

Recovered Resources Market Bulletin

July 2021

Victorian Market Intelligence Project (edition #18)



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Release date

August 2021

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Summary

This is the 18th 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.

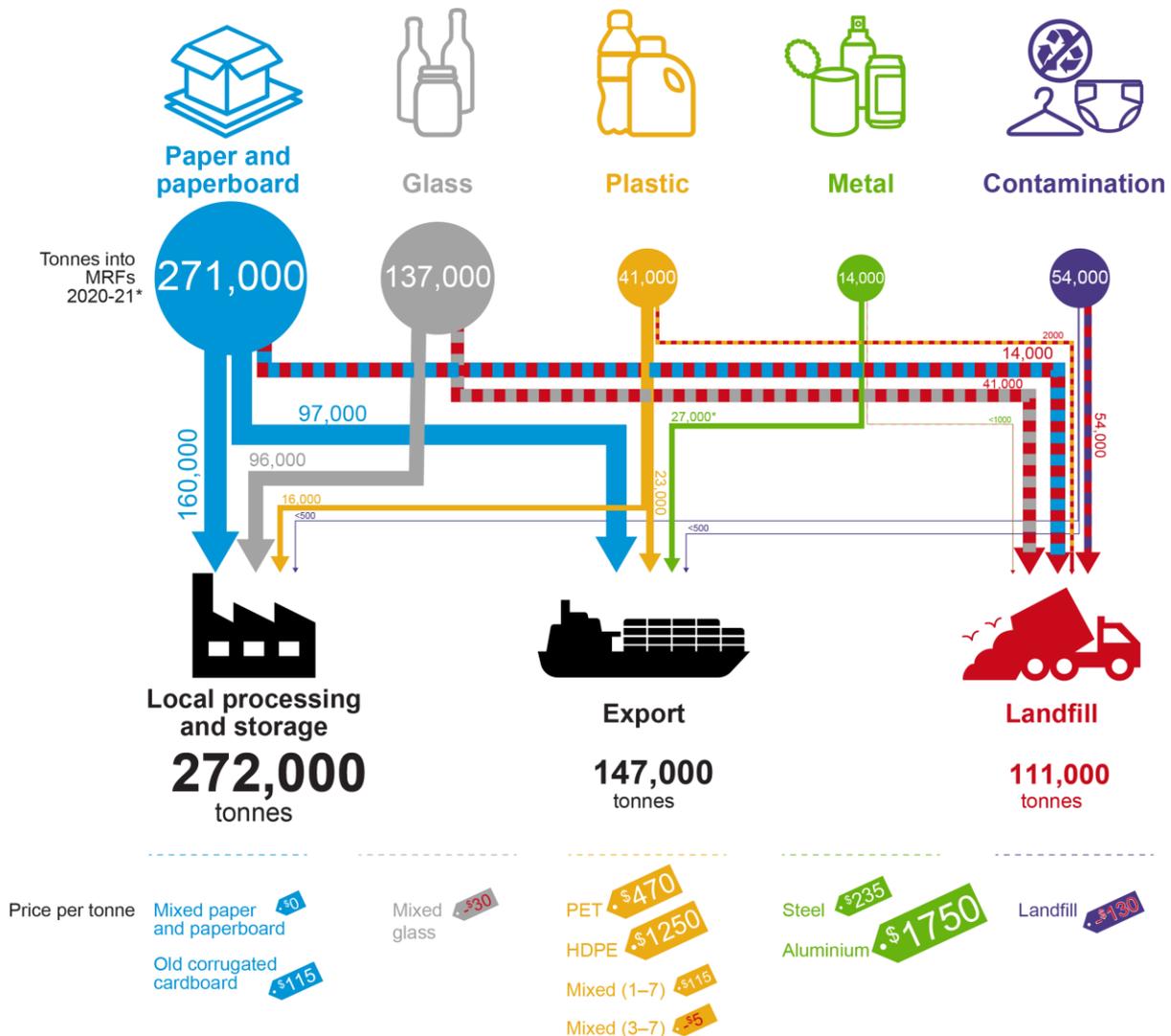
This bulletin includes export data to the end of May 2021, and pricing updates also to the end of May 2021.

Following a successful 12-month pilot program and evaluation, SV and WMRR are producing additional bulletins while considering a future bimonthly or quarterly release. This bulletin is one of these 'interim' bulletins. The bulletin format may also be updated, but the core time-series kerbside market datasets will continue.

Market overview

Figure 1 below is an overview of the flows of kerbside collected recyclables over the 11-month period of July 2020 to May 2021. Prices are for May 2021.

Figure 1 – Flows of kerbside collection materials in Victoria collected during July 2020–May 2021*



* Note that flows are for July 2020 to May 2021 only. Metal exports are higher than collections due to removals from stockpiles.

Kerbside recyclable materials sent to landfill

Of the 540,000 tonnes of kerbside materials collected 430,000 tonnes or 80% were sent to downstream processing (including export of 86,000 tonnes), and 110,000 tonnes or **20% was sent to landfill** across July 2020 to May 2021.

The disposal rate to landfill represents an increase of 2–3% 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 due to the impacts of coronavirus (COVID-19) (~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).

Stockpiling at the Metropolitan MRF operators do not believe stockpiling to be significant as of June 2021.

Kerbside materials exported

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

- 25% of national exported post-consumer paper & paperboard (27,000 tonnes of 106,000 tonnes). Compared with *28% exported in April and 31% in March*.
- 48% per cent of national exported post-consumer plastic (5,900 tonnes of 12,200 tonnes). Compared with *54% exported in April and 46% in March*.

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 will be banned, likely precipitating a drop in the exports of mixed post-consumer plastics. June 2021 export data will be available in August.

Kerbside recycling markets: April to June developments

Market-wide developments

Development 1 – Recycled commodity prices continue to be generally trending up. However, this has had minimal impact on the value of mixed paper & cardboard and glass recovered from kerbside collections. Across 2021 there have been continual significant increases in the commodity values for kerbside recovered plastics and metals, but not mixed paper & cardboard.

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 mid-June.

Paper & paperboard

Development 3 – Visy has announced a major upgrade of its Coolaroo paper mill to take an additional 95,000 tonnes/yr of mixed kerbside paper & cardboard. In April 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.

Development 4 – Indonesia has cemented its position as the major recipient of Australia’s recovered paper, post China’s exit from the market. This is significant because total exports continue to rise and month-on-month are now at or above levels experienced in 2020.

Development 5 – Global virgin pulp prices have plateaued, with some pulp grades levelling out at new peaks that are likely to remain in place until late 2021, maintaining the upward bias on most global fibre prices. This is a positive development for recycled fibre commodity prices.

Glass packaging

Development 6 – Visy has announced major expenditure on glass packaging beneficiation and glass packaging manufacture. Visy have announced the expansion of a Laverton based beneficiation facility by 100,000 tonnes annually. As reported in the last bulletin, 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 – Major expansions of glass beneficiation capacity by Cleanaway. As reported in bulletin #17 a major expansion of glass beneficiation will be constructed by Cleanaway in Melbourne to process glass packaging from its MRF operations and other sources such as CDS sourced material. The plant will have a capacity over 100,000 tonnes and be operational at the end of 2022. The Cleanaway plant will receive \$3 million in funding support from the Victorian Government.

Plastic packaging

Development 8 – Prices for recovered HDPE bottles continued to improve and are now at the highest levels seen since 2017 at least. 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.

Development 9 – Prices for recovered PET bottles continued to improve and are now at the highest levels seen since 2017. PET packaging scrap prices have grown much less strongly than HDPE, but are still much improved. There are very strong potential end-markets for more rPET supply.

Development 10 – There is significant new mixed kerbside sorting and reprocessing capacity coming on line in Victoria. There are a number of Victorian based plastics reprocessors installing new PP and coloured HDPE capacity, of around 50,000 tonnes (committed) over the next few years. There are deep local end-markets for kerbside recovered PP back into food contact and many other applications.

Development 11 – There is significant new kerbside plastic packaging sorting and reprocessing capacity coming on-line in Victoria. 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 for both tin-plate steel cans and aluminium beverage cans are both now at the highest levels seen for at least 5 years.

Development 13 – Exports of tin-plate steel cans and aluminium beverage cans continue to be at the highest levels seen since early 2015. Export markets for scrap metal packaging appear healthy and moving well, with market recovery from the pandemic dip (mid-2020) now in the past. The current high prices are probably reducing 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 trade has been particularly noticeable during April and May 2021.

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 #17.

Market implications

- **Recycled commodity prices are generally trending up:** Across 2021 there have been significant increases in the commodity values for clean cardboard (but not mixed paper & cardboard), plastics and metals. This may be reducing financial stress on sorters, reprocessors and exporters, but this is unconfirmed.
- **Increasing the flow of glass back into packaging.** With the significant drawdown on glass stockpiles, the priority turns to the expansion of beneficiation capacity to facilitate an increased flow of recycled glass back into bottle production.
- **Significant increases in reprocessing capacity and end-markets for kerbside mixed-paper are now on the longer-term horizon.** In April 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.

Investment opportunities

Market-wide

- Ongoing education program to reduce kerbside contamination.
- MRF modifications for improved separation 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.
- Commercial site cardboard compaction equipment.

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 18th 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 May 2021, and pricing updates also to the end of May 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:

- **Implications of international growth in virgin plastics capacity**
- **Consumer packaging away from the supermarket**

SV and WMRR are currently evaluating the ongoing frequency and format for the bulletin, potentially shifting to a modified format and quarterly basis going forward. We will keep all subscribers updated on the plan for 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:

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- Catherine Ng – Team Leader-Strategic Intelligence (catherine.ng@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.

A key aspect of the latest Chinese restrictions is a maximum contamination threshold of 0.5 per cent for imported bales of post-consumer mixed paper & paperboard and mixed plastics. This threshold is very low and MRFs internationally, including Victorian MRFs, are not capable of meeting the 0.5 per cent contamination threshold.

- Global coronavirus pandemic starting in early 2020, and still ongoing, hampering international freight movements and country level manufacturing activity.

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](#).

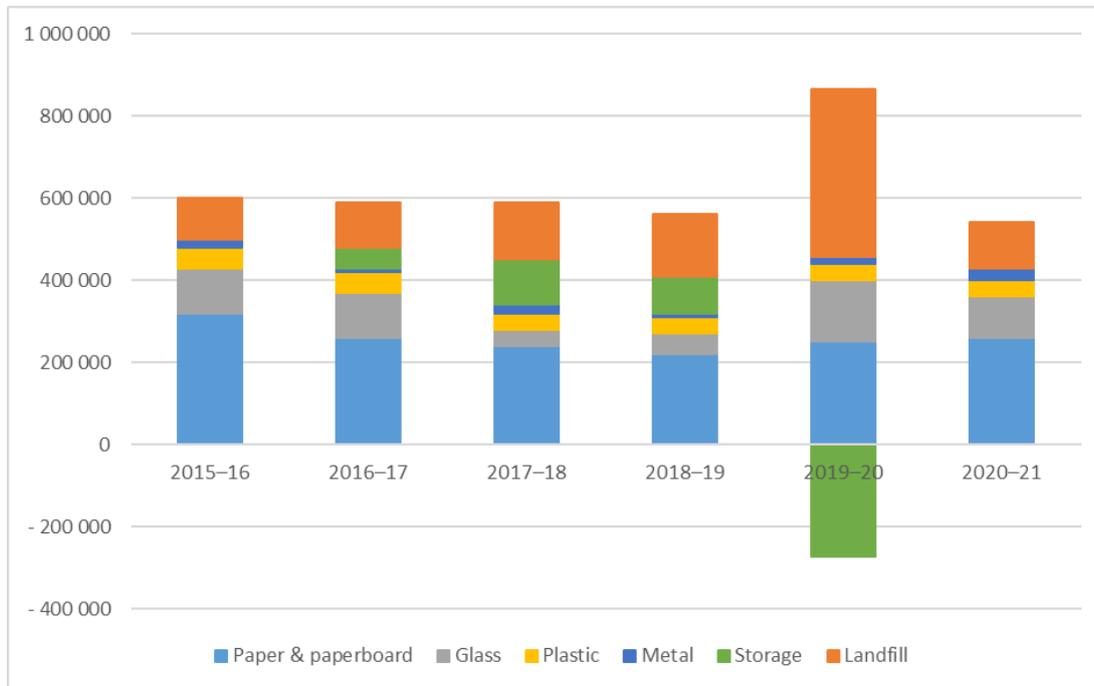
1.2 Overview of kerbside recycling flows

Victorian kerbside recyclables collection and sorting systems have been fairly steady over the past 4 years at around 550–600,000 tonnes per year. After operating losses of 150,000 tonnes of contaminant material and unrecovered recyclables an estimated 430,000 tonnes are available for reprocessing (2020 estimates). 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 2020–21 data is part-year data for the 11 months across July 2020–May 2021 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 are now at the lowest levels since 2017 at least.

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



Note: 2020–21 data is partial financial year across the 11 months July 2020–May 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
	(tonnes)	(tonnes)	(tonnes)	(tonnes)	(tonnes)	(tonnes)
Paper & paperboard	330 000	280 000	250 000	220 000	250 000	260 000
Glass	100 000	110 000	30 000	50 000	150 000	100 000
Plastic	50 000	40 000	40 000	40 000	40 000	40 000
Metal	20 000	10 000	20 000	10 000	16 000	30 000
Storage ^a	0	50 000	110 000	90 000	-274 000	0
Landfill ^b	100 000	100 000	140 000	150 000	410 000	110 000
Totals	600 000	590 000	590 000	560 000	592 000	540 000

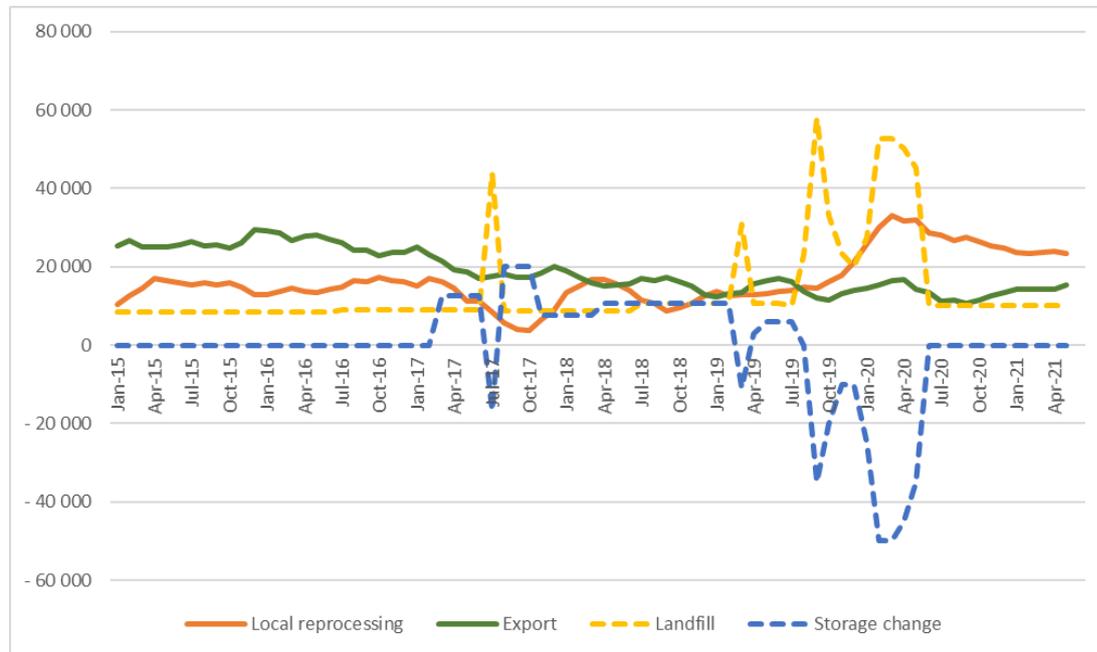
Source: SV (2017; 2018; 2019; 2020) and industry consultation.

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 table above have been estimated based on publicly available sources, with totals verified through consultation.

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. Most of the legacy glass storage has now 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.

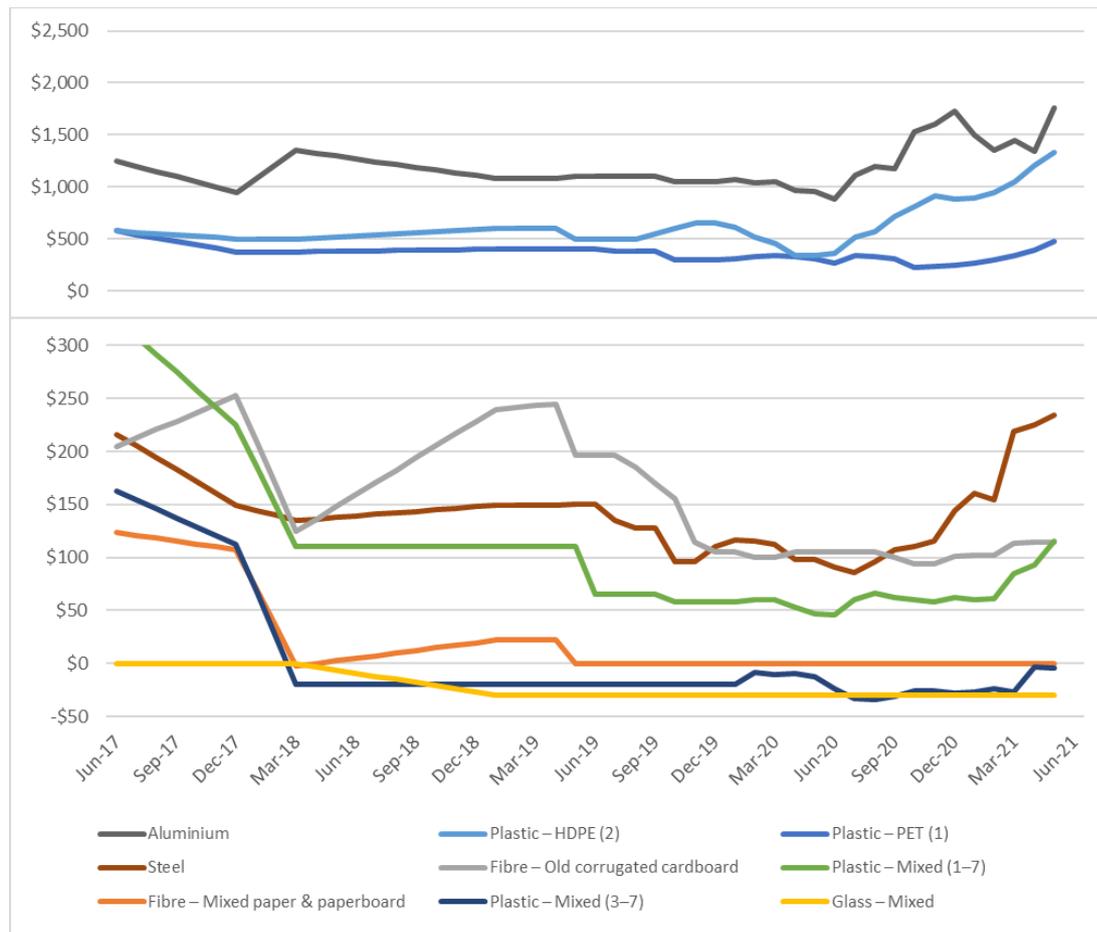
1.3 Market risks, opportunities and activities

Of all the states/territories Victoria may have the heaviest reliance on exporting kerbside materials. In May 2021 Victoria made up an estimated 30% of Australian exports of post-consumer materials that might have a kerbside source, compared with 34% in April and 37% in March. Averaged across the 2020–21 financial year to May Victoria made up an estimated 34% of Australian exports.

Recovered paper exports (including material from both C&I and kerbside sources) fell sharply across April–August 2020 to the lowest levels since January 2015 at least. However, there has been strong recovery since September 2020 back to pre-pandemic levels, which have been stable in quantity since February 2021. Prices for all grades of recovered paper and paperboard have been fairly steady over the January 2020 to February 2021 period, but with some increases from March following large increases in virgin fibre pricing.

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 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-May 2021 (\$AUD/tonne)

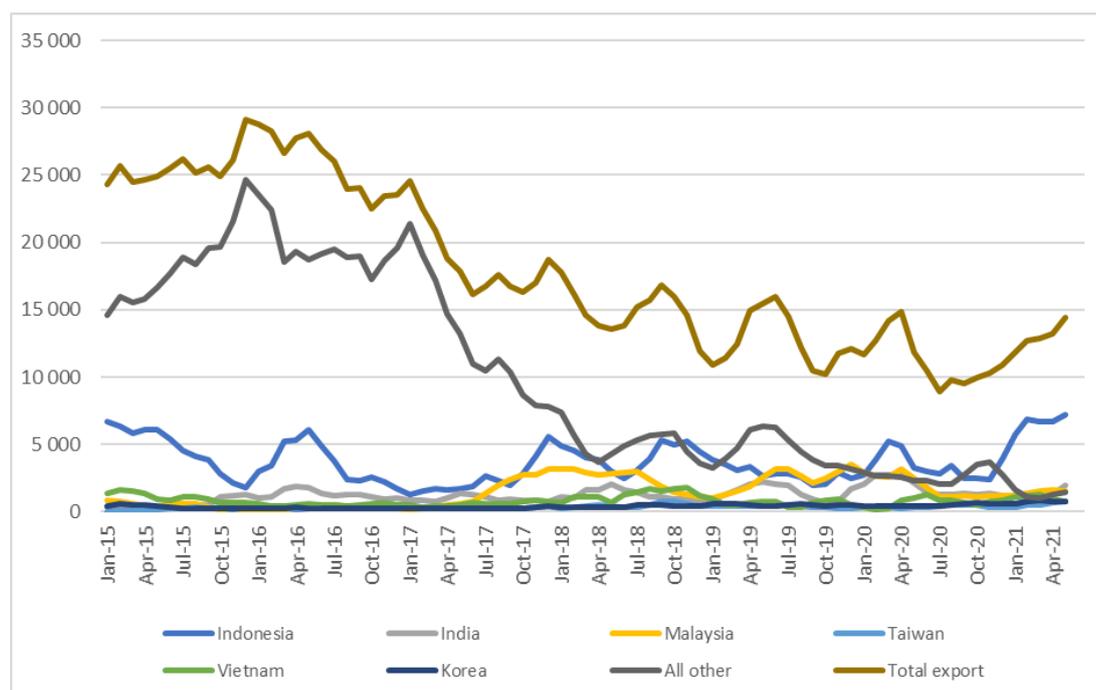
Material category	Value	Comments
Fibre – Bleached softwood kraft (BSK) pulp	\$1200–\$1300	BSK and BHK pulps are not directly competing with recycled fibre in the Australian market. Values provided to give some context on virgin pulp prices.
Fibre – Bleached hardwood kraft (BHK) pulp	\$950–\$1050	
Glass – 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	\$1,900–\$2,000	-
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	\$2,600–\$2,700	LME aluminium alloy

1.4 Export market review

A summary of Victorian exports since January 2015 is provided in this section. In May 2021, Indonesia, India, Malaysia, Taiwan, Vietnam and Korea were the main 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 May 2021.

Exports across the first 11 months of 2020–21 were an estimated 124,000 tonnes, compared to 137,000 tonnes across the corresponding 11 months in 2019–20.

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 2020–21. 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 destination country, for April and May 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 ^b (tonnes)
Indonesia	47 000	25 000	42 000	46 000	38 000	51 000
India	4 000	7 000	32 000	23 000	33 000	14 000
Malaysia	0	1 000	4 000	6 000	5 000	14 000
Taiwan	14 000	13 000	14 000	16 000	21 000	5 000
Vietnam	2 000	2 000	2 000	1 000	2 000	10 000
Korea	234 000	198 000	74 000	50 000	28 000	7 000
All other	22 000	20 000	25 000	29 000	20 000	23 000
Total	323 000	266 000	193 000	171 000	147 000	124 000

Source: ABS (2021) and Envisage Works

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

b) Partial year across July 2020 to May 2021.

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

Country ^a	December 2020 (tonnes)	January 2021 (tonnes)	% change (%)
Indonesia	6 700	7 200	7%
India	1 200	2 000	67%
Malaysia	1 600	1 500	-6%
Taiwan	700	800	14%
Vietnam	1 000	700	-30%
Korea	800	800	0%
All other	1 300	1 400	8%
Total	13 300	14 400	8%

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 June 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

It was reported in early bulletins that as of 1 April 2019 all (100 per cent) post-consumer paper imports into Indonesia will be inspected at ports (up from around 10 per cent previously). However, in practice, it appears so far that inspection rates are somewhat elevated, rather than covering all imports.

The contamination threshold (impurity limit) was set to 2 per cent in May 2020, which is significantly higher than the 0.5 per cent for China.

In October 2020, Indonesian authorities announced that exporters will need to complete a registration process to continue exporting to Indonesia, which is understood to have come into force in January 2021, however, this has not been confirmed.

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.

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, with tighter controls on e-waste imports also foreshadowed but its status is unclear. Low quality plastic waste imports may be banned from either later in 2021 or in 2022.

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 month

Development 1 – Visy has announced a major upgrade of its Coolaroo paper mill to take an additional 95,000 tonnes/yr of mixed kerbside paper & cardboard. In April 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.

Development 2 – Indonesia has cemented its position as the major recipient of Australia's recovered paper, post China's exit from the market. This is significant because total exports continue to rise and month-on-month are now at or above levels experienced in 2020.

Development 3 – Global virgin pulp prices have plateaued, with some pulp grades levelling out at new peaks that are likely to remain in place until late 2021, maintaining the upward bias on most global fibre prices. This is a positive development for recycled fibre commodity prices.

Material overview and market summary

Recovered paper markets cannot be distinguished from fibre markets in general. In the first half of 2021, as global virgin pulp prices spiked at an historically fast rate and reached record highs, recovered paper prices lifted the world over, including in domestic markets in Australia.

Although local markets are not always linked to their global counterparts, for recovered paper, the market is increasingly global. That is driving consideration of the optimum utilisation of recovered paper and ultimately, changing the dynamics.

Because old corrugated cardboard (OCC) collected from the C&I stream is internationally sought after, and kerbside material has much poorer markets, the local supply chain is developing an approach that sees it export the better-quality material and find ways to locally process the lower quality material.

That has – or at least can have – financial advantages, and it is also congruent with the recovered paper export bans, ensuring that quality material can be exported, and other material can be processed.

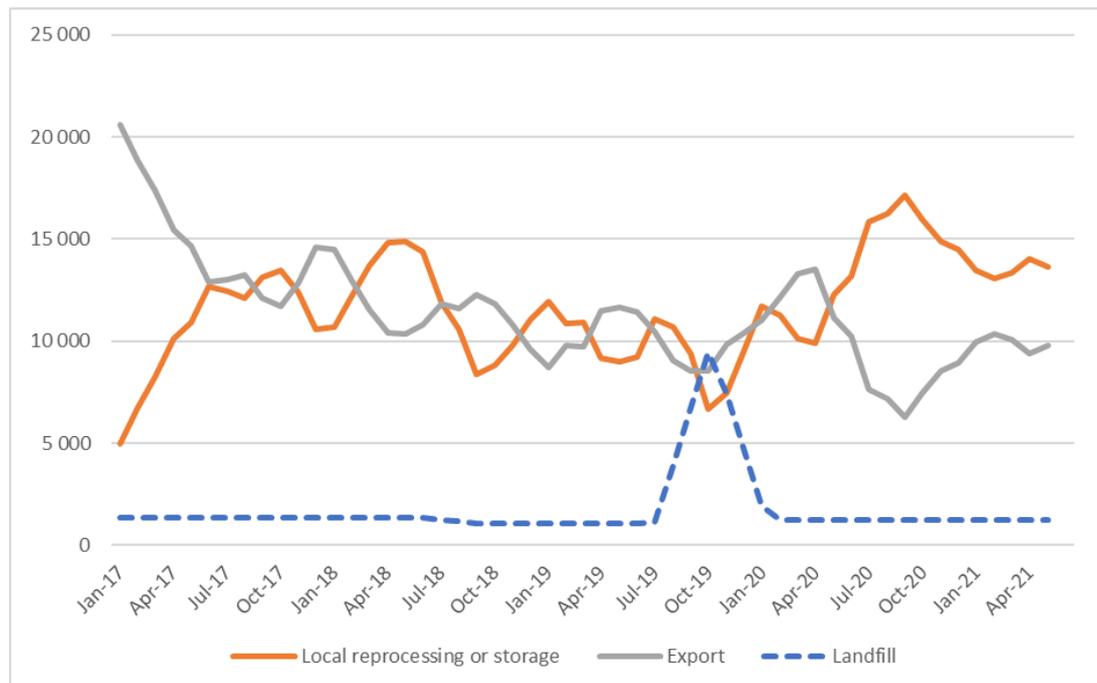
The sole target of MRFs with respect to kerbside volumes continues to be OCC, for both domestic and, where the quality is good enough, export outcomes. Market pricing does not provide MRFs with any margin in most cases, let alone to undertake significant positive sorts for the lower volume components in the mixed paper stream.

There does not appear to be a driver for positive sorting from kerbside mixed paper. Positive sorts are being conducted for newsprint and magazine grades, in some cases, where the main end-product is either moulded fibre or pet-care products.

Given the demand in domestic markets for recovered office material, coupled with the absence of volumes available through C&I streams because of the closure of so many offices, there have reportedly been assessments by major industry participants on positive sorts of kerbside material from selected areas, to extract sought after fibre. To date, no outcome appears to have been achieved, in part because of pricing, but mainly because there is concern that the volumes will diminish, so there is little or no point.

Remarkably, after the decade long dominance of China in global recovered fibre markets ended, Indonesia has filled the void, both in terms of volumes and prices. It is also of benefit to Australian exporters that the new major customer is one of our nearest neighbours.

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 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.

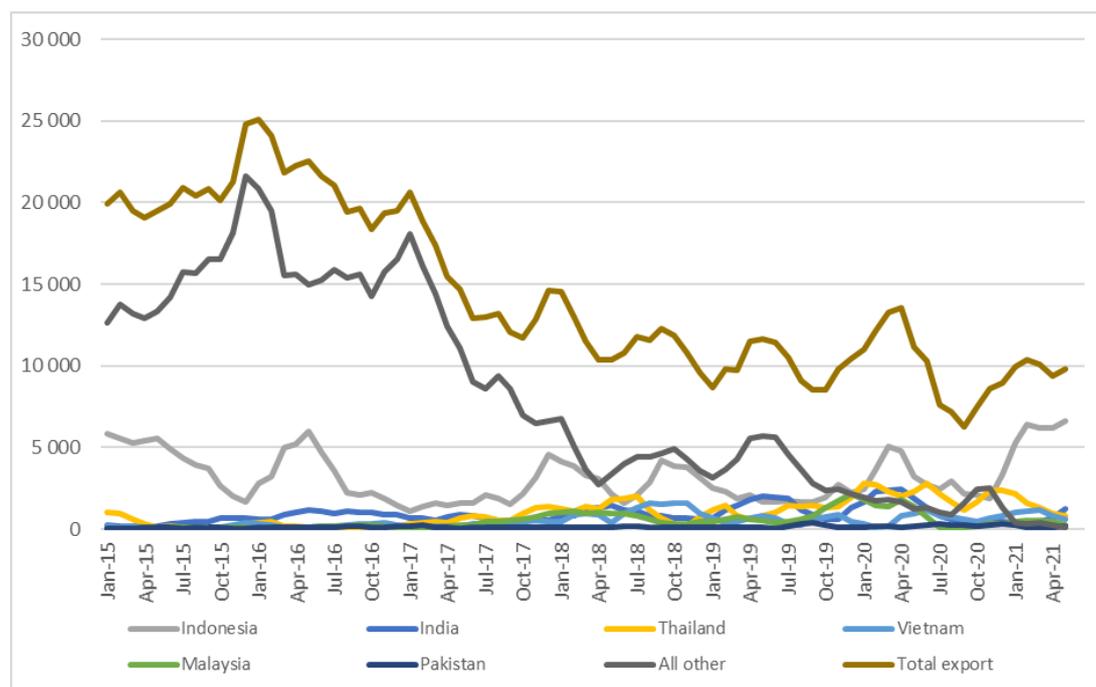
Key end-markets and related specifications

There are no new end-markets for kerbside recovered paper. Latest information indicates that the greatest competition in recovered paper markets is being experienced for recovered office papers. Local paper producers in packaging, recovered paper and tissue products (noting that tissue products can not go into kerbside collections) all seek the material for different purposes, but the volumes available have collapsed during the pandemic, including arising from many people working from home.

Export and interstate market review

Victorian recovered paper export volumes recovered progressively from October through to February, and held up across March to May. Higher Australian dollar prices have been more than compensated for by sharp increases in international pulp prices.

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 ^b (tonnes)
Indonesia	45 000	22 000	34 000	32 000	34 000	46 000
India	8 000	10 000	10 000	14 000	18 000	6 000
Thailand	2 000	4 000	14 000	11 000	24 000	18 000
Vietnam	2 000	3 000	7 000	12 000	7 000	9 000
Malaysia	1 000	2 000	10 000	6 000	16 000	3 000
Pakistan	1 000	2 000	1 000	1 000	2 000	2 000
All other	206 000	175 000	72 000	54 000	28 000	11 000
Total	265 000	218 000	148 000	130 000	129 000	95 000

Source: ABS (2021) and Envisage Works

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

b) Partial year across July 2020 to May 2021.

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

Country	April 2021 (tonnes)	May 2021 (tonnes)	% change (%)
Indonesia	6 200	6 600	6%
India	600	1 200	100%
Thailand	1 000	800	-20%
Vietnam	800	600	-25%
Malaysia	400	300	-25%
Pakistan	100	100	0%
All other	200	100	-50%
Total	9 300	9 700	4%

Source: ABS (2021) and Envisage Works

Market risks, opportunities and activities

Rising OCC prices – and better prices for other recovered paper grades – had little to no impact on kerbside recovered paper prices in the first half of 2021. Contamination remains a very serious issue for sellers/brokers of kerbside recovered paper, which impacts the domestic market, and continues to constrain export market opportunities.

Indonesia is viewed by some elements of the recovered paper supply chain as a modern saviour. The departure of China from the market created a tension that is still dissipating. Indonesia's receipts of Australia's exports of recovered paper has proved to be something of a boon, both for specific grades, as well as the kerbside volume.

Expectations of large scale increased scrutiny in Indonesia do not appear to have materialised, partly because fibre balances (recovered and virgin) are so disrupted and often uncertain that Indonesian buyers value the firming relationships with Australian suppliers, and are currently tolerant of any quality issues that may be occurring.

Key ongoing risks are the lack of local processing capacity and end-markets for kerbside mixed paper, the poor business case for sorting the mixed paper into higher quality grades and the reliance on exports to find any outlet for materials.

However to address these risks the Victorian Government announced a major upgrade of Visy's Coolaroo paper mill to take an additional 95,000 tonnes/yr of mixed kerbside paper & cardboard.

The upgrade is a \$37 million joint investment for the installation of drum pulpers at the 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.

Once operational, this upgrade will eliminate most, but not all, of Victoria's dependence on exporting low-value kerbside mixed paper.

It is anticipated that the additional mill paperboard production is unlikely to have any end-market barriers to sale, into local and export markets. The timing of the mill upgrade completion is not yet known, but it will probably take at least 2–3 years to become operational.

2.2 Kerbside recovered glass packaging

Market developments this month

Development 1 – Visy has announced major expenditure on glass packaging beneficiation and glass packaging manufacture. Visy have announced the expansion of a Laverton based beneficiation facility by 100,000 tonnes annually. As reported in the last bulletin, 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 – Major expansions of glass beneficiation capacity by Cleanaway. As reported in bulletin #17 a major expansion of glass beneficiation will be constructed by Cleanaway in Melbourne to process glass packaging from its MRF operations and other sources such as CDS sourced material. The plant will have a capacity over 100,000 tonnes and be operational at the end of 2022. The Cleanaway plant will receive \$3 million in funding support from the Victorian Government.

Material overview and market summary

There are currently two glass beneficiation plants operating in Victoria (both 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. This is currently insufficient to handle the total volume of glass collected in kerbside recycling bins in Victoria, which is in the order of 150,000 tonnes. 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 150,000 tonnes of glass is going into road base and a range of other applications through companies such as Alex Fraser and Repurpose-It. Some is crushed into sand and used in other applications.

Currently much of the glass collected through MRFs continues to be destined for road construction or landfill remediation. 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 April 2021 Visy announced the investment of \$35 million into an expansion of its glass beneficiation operations at Laverton. The company stated that this will lift capacity at the plant from 100,000 tonnes/yr to 200,000 tonnes/yr. The plant currently operates by sorting glass 10 mm in size or larger. Following the upgrade, the new facility will be able to sort glass down to 3 mm in size.

This is in addition to the Cleanaway glass beneficiation plant to be built in Melbourne's north-west with an annual capacity of 100,000–120,000 tonnes with a potential to scale up to 150,000–170,000 tonnes/yr. It will also use state of the art sorting equipment leading to higher recovery and recycling levels.

Both of these plants when fully operational will be able to address the capacity requirements for utilising all glass in either bottles and sand/aggregates. Both are timed to commence in late 2022 to coincide with the move to glass separate collection and the 2023 introduction of CDS in Victoria.

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.

Stockpiles of collected glass continue to drop with reduction of long-standing stockpiles at the Visy site to accommodate the plant expansion. Polytrade has also drawn down its stocks.

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.

There has also been an announcement that a container deposit scheme will be developed and introduced, and this is also likely to result in significant new quantities of uncontaminated glass suitable for use in new glass packaging, including increased diversion to recycling of packaging glass that is currently going into kerbside bins.

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. Ballarat City Council is currently excluding glass from its kerbside collections and encourages residents to recycle glass through nine Pass on Glass drop off sites.

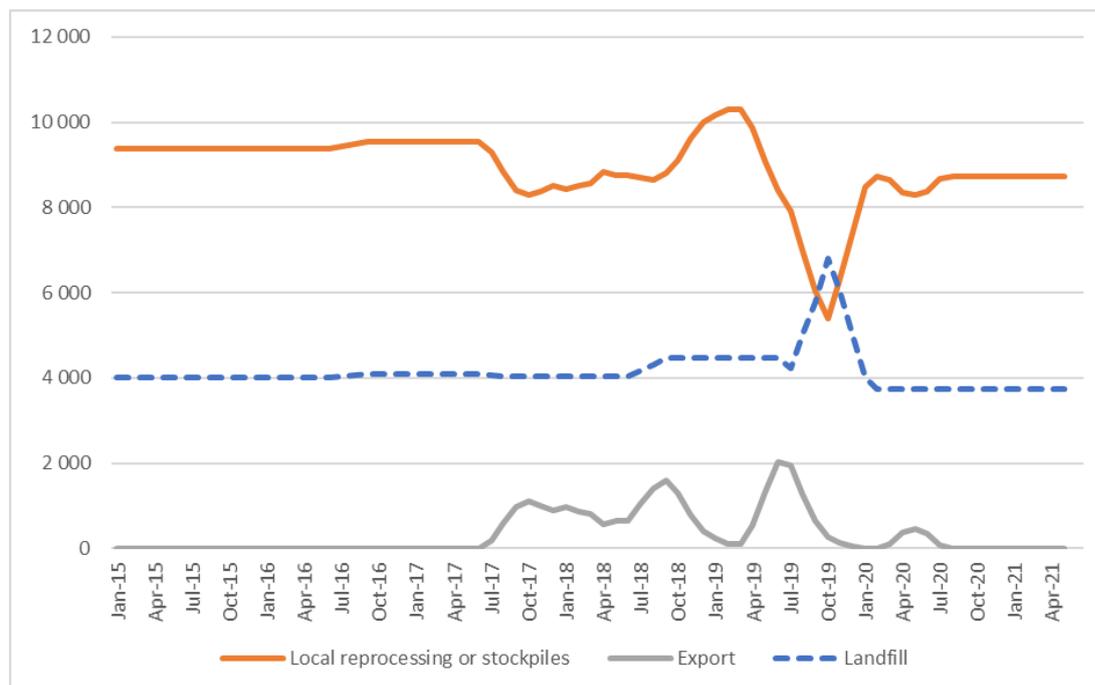
Table 2.2.1 – Glass bin (separate) service configurations

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	All Stone Quarries (Eaglehawk) for use in asphalt.
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 have been seen from Victoria since May 2020 (to end-May 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).

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.

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).

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. 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 Cleanaway 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 and (high-quality) unbeneficiated 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 continued to improve and are now at the highest levels seen since 2017 at least. 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.

Development 2 – Prices for recovered PET bottles continued to improve and are now at the highest levels seen since 2017. PET packaging scrap prices have grown much less strongly than HDPE, but are still much improved. There are very strong potential end-markets for more rPET supply.

Development 3 – There is significant new mixed kerbside sorting and reprocessing capacity coming on line in Victoria near the end of 2021. There are a number of Victorian based plastics reprocessors installing new PP and coloured HDPE capacity, of around 50,000 tonnes (committed) over the next few years. There are deep local end-markets for kerbside recovered PP back into food contact and many other applications.

Development 4 – There is significant new kerbside plastic packaging sorting and reprocessing capacity coming on-line in Victoria near the end of 2021. 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.

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.

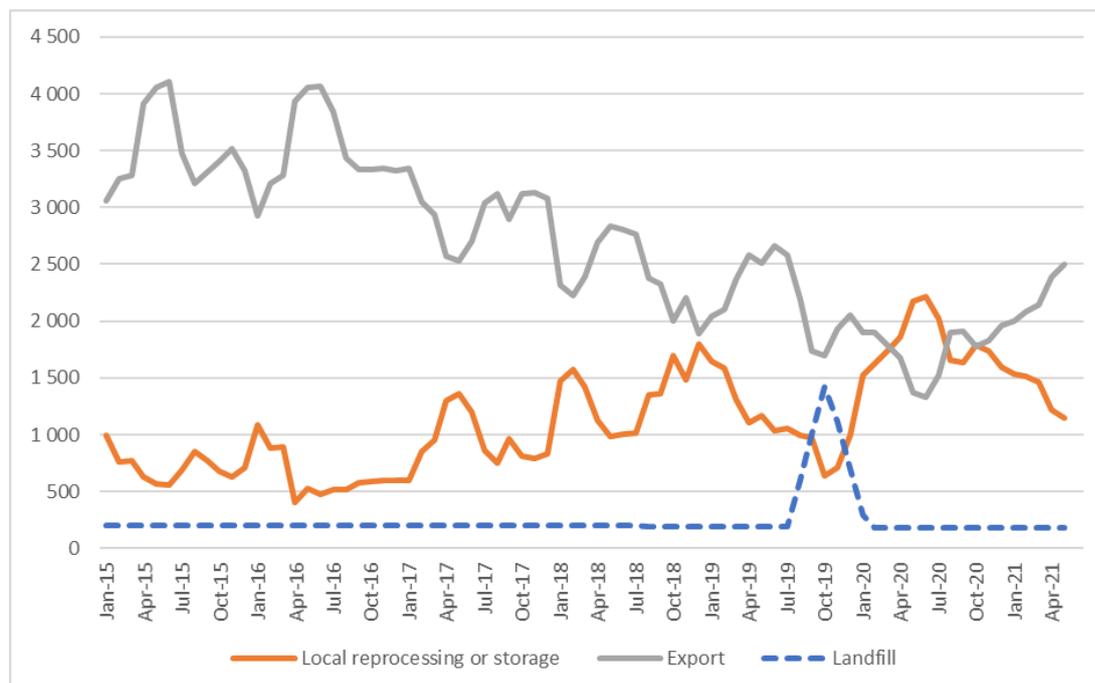
From 1 July 2021 the Australian scrap plastic export restrictions will come into force. This will restrict the export of plastics to those that have been either:

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

The impact of the export restrictions will not be visible in the export data until the September data release of the July 2021 export data.

However, it is anticipated that for the two main scrap plastic export codes (export codes 39151000 and 39159092) around 50% and >90% of the consignments under each code respectively will be impacted to some degree by the restrictions. The estimated Victorian kerbside sourced exports over the last 12 months under each code were around 13,000 tonnes (39151000) and 11,000 tonnes (39159092). So the potential impact of the export restrictions on kerbside sourced plastics flows to recycling are significant.

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

Provided in Table 2.3.3 below is a high-level summary of the current status of capacities and markets for the major rigid plastic packaging products that can be generated through the collection, sorting and reprocessing of kerbside plastic packaging. This table is an updated version of the table originally provided in bulletin #17.

Table 2.3.1 – Victorian kerbside packaging plastics sorting, reprocessing and end-market capacities

Product	Sorting	Reprocessing	End-markets	Exportable from 1 July 2021
PET bottles	Good	Good	Very good	Yes
PET thermoforms	Okay	Poor	Poor	Yes
PET coloured	Poor	Okay	Okay	Yes
HDPE natural	Good	Good	Very good	Yes
HDPE coloured	Okay	Poor	Good	Yes
PP natural	Okay	Good	Very good	Yes
PP coloured	Poor	Good	Good	Yes
PVC and PS	Very poor	Okay (if sorted)	Okay	Yes
Mixed rigid (4:4:2) ^a	N/A	Poor	Poor	No
Mixed rigid (2:2:6) ^b	N/A	Poor	Poor	No

a) 4:4:2 – Approximate proportions of PET (40%), HDPE (40%) and all other polymer types (20%) in the mixed rigid plastic bales produced by MRFs, if no polymer sorting has been undertaken.

b) 2:2:6 – Approximate proportions of PET (20%), HDPE (20%) and all other polymer types (60%) in the mixed rigid plastic bales produced by MRFs, if polymer sorting for PET and HDPE has been undertaken.

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 \$400–\$500 /tonne by the end of May 2021.

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, but this was offset to a degree by the deteriorating AUD/USD exchange rate to March 2020.

However, the exchange rate has now increased by 25% increase across the March 2020 to February 2021 period and since February has been fairly steady at the same level as was last at 3 years ago. This creates an environment for virgin PET resin prices to be cheaper in AUD, decreasing the competitiveness of recycled PET with virgin PET.

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 \$700–\$800 /tonne level at end-February 2021, and now jumped to the \$1,000–\$1,100 /tonne range for good quality natural HDPE bottles. Whether these unusually high prices are a blip or can be sustained by growing demand for good quality rHDPE will become clearer over the next few months.

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.

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 been the largest destination for Victoria kerbside plastics by a significant margin.

Across 2020–21 China was still the second largest destination of post-consumer plastics exported from Victoria, after Malaysia, and followed by Indonesia in third place. However, this destination mix, and the quantities, will change about 1 July with the export ban on mixed plastics commencing.

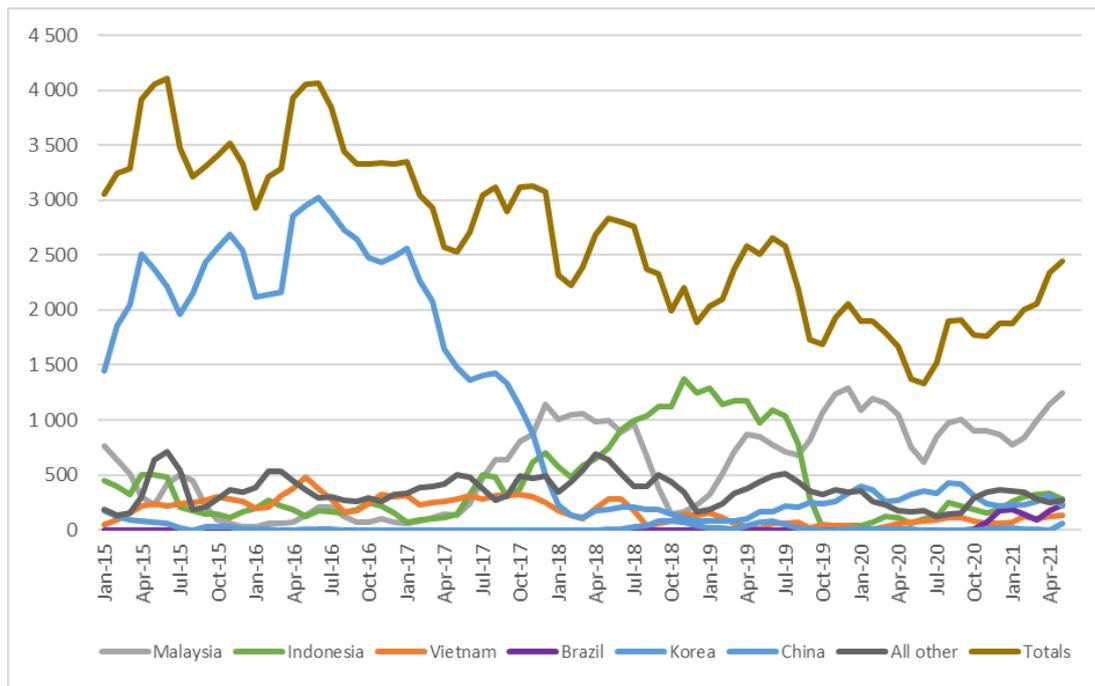
Export and interstate market review

Post-consumer plastic imports into Malaysia from Victoria were fairly steady since the beginning of 2019 to March 2021, averaging around 900 tonnes each month, albeit with a fair degree of month-to-month variability. Over April and May they have increased by 200–300 tonnes/month, possibly in preparation for the export bans. Imports into China have stabilised at around the 200–300 tonnes/month level over the same period.

Exports of kerbside recovered mixed plastic packaging have dropped dramatically over the past few years (see Table 2.3.2), but appear to have been recovering across 2020–21.

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.

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



Source: ABS (2021) and Envisage Works

Table 2.3.2 – Annual Victorian recovered kerbside plastics, to export country (tonnes/yr)

Country ^a	2015–16 (tonnes)	2016–17 (tonnes)	2017–18 (tonnes)	2018–19 (tonnes)	2019–20 (tonnes)	2020–21 ^b (tonnes)
Malaysia	1 900	1 400	10 600	6 600	11 600	10 500
Indonesia	2 100	2 000	6 900	13 700	2 700	2 600
Vietnam	3 600	3 100	2 900	1 000	500	1 100
Brazil	0	0	0	0	0	1 100
Korea	100	0	0	600	100	100
China	29 600	27 100	7 700	1 600	3 500	3 200
All other	4 500	4 200	5 600	4 300	3 700	2 900
Total	41 800	37 800	33 700	27 800	22 100	21 500

Source: ABS (2021) and Envisage Works

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

b) Partial year across July 2020 to May 2021.

Table 2.3.3 – Most recent monthly change in Victorian recovered plastics, to export country (tonnes/month)

Country	April 2021 (tonnes)	May 2021 (tonnes)	% change (%)
Malaysia	1 100	1 300	18%
Indonesia	300	300	0%
Vietnam	100	100	0%
Brazil	200	200	0%
Korea	0	100	N/A
China	0	100	N/A
All other	300	300	0%
Total	2 000	2 400	20%

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 HPDE packaging recovered from CDS related sources, rather than lower value PET and HPDE from kerbside sources. However, 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 that will be caught up in the Australian mixed plastics export ban due to come into force in July 2021.

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 will become a significant issue with the export bans commencing for plastics.

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 will continue to update this list as information on new reprocessing facility commitments become public.

Table 2.3.4 – Major new or upgraded plastics reprocessing facilities across 2020–2021 (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	TBC	Sorting, shredding/granulation and pelletising	Food grade rPET and rHDPE production
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	-	97 000–162 000	-	-

Note: Updated to June 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 for both tin-plate steel cans and aluminium beverage cans are both now at the highest levels seen for at least 5 years.

Development 2 – Exports of tin-plate steel cans and aluminium beverage cans continue to be at the highest levels seen since early 2015. Export markets for scrap metal packaging appear healthy and moving well, with market recovery from the pandemic dip (mid-2020) now in the past. The current high prices are probably reducing 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 trade has been particularly noticeable during April and May 2021.

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.

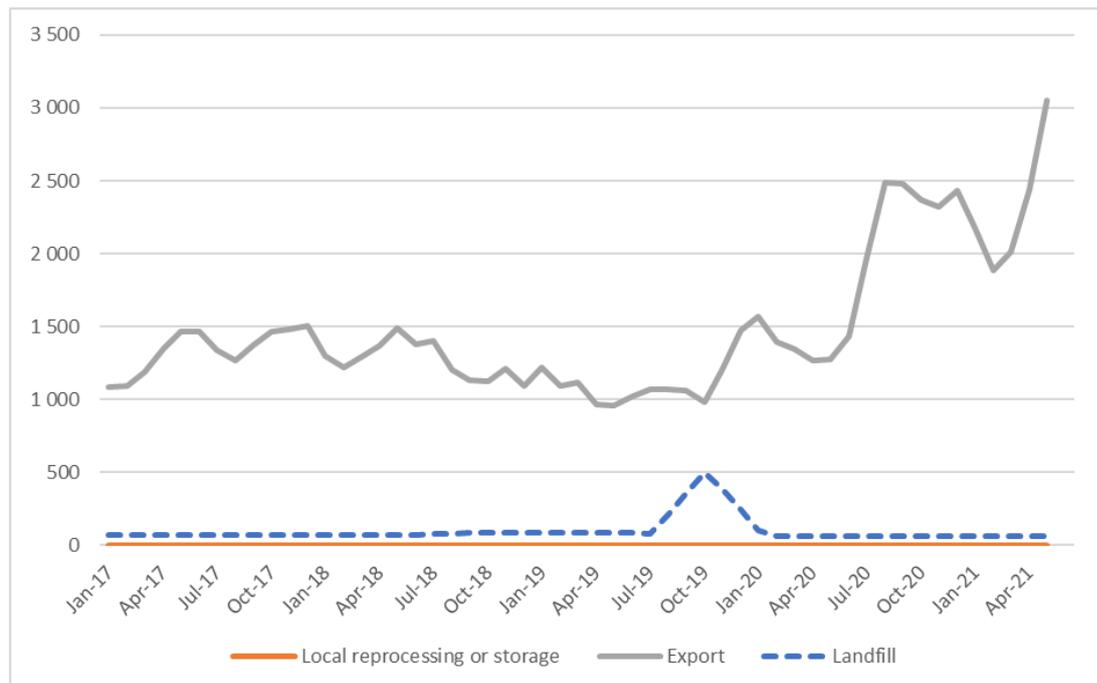
MRFs are well equipped to separate these materials from household collections into marketable grades of recyclate, which although small in volume (around 3–4 per cent of the average household recycling bin) represent a valuable source of revenue for MRFs.

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 May 2021 is due to two main factors reversing a high level of local stockpiling activity by MRF operators and scrap metal traders across the first half of 2020.

These factors were a large increase in exports to India, possibly following relaxation of Indian import restrictions on tin-plate steel can bales. The other factor was the large increase in scrap metal prices across the December 2020 to May 2021 period, with particularly notable price increases for tin-plate steel cans across the last 4 months or so.

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 India, Taiwan, South Korea, Indonesia and Thailand across the 2020–21 financial year. 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 \$220–\$230 /tonne (EXW MRF). This is strong growth from the price of around \$90–\$100 /tonne seen back in the middle of last year.

The price of shipped aluminium packaging is linked to virgin aluminium pricing. The current price received for baled aluminium beverage cans is approximately \$1,500–\$1,600 (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.

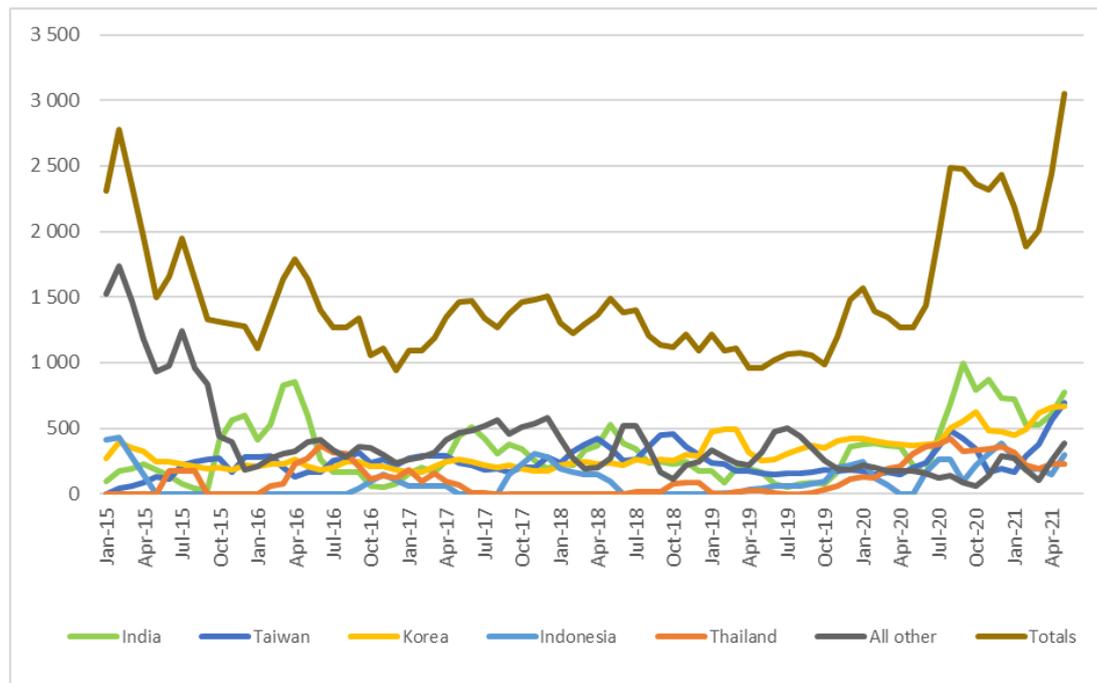
Generally steel and aluminium packaging is recycled back into the respective post-consumer metal pools and go into durable applications such as vehicles, building materials and many other products.

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.

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 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 ^b (tonnes)
India	5 200	2 400	4 000	2 400	2 700	7 700
Taiwan	2 700	3 100	3 200	3 300	2 100	4 100
Korea	2 600	2 600	2 600	3 900	4 500	5 900
Indonesia	0	600	1 700	200	1 300	2 600
Thailand	1 400	1 800	0	400	1 500	3 300
All other	6 000	4 100	5 000	3 500	3 000	2 000
Total	17 900	14 600	16 500	13 700	15 100	25 600

Source: ABS (2021) and Envisage Works

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

b) Partial year across July 2020 to May 2021.

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

Country	April 2021 (tonnes)	May 2021 (tonnes)	% change (%)
India	600	800	33%
Taiwan	600	700	17%
Korea	700	700	0%
Indonesia	100	300	200%
Thailand	200	200	0%
All other	200	400	100%
Total	2 400	3 100	29%

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.

If a large market such as India suffered a longer-term contraction in economic activity for any reason (e.g. the COVID-19 pandemic) this could result in price reductions. However, the escalating pandemic in India has not had an apparent impact on steel can imports to May 2021.

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. It is worth noting that black iron is designated as an essential material by the Indian Government, and import restrictions are not likely.

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. Although the Indian import restrictions last year require careful monitoring.

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:

- Implications of international growth in virgin plastics capacity
- Consumer packaging away from the supermarket.

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

3.1 Implications of international growth in virgin plastics capacity

By Envisage Works and Sustainable Resource Use

There are large increases in global virgin resin capacity currently coming online, which are likely to generally push down virgin resin prices over the next few years. Virgin (primary) resin production has seen enormous growth over the last 70 years, and this is forecast to continue with the massive new capacity builds that are taking place globally, but particularly in China, the Middle East, and the USA (Carbon Tracker, 2020).

It is estimated that the petrochemical industry, including fossil fuel giants such as ExxonMobil, Dow Chemical, Chevron and Shell, plan to double plastics production over the next 20 years.

Driven by shale fracking over the last decade, producing cheap ethane, which is then made into ethene (the predominant plastics feedstock in the USA), 24 fossil hydrocarbon investments have poured into what has been called the Plastic Production Corridor along the USA Gulf Coast in Texas and Louisiana.

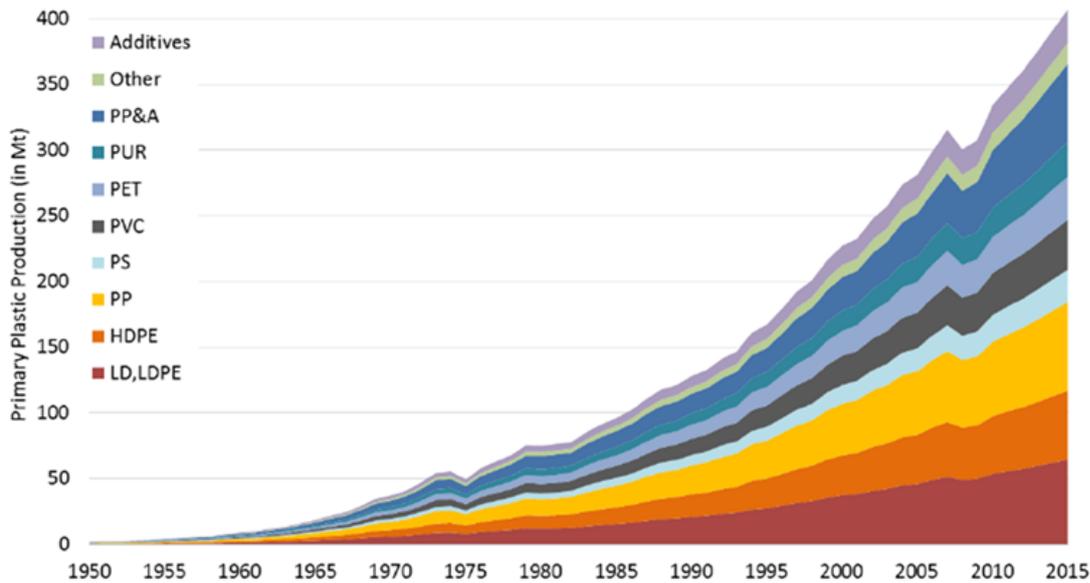
Plastics production in the USA has been in a state of overcapacity since around 2014. Despite this, significant investments into increased supply continued while demand struggled to keep pace. This caused reduced utilisation rates and falling ethene prices even before the coronavirus (COVID-19) pandemic.

Analysts are forecasting growth in ethene capacity between 4%–7% per year between 2019 and 2024 (pre-COVID). With COVID-related demand impacts, the plastics manufacturing glut has continued to deepen.

The Center for International Environmental Law (CIEL) found that global emissions linked to plastic could, by 2030, reach 1.3 billion carbon dioxide equivalent tons annually, as much as almost 300 coal-fired power plants (CIEL, 2019). If output grows as planned, plastic alone will use between 10–13 percent of the allowable carbon emissions if warming is to stay below 1.5 °C.

Growth in global virgin resin production to 2015, by polymer type, is presented in the following figure.

Figure 3.1.1 – Global virgin plastics production 1950–2015



Source: Geyer, et. al. (2017)

Note: PP&A stands for polyester, polyamide, and acrylic fibres.

This massive growth in virgin plastics manufacturing capacity comes at a time when momentum is growing across consumers, markets, governments, and other stakeholders to reduce plastic consumption.

The Minderoo Foundation, established by Australian businessman Andrew Forrest and wife Nicola, released a report in May that recommends a levy on the production of virgin plastics and the establishment of a global treaty to 'address the problem at its source, with targets for the phasing out of fossil-fuel-based plastics'.

Correcting the cost externalities related to virgin plastics, by bringing those costs into the price of virgin plastics, seems an economically sound approach. The other obvious approach is to subsidise the costs of recycling plastics to make them 'competitive' with virgin plastics, and requiring an amount of recycled to be used in products, however this then becomes an indirect subsidy of the unrecognised cost externalities of virgin resin, and so continues the current status quo perception that virgin plastics are 'cheap'.

In summary, the fossil hydrocarbon supply sector is planning towards plastics as a major, if not the main growth market, for fossil hydrocarbons over the next 20 years or so, as electrification of transport and industrial processes expands.

The implications this has for the price of virgin resin, and therefore for recycled plastics prices, are clear and significant. This is a major plastics trend with implications for both reducing plastics use and increasing circular flows of plastics.

3.2 Consumer packaging away from the supermarket

By Sustainable Resource Use

The packaging that is generated and handled by consumers from supermarkets and other grocery related outlets is understandably a major focus for governments, brand-owners and the general public. This is particularly the case for food and beverage packaging where systems are in place and generally understood and used by consumers. There is however a large proportion of packaging that is not sourced through our grocery shopping, and it is often difficult to get an understanding and focus on this packaging.

Retail is much broader than grocery and includes clothing, hardware, electrical appliances, homewares, garden. Much of it now comes through online and home delivery channels and our circular system focus needs to reflect this diversity.

As an example, plant pots are a form of packaging accounting for 16,000 tonnes annually of readily recyclable material. Development of the appropriate collection pathways is important for these, but also for the bags that carry fertiliser, potting mix soils and mulches.

Similarly, each year Australians purchase 1.5 trillion items of clothing, much of it in some form of packaging. Market segments such as electrical and electronics, hardware, homewares all generate boxes, wraps and protective infill packaging that needs to be assessed and systems identified to recover and recycle this material, underpinned by consumer education programs.

Online purchasing has resulted in a major addition of outer packaging (bags and satchels) and protective packaging including expanded polystyrene in different forms. Similarly, home delivery, particularly of food, has added bags and chill packs that will add to packaging to landfill unless addressed.

We need to ensure our collection systems, whether kerbside bins, deposit returns, point of sale return or other drop off are focussed on all forms of consumer packaging. Efforts to limit single use plastics are proceeding. The paper and other formats that will replace many of these need to have high recycling diversion to maximise good environmental outcomes.

The reduction in single use plastic bags at supermarkets now needs to be a focus at other retail sites. The focus on recyclability and recycled content for cleaning and healthcare bottles needs to be matched by a similar outcome for hot and cold cups and their lids.

Total packaging in Australia is now around 6 million tonnes and meeting the recycling and recycled content targets that have been agreed by government and industry, will only be achieved with a broad focus on consumer packaging in all its forms.

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>.