
China	29 600	27 100	7 700	1 600	3 500	3 300	600
Brazil	0	0	0	0	0	1 400	1 800
Vietnam	3 600	3 100	2 900	1 000	500	1 200	400
Germany	300	200	0	200	0	0	200
Malaysia	1 900	1 400	10 600	6 600	11 600	11 600	4 300
All other	6 300	6 000	12 400	18 400	6 400	5 400	2 800
Total	41 700	37 800	33 600	27 800	22 100	23 700	12 500

Source: ABS (2021) and Envisage Works

a) Countries ranked by average of last three months of exports.

b) Partial year across July 2021 to December 2021.

Table 2.3.2 – Most recent monthly change in Victorian kerbside recovered plastics, to export country (tonnes/month)

Country	November 2021 (tonnes)	December 2021 (tonnes)	% change (%)
USA	600	600	0%
China	100	100	0%
Brazil	200	200	0%
Vietnam	100	100	0%
Germany	0	100	n/a
Malaysia	800	600	-25%
All other	400	400	0%
Total	2 200	2 100	-5%

Source: ABS (2021) and Envisage Works

Market risks, opportunities and activities

There continues to be significant and growing local demand for high-quality PET, HDPE and PP packaging recyclate for remanufacturing into many applications, if reprocessed to a high level. In addition, good export markets exist for high-quality sorted/washed flake and pellets.

However, a significant shortfall exists in suitable reprocessing capacity locally. What local reprocessing capacity is available preferentially targets higher value feedstock such as PET and HDPE packaging recovered from CDS related sources, rather than lower value PET and HDPE from kerbside sources.

There is significant new rPET, rHDPE and rPP reprocessing capacity in the pipeline, that appears close to covering the local reprocessing shortfall, including scrap plastics caught up in the Australian unprocessed single-polymer plastics export ban due to come into force in July 2022.

However, much of the new capacity will not be operating by July 2022, leaving a capacity shortfall for the reprocessing of higher value bales of single-polymer kerbside packaging, such as PET and HDPE bottles, that were previously sent directly to export. This may lead to some stockpiling of these bales while local reprocessing capacity catches up with supply from MRFs.

Markets for mixed polymer and lower value post-consumer plastic packaging, such as PET thermoforms, rigid PVC, rigid PS, and mixed polymer scrap bales continue to be under-developed or non-existent. These mixed bales can no longer be exported, as of July 2021, and while it is not confirmed, presumably much of these packaging polymers is currently being sent to landfill.

It is important to note that PVC and PS are now being proactively phased out from use in packaging by many brand-owners, and the quantities of these polymers in kerbside collections are already low and continues to fall. Continued deselection of PVC and PS, and ongoing improvements in PET, HDPE and PP based packaging design, are anticipated to improve the overall value and recyclability of our PET, HDPE and PP dominated rigid plastic packaging system.

There is significant new capacity that has either started operating in the last year, or is reported to be coming online in the next 1–3 years. A summary of this future capacity, that has a kerbside packaging focus, is provided in Table 2.3.4.

Note that the estimated capacity figures in this table are provisional. We continue to update this list as information on new reprocessing facility commitments become public. Also note that there are numerous other plastics reprocessing projects under development in Victoria (~10–15) that do not relate to kerbside plastic packaging, these are not listed.

Table 2.3.3 – Major new or upgraded plastics reprocessing facilities across 2020–2022 (kerbside packaging focussed)

Facility name	Location	Est. capacity (tonnes/yr)	Highest reprocessing level	Other comments
Advanced Circular Polymers (ACP)	Somerton VIC	20 000–70 000	Sorting and shredding/granulation	Non-food grade flake production of PE and PP (mostly)
Australian Recycled Plastics	Narrabri NSW	1 000–2 000	Sorting, shredding/granulation and pelletising	Non-food grade rPET production
Coca-Cola Amatil / Veolia	TBC	10 000	Sorting, shredding/granulation and pelletising	Food grade rPET and rHDPE production. Start-up in late 2023.
Circular Plastics Australia PET Asahi / PACT / Cleanaway	Albury NSW	28 000	Sorting, shredding/granulation and pelletising	Food grade rPET and rHDPE production. Start-up in October 2021.
PACT Group / Astron	Wacol QLD	7 000	New product manufacture	LDPE film processing
PACT Group / Astron	VIC	2 000	Sorting and shredding/granulation	Kerbside mix sorting and reprocessing. Start-up in 2 nd half 2021.
Martogg LCM	Dandenong VIC	23 000	Sorting, shredding/granulation and pelletising	Food grade rPET production
Martogg LCM	VIC	>6 000	Sorting and shredding/granulation	Food grade rHDPE production. Start-up in July-Sept 2021 period.
Recycled Plastics Australia	Kilburn SA	10 000–20 000	Sorting, shredding/granulation and pelletising	Non-food grade flake and pellet production PE and PP (mostly)
Total	-	107 000–168 000	-	-

Note: Updated to December 2021

2.4 Kerbside recovered metal packaging

Market developments this month

Development 1 – Prices for recovered tin-plate steel cans and aluminium beverage cans have recovered strongly from mid-2020 lows. Prices aluminium beverage cans are now at the highest level seen for at least 5 years. Prices for steel cans fell in December 2021, but are still relatively good.

Development 2 – Exports of tin-plate steel cans and aluminium beverage cans dipped in the second half of 2021. Export markets for scrap metal packaging appear healthy and moving well. The high prices across 2021 probably reduced stockpiles of baled cans built-up by MRF operators and scrap metal traders during the period of very low prices across the 2020 calendar year. This stockpile draw-down is now complete and may have contributed to exports falling across the last quarter of 2021.

Development 3 – Container costs have been at record prices across the second half of 2021. Freight cost have been very high across the second half of 2021, putting downward pressure on exports even though metal prices are good.

Material overview and market summary

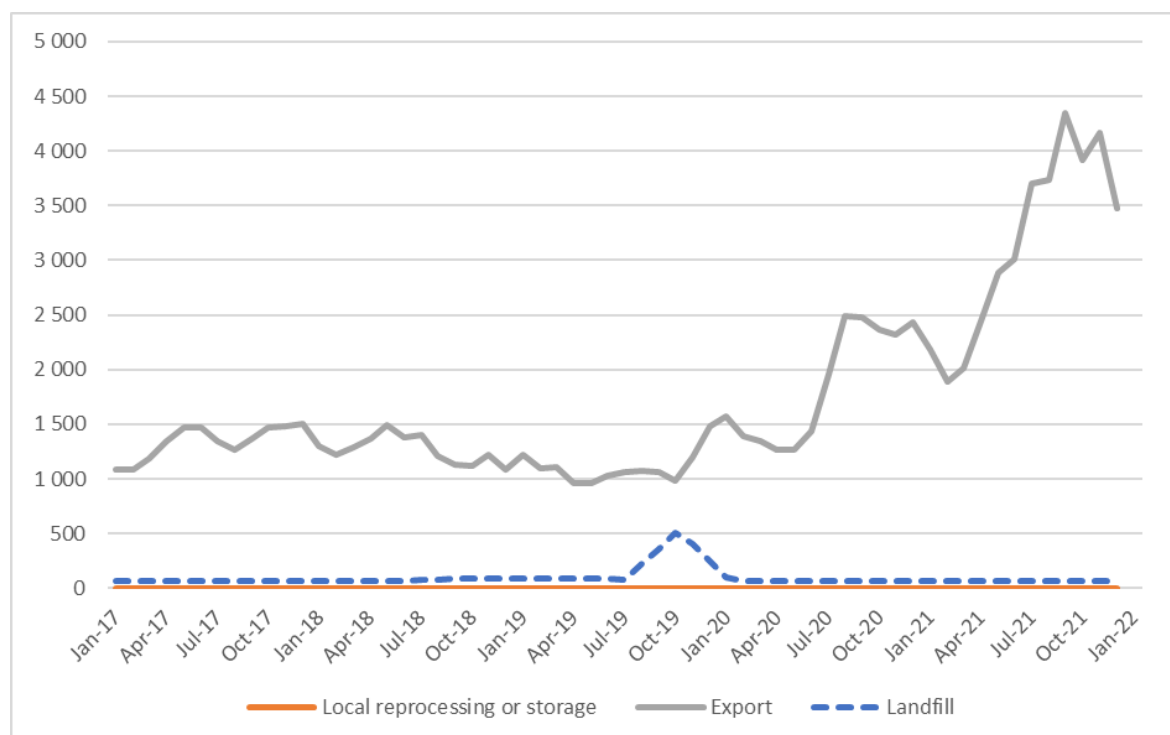
Steel and aluminium cans, mostly recovered through kerbside recycling collections from households, account for only a small fraction of overall metals recovery from Victoria.

MRFs are well equipped to separate these materials from household collections into marketable grades of recyclate, which although small in volume (around 3–4 per cent of the average household recycling bin) represent a valuable source of revenue for MRFs.

Recovered steel packaging is considered a low-value form of steel post-consumer, but is still saleable into overseas markets, sometimes by blending it into mixed grade steel products (e.g. 'black iron'). It is not purchased by local smelter operators in any volume.

Figure 2.4.1 provides data on the change in exports of kerbside recovered metal packaging since the beginning of 2017. The jump in metal packaging exports across the period of July 2020 to October 2021 is probably mainly due to the large increase in scrap metal prices across the December 2020 to November 2021 period. There were notable price increases for tin-plate steel cans across the June–November 2021 period, and prices increases for aluminium cans continuing to the end of the year.

Figure 2.4.1 – Destination of Victorian MRF outputs (tonnes/month) – Metal packaging



Note 1: Historical total monthly MRF outputs have been approximated in the figure above to enable comparison with monthly ABS customs export data. The overall trends are the key aspect of the figure.

Note 2: The combined 'Local reprocessing or storage estimate is indicative only, and these fates will be presented separately if this level of data becomes available. Landfill excludes disposal from storage and is an approximation based on annual waste to landfill rates.

Source: ABS (2021) and Envisage Works

The baled steel and aluminium packaging is sent to a fairly wide range of countries, with the main destinations being Thailand, Indonesia, South Korea, Taiwan and India across the second half of 2021. Almost all recovered metal packaging is sold into export markets, with no Victorian tin-plated steel or aluminium packaging identified as being reprocessed in Australia.

There are trials of small quantities of tin-plated and aluminium packaging reported as reprocessed in other states, and it is expected that these quantities will increase over coming years.

Prices, demand and supply

While there is currently little steel or aluminium packaging post-consumer reprocessed in Australia, international markets for these commodities remain strong.

There are two aluminium smelter operators in Australia that are reportedly investigating upgrading facilities to take used aluminium beverage cans. These are located in Tasmania and Queensland. This may provide some increased surety of (local) reprocessing capacity, and a buffer from international trading conditions, should they deteriorate.

There is no reported significant distressed storage of steel or aluminium packaging, which the jump in exports over the last 12 months supports.

The price of steel packaging is strongly linked to global steel pricing. The current price received for baled steel packaging is probably around \$250–\$270 /tonne (EXW MRF). This is strong growth from the price of around \$90–\$100 /tonne seen back in the middle of 2020.

The price of shipped aluminium packaging is linked to virgin aluminium pricing. The current price received for baled aluminium beverage cans is approximately \$2,000–\$2,200 (EXW MRF).

Key end-markets and related specifications

Exported steel packaging has specifications relating to contamination levels and bale density. The sorting that is undertaken at MRFs allows the baled material to meet these specifications without major difficulty or manual sorting input. A similar situation exists for aluminium packaging.

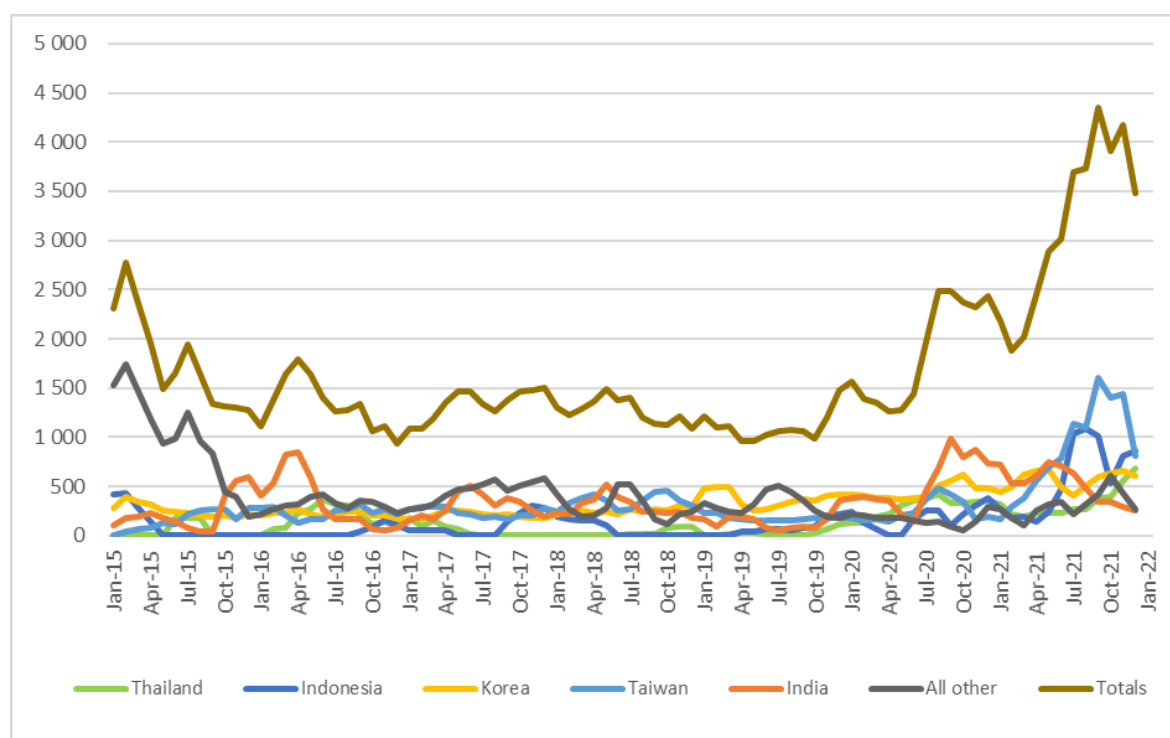
Generally steel and aluminium packaging is recycled back into the respective post-consumer metal pools and go into durable applications such as vehicles, building materials and many other products.

Export and interstate market review

The exported steel and aluminium packaging are sold into large markets with most metal coming from non-packaging sources. The material flows from all countries and is destined for wherever the demand requires material for production. Unlike some other materials, there is no way of knowing the origin of the steel or aluminium in new product. Demand and pricing can increase or decrease based on worldwide supply and demand conditions.

Exports of kerbside recovered metal packaging have increased to a high level since June 2020, driven by a sharp return in exports to India, increases in exports to Taiwan, South Korea and Indonesia, and continually improving prices across 2021. The fall from October 2021 may be due to the completion of the drawdown of stockpiled bales, and some slowdown in exports due to supply chain disruptions and very high container costs over the second half of 2021.

Figure 2.4.2 – Victorian recovered kerbside metal packaging, to export country (tonnes/month)



Source: ABS (2021) and Envisage Works

Table 2.1.1 – Annual Victorian recovered kerbside recovered metals, to export country (tonnes/yr)

Country ^a	2015–16 (tonnes)	2016–17 (tonnes)	2017–18 (tonnes)	2018–19 (tonnes)	2019–20 (tonnes)	2020–21 (tonnes)	2021–22 ^b (tonnes)
Thailand	1 400	1 800	0	400	1 500	3 600	2 500
Indonesia	0	600	1 700	200	1 300	3 000	5 300
Korea	2 600	2 600	2 600	3 900	4 500	6 400	3 400
Taiwan	2 700	3 100	3 200	3 300	2 100	4 800	7 500
India	5 200	2 400	4 000	2 400	2 700	8 400	2 300
All other	6 000	4 100	5 000	3 500	3 000	2 000	0
Total	17 900	14 600	16 500	13 700	15 100	28 500	23 200

Source: ABS (2021) and Envisage Works

a) Countries ranked by average of last three months of exports.

b) Partial year across July 2021 to December 2021.

Table 2.4.3 – Most recent monthly change in Victorian recovered metals, to export country (tonnes/month)

Country	November 2021 (tonnes)	December 2021 (tonnes)	% change (%)
Thailand	600	700	17%
Indonesia	800	900	13%
Korea	700	600	-14%
Taiwan	1 400	800	-43%
India	300	300	0%
All other	400	300	-25%
Total	4 200	3 600	-14%

Source: ABS (2021) and Envisage Works

Market risks, opportunities and activities

The global steel and aluminium markets have both been able to consistently absorb metal packaging from kerbside systems, better than the local or global markets for any of the other packaging materials. This is primarily due to the lack of barriers in using MRF-sourced metal packaging into many steel and aluminium market outlets.

Previously there have been no limits on quantity of steel or aluminium packaging into international markets. However, in the first half of 2020 there was a taste of how that could change with the temporary tin-plate steel import restrictions into India.

Tin-plate steel packaging is not reprocessed in Australia, except in very small quantities, is low value, and there are reports of high levels of contamination. There is increasing risk of future import restrictions by receiving countries, particularly if mixed grade post-consumer steel imports (e.g. 'black iron' scrap grades) are restricted for any reason, as tin-plate steel is often 'shandied' (blended) into other scrap steel grades to enable its sale.

If there was a dramatic negative shift in supply/demand at a global level, this could lead to significant price reductions for baled steel or aluminium packaging. However, there is no reason to believe that this is currently a major risk.

It is worth noting that China has not historically been a significant destination of Australian steel and aluminium packaging, and there are a reasonable number of destination countries purchasing Australian scrap metal packaging.

The worldwide virgin steel and aluminium production capacities are also changing and a contraction or expansion in capacity will influence pricing. However, these are seen as only low risks at the current time.

3. Special topics

Each bulletin examines one or two special topic areas. These provide a deeper examination of specific issues of interest to a broad audience, while updating and building on the core information and time-series data that are integral to the bulletin each month.

This bulletin looks at:

- Is this the last dance for mixed recovered paper exports?
- Towards a harmonised kerbside collection system

Refer to the earlier bulletins for the special topics explored in those editions.

3.1 Is this the last dance for mixed recovered paper exports?

By IndustryEdge

Current global fibre markets – and those of the last year – have been so buoyant, it would be possible to forget that impending trade bans exist at all. Whether the year-old Chinese import bans or the mid-2024 Australian export bans, kerbside or ‘mixed’ recovered paper faces uncertain prospects that the market seemed to shrug off in 2021.

Is this a lasting trend, or a last dance in an international market on which time is about to be called?

Over the year-ended November 2021, national exports of mixed recovered paper (most of which is collected at kerbside) lifted 9% to a record 468,000 tonnes at an average price over the year of AUD306 /tonne FOB. The average price is also a record but is skewed by small volumes of apparently very high value.

In any event, how are these export volumes even conceivable, in a year when China exited the market entirely?

The simple reality is that despite the long-term volume trade being dictated by Chinese box manufacturers, value has long remained elsewhere. The global recovered fibre market saw China was already overcrowded and for two long decades, exporters rushed headlong to join the throng, trading less on the product and more on the price.

At its heart, the traditional thesis was that exporters felt lucky to be attracting any value for the privilege of what they had long considered was nuisance rubbish. We should recall that until five years ago, the common term for recovered paper or recovered fibre was ‘waste paper’. The term ‘scrap’ is still used to this day.

That approach undermined the value of what was actually a reliable stream of a valuable resource.

When China called time on being the dumping ground for other countries’ rubbish, it did the world a favour – including Australia. It might not yet seem that is so, but the actions of the Chinese authorities (increasingly mirrored elsewhere in South-East Asia) emphasised the underlying value of the fibre. Even the ‘problematic’ fibre with its inherent separation and contamination challenges.

By the time the 1st January 2021 came around and China shifted from quality specifications to an outright import ban, the penny had dropped with industry and government here in Australia. The abundant kerbside recovered paper stream was too valuable as a resource to ignore, and certainly too valuable to consign to a ‘let’s get rid of it, regardless of price’ approach.

Australia’s export bans were already law and planning was underway to utilise the resource when the bans kicked in. For some, that prompted action on improved sortation, handling, baling and so on, but for others, including supported by both State and Federal Governments, domestic reprocessing is the agenda of the day. The dance certainly continues on that front, and we can expect to see more developments over the next year and beyond.

Indonesia and some other countries had long been customers of Australia's recovered paper. But the Chinese ban increased that trade dramatically, because the Chinese box makers could no longer receive recovered paper into China. Since 2018 they had rushed to establish satellite manufacturing themselves or by contract outside China. Malaysia, Indonesia, Vietnam, Thailand and other nations have all expanded their receipt of recovered paper – manufacturing corrugated box paper and shipping it to China to be manufactured into boxes.

Indonesia has replaced China as the major recipient of Australia's recovered paper. Shipments to it are up 99% year-ended November and topped 628,000 tonnes for the year. Much of their imports are kerbside derived recovered paper, with abundant old corrugated cartons and other packaging grades dominating that stream.

Desperate for fibre to meet their customer's demands in China, they pay what they must to ensure the supply is available to them.

This could be short lived as a trade, but the possibility is that it remains sufficiently lucrative that a low value kerbside waste stream is headed toward sufficient long-term value for improved sorting, separation and specific supply of recovered paper to be viable into the future here in Australia, beyond the ban on unsorted exports.

It might just be that the band will play a few more encores, and the dance can continue.

3.2 Towards a harmonised kerbside collection system

By Sustainable Resource Use

For many years kerbside recycling has been hampered by poor packaging material choices, and inconsistencies across council kerbside systems. This includes different bin colours, signage, size and collection frequency. It also extends to significant differences in what can be included, and what is designated contamination.

Often this has been the result of recycling market conditions, differing approaches by MRFs and general confusion on recyclability of many forms of packaging.

This was recognised by the Victorian Government in the circular economy policy released in 2020. In April 2021 a national meeting of the state environment ministers committed to 'work collaboratively to improve the harmonisation of municipal waste collection, taking the first step within each state through the implementation of standards within each jurisdiction for kerbside recycling, and a national implementation roadmap that considers costs and benefits'.

It is expected that harmonised guidelines/standards could include the following features:

- Wheeled bins in black or forest green, yellow lids for commingled, lime green for organics, red for residual waste, purple for glass, and for commercial sites/MUDs – blue for paper/cardboard.
- Collection frequency to be fortnightly for commingled, organics and residual waste, four weekly for glass. If odour is deemed an issue additional collections in summer could be provided.
- Signage (pictorial as well as wording) on the lid as well as the front of the bin with detailed messaging on what to include/exclude inside the lid or regularly featured in municipal wide communications.
- The 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. In the near future, with the development of a soft plastics product stewardship scheme, soft plastics to be included in a 'bags in a bag' format.
- the 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 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.

Harmonising of kerbside systems is seen as crucial to the meeting of the national 2025 recycling targets.

4. Supporting material

Please refer to the document *Resource Recovery Market Bulletin (glossary and references)* for a detailed glossary of the terms used throughout the bulletins, and a listing of the references and other sources drawn on in the development of the bulletins.

This document is available for download at:

<https://www.sustainability.vic.gov.au/Business/Investment-facilitation/Recovered-resources-market-bulletin>.