



Eliminating coffee cup waste from Alpine Resorts

Final Report – Falls Creek Resort

ABN: 11 886 131 651

Michelle Kent

16 Mountbatten Ave

Bright, 3741

0499 376 079

michelle@enviropanservices.com.au

Contents

Project Background	3
Project Team	4
Policy Context	4
Methodology.....	5
Commercial External Processors.....	6
Transport.....	7
The Cup	7
Alternative single use cups	8
Re-usable Cup Library	9
Existing Conditions	11
Hospitality Sector and Coffee Cup use.....	11
Falls Creek strengths and weakness analysis.....	13
Financial Analysis	14
Recommendations for Falls Creek	15
Risk Analysis	16
Conclusion.....	17
Appendix 1 – Detailed Table of Cup Pricings	18
Appendix 2 – Survey Summary Falls Creek Resort.....	20

Introduction

In this project Falls Creek, Mount Hotham and Mount Buller/Mount Stirling Alpine Resorts collaborated to develop a business case for each Resort for a compostable and reusable coffee cup program. The project was supported by the North East Waste and Resource Recovery Group (NEWRRG).

The project undertook research on the costs, benefits and options for alternative coffee cup supply and processing, by engaging with commercial operators at each Alpine Resort. This report is one of three business cases specific to each Alpine Resort to make the project “shovel-ready” to implement for future seasons, subject to funding becoming available.

The requirements for each resort were to develop and submit business cases that included and considered the following:

1. The specific context of each resort, including material pathway for compostable cups.
2. Baseline figures of coffee cup quantities and cost and waste operations costs.
3. Infrastructure needs to transition to compostable cups.
4. Summary of potential models, costs and operational considerations of a mug library or non-single use cup.
5. Results of engagement with commercial operators on moving to compostable and reusable cups including preferred model for a cost-neutral, equitable transition.
6. Design of a logo and education collateral for the program.
7. Recommended model(s) of implementation of a program in future years, including costs, savings and risks of the various models.

Note that item six – design of a logo and education collateral has been removed from the scope of this project in consultation with the project Working Group following the identified need to first determine the most suitable model of implementation in consultation with stakeholders.

Project Background

This project builds on research undertaken by Mount Hotham Alpine Resort in 2019 and the 2021 trial of collection and processing of compostable cups from a small number of participating commercial operators showing coffee cups comprised approximately 20% of landfill waste generated from the resort. An audit found a wide variety of cups were provided by the various commercial operators, which made it difficult for the community and visitors to know how to dispose of the cups, or if they were recyclable or compostable. Engagement with commercial operators demonstrated support for a change to compostable cups that were consistent across the resort, however the cost impacts to commercial operators (as well as Alpine Resort Management Boards) needs to be sensitively managed given the COVID impacts to their businesses.

Further work was needed prior to implementing the program at Mount Hotham and the project concept provided the opportunity for Falls Creek and Mount Buller/Stirling Resorts to also seek out solutions for reducing coffee cup waste to landfill based on the unique context of each resort.

The RV Councils Fund presented an opportunity to obtain funding to further explore this concept. Mount Hotham Alpine Resort led a collaborative application to this grant fund and was successful in obtaining \$20,000. The three alpine resorts have successfully collaborated previously on several projects, including the Living Bin program, which offers a food organics collection and composting service, resulting in significant savings on waste to landfill. Living bin champions continue to operate in the alpine resorts during the high season, providing ongoing waste education and support to residents, visitors and businesses.

Project Team

Mount Hotham alpine resort:

- Aviya Naccarella – Environmental officer
- Bev Lawrence – Environmental Officer and Living Bin Champion
- Nick Malkin – Senior Manager Resort Operations

Mount Buller and Mount Stirling alpine resort:

- Ali Kirkwood – Environmental Services Officer
- Living Bin Champion

Falls Creek alpine resort:

- Naomi Monk – Environmental Officer
- Lauren McKechnie - Living Bin Champion

North East WRRG:

- Jill Croome – Project Coordinator

Project consultants:

- Michelle Kent
- Michelle Porter

Policy Context

Victoria has recently adopted a circular economy plan, *Recycling Victoria: A new economy*. Reduction of waste and landfill is one of the key goals of the plan, supported by the *Circular Economy (Waste Reduction and Recycling) Bill 2021* and the establishment in 2022 of a dedicated Government business unit called Recycling Victoria.

Part of the Plan is a move to a four bin system across Victoria, which will ensure food and organic waste removal from landfill across the State. It is unresolved at the time of writing this report whether certified compostable coffee cups and lids will be accepted in the organics bin standard contents list and DELWP note this item requires further work to resolve.

The Plan also includes a state-wide ban on single-use plastics. Whilst not explicitly targeting single-use coffee cups at this stage, it is a possibility for the future. Western Australia has committed to removing non-biodegradable coffee cups from the economy by the end of 2023 and South Australia have made a similar commitment by 2024. Queensland have declared that plastic lined coffee cups will be banned but have not yet specified a timeframe.¹ The City of Hobart has created a by-law that bans plastic-lined coffee cups.² Banning plastic-lined coffee cups is gaining traction across the country and having a proactive and strategic approach to removal of non-compostable coffee cups from the local economy makes sense at this time.

Removing coffee cups from landfill supports a number of intents of the *Recycling Victoria* Plan:

- Reduction in landfill volumes.
- Supports a circular economy by mandating cups that are compostable.
- Removes single-use plastic items from the coffee industry.

In addition to State Government policy requirements, a reduction of coffee cups in landfill is supported by the relevant industries. Vail Resorts (owner of Ski Companies at Mount Hotham and

¹ <https://www.marineconservation.org.au/which-australian-states-are-banning-single-use-plastics/>

² <https://www.hobartcity.com.au/Business/Food-and-beverage-businesses/Single-use-plastics-by-law-information>

Falls Creek) have a commitment to zero waste to landfill by 2030.³ The Australian Packaging Covenant Organisation have a National Compostable Packaging Strategy in place to encourage further uptake of compostable packaging as well as appropriate methods for collection.⁴

Methodology

The project methodology focused on consultation with key stakeholder groups to understand coffee cup use, disposal and processing at the three resorts, supplemented with desk-based research on coffee cup options and policy framework.

Engagement consisted of a preliminary project workshop with the Project Working Group, phone discussions with Alpine Resorts environment and waste staff, a survey of commercial operators in hospitality at each of the three resorts, meetings with each of the three commercial composting processors in the region, and consultations with compostable and re-usable cup manufacturers. This draft report has been compiled based on research findings.

³ <https://www.vail.com/the-mountain/more-options/sustainability.aspx>

⁴ <https://documents.packagingcovenant.org.au/public-documents/National%20Compostable%20Packaging%20Strategy>

Project findings

Commercial External Processors

Mount Hotham Resort has an established organics composting system that is run internally at the Cobungra Landfill site. All collected Mount Hotham organics is currently processed at this site. Mount Buller/Mount Stirling also currently process a majority of organics waste onsite using a 'Closed Loop' system, which is an industrial compost accelerator system. This system cannot process all of the Resort's organic waste however and some is transported offsite. Falls Creek currently transports all organic waste offsite.

There are three commercial processors that are within transportable distance of the three resorts. These are City of Wangaratta's Organic Waste processing facility (Bowser), Western Composting Technology (Shepparton), and Carbon Mate - Wagga Wagga, which collects organic waste from Albury.

All three commercial processors were interviewed as a part of this research. Australian standard compostable cups and lids are accepted in Shepparton and in Wagga Wagga. Bowser in Wangaratta are performing a trial to understand how compostable cups breakdown and whether they alter the end product. Key information from each facility is presented in Table 1, below.

Table 1: Processing options and requirements

	Wangaratta (Bowser)	Western Composting Technology (Shepparton)	Carbon Mate – Wagga Wagga
Cups accepted	Uncertain – conducting a 12 week trial on BioPak and Pak360.	All cups with certification to Australian Standard, but particularly recommend BioPak and Pak360.	Accept BioPak and Pak360 only.
Gate fees	\$80-\$120 per tonne.	\$120 per tonne.	Volume charge paid to Clean Away.
Collection or transport requirements	Prefer collection and transport as part of mixed organics. Require contamination removed prior to transport. Prefer more regular loads.	Prefer collection and transport as part of mixed organics. Contamination ideally removed prior to transport.	Prefer collection and transport as part of mixed organics. Contamination ideally removed prior to transport. This option is only viable if Clean Away are used as the transport contractor.
Challenges/issues	Facility is currently at capacity and not accepting more material. Currently developing a business case to apply for a new EPA license to expand the facility.	Distance to the facility adds transport costs compared with distance to Wangaratta (or Albury for Mount Hotham and Falls Creek)	Distance is a barrier but if Cleanaway are the transport contractor then transport need is only as far as Albury.

Transport

Transport services are required at Falls Creek and Mount Buller/Stirling Resorts to transport all waste types to processing facilities. Currently Mount Hotham only requires transport services for recyclables as landfill and organic waste are processed internally.

4Site is a transport company that have a contract to transport waste from Falls Creek and Mount Buller/Stirling Resorts. Discussions with 4Site highlighted no significant barriers to transporting coffee cup waste as green-waste rather than landfill. The reduction in landfill and increase in organics waste are likely to be cost-neutral. It is possible that organics collection infrastructure at Mount Buller Resort may need to be adjusted – this is discussed in the Mount Buller/Stirling Resort report.

It is also possible that transport routes may change if coffee cups are added to organic waste and Bowser decide to not accept cups. This may require a variation to 4Site's transport contracts. Depending on the extent of the 4-bin transition infrastructure upgrade at Falls Creek there is the possibility of reducing transport loads of organic waste using an on-site dehydrator or in-vessel composter.

The Cup

This section explores the options available for switching to compostable cups and lids across all Alpine Resorts. It includes quoted wholesale costs of cups and types of cups that will be accepted by processors.

There are many types and sizes of single-use coffee cups on the market, and many different labels. Marketing spin labels cups and lids as recyclable, biodegradable, or compostable. For the purposes of this project the only cups that are considered are cups that have achieved certification with Australian Standards (AS 4736-2006: Industrial Compostability) for industrial composting systems. Cups labelled as biodegradable simply breakdown into smaller pieces of plastic. Most standard single-use coffee cups are made with a cardboard outer and plastic inner lining. The plastic lining is why standard cups are not recyclable. Australian recycling processing facilities are currently not equipped to separate these materials. Compostable coffee cups are made of cardboard lined with a plant-based plastic-replacement product that breaks down in industrial compost systems to organic compounds.

Cups come in single-wall or double-wall varieties. Double wall has an extra layer of cardboard. Single-walled cups will still retain their shape and integrity with hot liquid inside. The point of difference between the two is in heat convection. Double-walled cups are easier to hold with hot liquids inside. However coffee is intended to be made at sixty degrees Celsius. A single-walled coffee cup will not feel too hot with coffee brewed to this temperature. BioPak recommends single wall cups because of the reduced material that goes into producing them.

Coffee cup sizes are generally expressed in ounces. The most common coffee cup sizes are 8 ounce (equivalent to a small) and 12 ounce (equivalent to a medium or mug size). Other cup sizes include 4 ounce (espresso), 6 ounce (piccolo), or 16 ounce (very large). We have focussed on prices for 8 ounce and 12 ounce cups here as these are the most common from the survey.

There are several brands of compostable cups available in Australia however the food and organics waste processors have focussed on the two most known brands – BioPak and Pak360 as they have been tested and found to not impact the end composting product. These brands are accepted by processing facilities in Shepparton and Wagga Wagga. Bowser in Wangaratta are currently testing these two brands. Processing facilities may accept other brands once they have been certified to AS4736, the Australian Standard that certifies products as being suitable for commercial composting systems.

BioPak is made of a cardboard outer sourced from Forest Stewardship Council certified plantation forests and lined with a bioplastic (made from plants) lining called Ingeo. Pak360 also uses Ingeo

bioplastic as a liner, but combines this with a bamboo shell to make their cups tree-free. Pak360 is an Australian-owned company. Because we know BioPak and Pak360 are certified to AS4736 and both are accepted by two of the three processors available to the area we have focussed on these two brands for pricing. BioPak is also commonly used at Alpine Resorts in several of the venues that have already switched to composting cups.

Table 2: Comparative table of compostable coffee cup and lid prices

Product size and type	COMPOSTABLE (Lowest price) cents/unit	NON-COMPOSTABLE (Lowest price) cents/unit
8oz 80mm Single wall	10	7.2
12oz 90mm Single wall	12	10
8oz Double wall	15	13
12oz Double wall	18	18.4
Small lid	8	7.2
Large lid	9	7.5
AVERAGE	12	10.55

Table 2, above, is a summary of coffee cup pricings collated for this project. A more detailed table of pricings of individual cups and brands is presented in Appendix 1. Table 2 identifies to lowest possible price found during this project for the four most common cup sizes/types and the two most common lid sizes. The difference between compostable pricings and non-compostable pricings is small with a maximum lowest price difference of 2.8 cents per unit for the small 8ox single wall cup.

It is important to note that most businesses would not be getting the rock bottom price for non-compostable cups identified here. Most survey respondents did not respond to the question about prices they are paying per cup, however the small number that did were paying a price similar to the prices of compostable cups. Only two survey respondents indicated that they currently do not use compostable cups and would only switch if the compostable alternative was cost neutral. Other respondents indicated they would be prepared to pay up to five cents more per cup.

Alternative single use cups

The Good Edi cup⁵, is an example of an alternative single-use cup. It is entirely edible, made from oats, grains, flour, water, bran, sugar and salt. At \$2.50 per cup, however, it's unlikely to be an industrial scale replacement for single-use cups, but it is a niche item that cafes could have the option of stocking that will help remove some take-away cups from landfill. This would be especially useful for small operators that do not have a sit down option and are limited on space to collect cups for washing up.

'I'm not paper'⁶ is another alternative single-use cup brand. At 18.8 cents per 8oz cup/lid combination their pricing is highly competitive with paper-based compostable cup options. The equivalent sized cup and lid combination from BioPak is only 0.9 cents cheaper. 'I'm not paper cups' are made from agricultural plant waste (post-harvest waste) and fast-growing crops and use a plant-based liner. Unfortunately they do not have AS 4736 certification as yet but state on their website that this is in progress. They are also attempting to get AS 5810 certification, which will mean 'I'm not paper' cups can be put into home composting bins.

⁵ <https://good-edi.com/>

⁶ <https://www.iamnotpaper.com/>

Re-usable Cup Library

While replacing single-use coffee cups with compostable cups is an excellent option to reduce landfill, re-usable cups remains the better alternative overall for sustainability. Encouraging patrons to bring their own take-away cups is an important component of a program to reduce single-use coffee cups. Avoiding waste in the first place is the first priority of the Waste Hierarchy!

Table 3: Swap-cup program options

Green Caffein - swap cup	Huskee Swap – swap cup	Other
• Customer downloads App. • No cost to business if grant used for initial capital purchase. • No cost to consumer provided they return the cup within a month. • Australian owned and made. Cups are designed to circulate and made of recycled plastic. • One size (12 oz) with 8oz small size marked on the inside. • Resort/café provide cup. • End of life recycling. • Currently used in over 700 cafes nationally. • Data on number of cups diverted from landfill. • Set up costs of \$5.85 per cup (Based on pricing for 6,000 cups plus set up support and data). \$5 additional cups. Could be scaled down. • Grant required to roll out widely (Advice from Green Caffein is \$35,000 for 6,000 cups across 50 outlets – We suggest scaling down to 2,000 cups across 15 operators for \$15,000). • Incentives offered (free coffees and discounts covered by Green Caffein).	• Customer downloads App. • Customer purchase model – purchase one cup and it goes into the swap system. • No cost to business. Profit on cups they sell. • Design led company – cups are attractive and made from coffee husks. • 3 inter-changeable size options. • End of life recycling. • Wholesale prices for bulk buys p/cup \$6.25 - \$8.87. RRP \$16 - \$22 (depending on size). • Recommend purchase 24 cups, 12 for stock, 12 for retail.	Purchase of reusable cups: • Stojo collapsible cup = \$14.97. • Sea to Summit collapsible cup - \$12.90 (no lid). • Branded keep cup = around \$7.65 (cost off-set by marketing value of branding). • Each resort could provide all staff with a re-usable cup at a cost of \$11,475 (for 500 staff at each resort at \$7.65 each).
Barriers		
• Cups are functional. • People may be discouraged by having to download an App. • Businesses may not like the responsibility of washing.	• Up-front cost to customers may be a disincentive. • People may be discouraged by having to download an App.	• Mount Hotham Resort has reported poor uptake on use of keep cups that have been provided by the Resort. People forget cups or simply do not want to have them on

	Businesses may not like the responsibility of washing.	their person once their coffee is finished.
--	--	---

We investigated three options for reusable cup programs as a part of this project. Two programs are swap-cup programs that operate nationally – Green Caffein, and the Huskee Swap program. The third program would ensure all staff at each Resort have a keep-cup and are encouraged to use it, with potential promotions to encourage uptake of use. This scenario does not provide an alternative single use cup for the public, relying instead on the education value of a staff program to encourage Resort visitors to bring their own cup. One of the two swap cup programs would be the option for the public.

With strong customer support, ease of use, and relatively wide use nationally Green Caffein are highly competitive in this space. Huskee Swap offers a model that does not require a large capital start-up fee as purchase prices are passed on to the consumer. A swap-cup program could be implemented with just five operators at first, scaling up as needed. There is also an opportunity to work with valley towns servicing each resort to implement the swap-cup program more broadly and provide more options for the cups to be circulated on and off the mountain. Each Resort has been provided with a sample of the two swap cup programs to help make a decision about whether these programs would be practical and suitable to roll out at each Resort.

Informal environment group, Sustainable Snowy's, operate in the Snowy Mountains in New South Wales. They implemented a Green Caffein program across operators in the region. Consultations with staff from Perisher Blue indicate that the Green Caffein roll out in the Snowy's has not resulted in significant uptake, possibly because the roll out coincided with Covid impacts and there was hesitancy in using the cups. Despite this, Perisher Blue staff do see the Green Caffein system as having great potential, particularly for staff and to help Vail Resorts achieve their goal of zero waste by 2030. If Victorian Resorts decide to proceed with a swap-cup program careful attention to engagement with operators, education, and publicity will be needed to ensure good uptake.

Falls Creek Resort

Existing Conditions

In 2019 Falls Creek Resort transported 390 tonnes of waste to landfill, which included an estimated 2.1 tonnes of coffee cups. Landfill is collected from 32 public place bins and 53 hutches. Food and organic waste is currently only collected from the hutches. After collection from the hutches organic waste is collected in a purpose-made skip.

4Site holds a contract to transport waste from Falls Creek. Some minor changes to transport weights can be undertaken within the current contract. The contractor is supportive of the project.

Currently, landfill is taken to Albury and food waste is taken to Bowser in Wangaratta. In 2019, prior to the opening of Bowser, organic waste was transported to Western Composting Technology in Shepparton. A program of compostable cups is expected to decrease the landfill taken to Albury (at a slightly higher tonnage fee) by 2 tonnes per year, and will increase organic waste to the organics processor.

Currently organic waste is only collected at Falls Creek during the winter as summer loads are not enough to justify the transport costs and due to risk of unpleasant odours that result from long collection intervals required to fill the container. Food waste is collected from hutches in non-compostable bags and the bags are split open by Resort staff and emptied into bins outside the waste transfer shed. The non-compostable bags are then sent to landfill with investigations underway as to recycling options. Winter collection makes this process possible as the organics waste does not putrefy in cold winter conditions.

The increase in visitation during winter currently makes winter collection the most viable option. As organics collection is made universal and compostable packaging more commonly used it is likely that the increase in organic waste collected will enable processing during summer. The addition of organic waste public place bins would also increase volumes collected in summer.

Hospitality Sector and Coffee Cup use

Part of the project included a survey of the hospitality sector at each Alpine Resort in order to assess quantities and types of coffee cups used and the willingness of businesses to convert to a (potentially more expensive) compostable cup. The survey also assessed how willing businesses would be to implement a re-usable cup scheme. All food and beverage operators at each of the three resorts were asked to respond to the survey. Operators were first sent an email introducing the project and were then sent a reminder email. Those who did not respond were contacted via phone, with a final reminder email sent to those who were not reachable over the phone.

This section presents the conclusions made from analysis of results of this research. Other more detailed results of the survey are contained in Appendix One.

Seventeen surveys were commenced and thirteen were completed, which represents a 59% completion rate amongst contacts provided by the Resort Management Board, noting some survey responses represented multiple businesses.

Based on survey responses, 134,000 cups on average are used annually.

Amongst survey respondents, 75% (9) report using compostable cups, with 'environmental' motivation the most common reason given for choosing compostable cups.

Of those using compostable cups already, 54% (6) use BioPak brand.

Amongst survey respondents not using compostable cups (3), there is good support to switch to compostable cups (2). 1 respondent would need more information before making the switch. Of the

two who would consider switching, one said it would need to be cost neutral or cheaper and the other is prepared to pay up to 5 cents more for a compostable cup.

When asking about single-use coffee cup lids, 42% (5) currently use compostable lids, and 42% (5) do not, two respondents were unsure. Of those not using compostable lids, 43% (3) use recyclable lids and 57% (4) are unsure if the lids are recyclable. 100% (6) of survey respondents not using compostable lids who answered the question would consider swapping to compostable lids.

Survey respondents were asked to share observations made about where patrons mostly dispose of single-use coffee cups and lids. This disposal information will be useful to understand waste disposal behaviour and to determine the location of waste collection infrastructure.

Survey respondents who answered the question ranked disposal as follows:

1. In public bins, close to where they purchased them (82%)
2. In public bins located outdoors (27%)
3. In public bins located indoors (18%).

Survey respondents were asked about their current arrangements for alternatives to single-use coffee cups/lids and were introduced to the concept of a 'swap cup' program and asked about their interest in such a program. The following summarises findings:

- Close to 50% of respondents who completed the survey provide ceramic/glass cups for patrons sitting in. The proportion of patrons sitting in versus taking away varies for each business, from 1% sit in to 90% sit in.
- A little over half of respondents who completed the survey accept patron supplied reusable cups (i.e. keep cups). Two survey respondents stopped accepting patron supplied cups during covid.
- There is strong support and interest in more information about a 'swap cup' program, with 4 survey respondents being interested in being involved in a 'swap cup' program and 7 would require more information about the program. One respondent said they would not be interested in being involved. Respondents said "[we would] *need to know how many businesses were participating so that it is easy and convenient for customers to return the cups*" and "*personally I don't think it will work but willing to try. We need to see the cup and size etc*". Further comments can be found in Appendix 1.

Group bulk-buys of compostable cups could provide an opportunity to harness economies of scale and source a compostable cup at a cheaper price for businesses. A standardised cup purchased through a group bulk buy could also assist with correct waste disposal of compostable cups by eliminating confusion amongst patrons of which bin cups go in. Survey respondents were asked '*if a group bulk buy of compostable cups was arranged at the resort or amongst resorts, what cup and lid features are important to their business*'. The three most common important features include: 1: size; 2: quality; and 3: style and storage. Comments from survey respondents included:

- "*...general style not going to work*"
- "*We would require sizing and quality to be strongly considered*"
- "*As long as we could access them as required....*"

Falls Creek strengths and weakness analysis

A strength and weakness analysis conducted for Falls Creek during the first Project Working Group workshop and again during the data analysis phase of the project identified a number of opportunities and some constraints. These are highlighted in Table 4.

Table 4: Falls Creek SWOT Analysis

Strengths: • Strong need – approximately 24% by volume of landfill is coffee cup waste • Established Living Bin program – existing voluntary organics collection • Project partnership approach – shared expertise, knowledge, connections, support • Existing use of compostable cups by F&B operators (including BioCup) • Support to switch to compostable cups/lids • Active Living bin champion with strong relationship with commercial operators	Weaknesses • Currently no public place organics collection • Moderate survey response rate - potential gaps in knowledge of current practices • Currently organics go to Wangaratta who have indicated that they need to complete a trial on compostable cups before accepting a large number of cups. • Requirement for all-year-round organics/cup collection to achieve total diversion from landfill
Opportunities: • Support for switching to compostable cups (by those not already using) • Interest in swap cup program • Partnership with off-mountain F&B operators for swap cup program • FOGO roll out regionally - collection opportunity? • All year-round organics diversion • Uniform infrastructure for public place bins across resorts • Introduce compostable packaging at same time • Connections to off-site processing facilities – may be more suitable for large quantities of coffee cups • \$1 per cup marketing value • Economies of scale through bulk-buy of cups/lids • Uniformed education, marketing, infrastructure for public places • Broad community uptake of reusable coffee cups • Alignment with known and established 'Swap cup' program • Funding opportunities to support additional infrastructure requirements	Threats: • Off-site processor stops accepting cups • Cups bought off-mountain impact contamination • Not 100% of food and beverage businesses buy-in • Covid-19 and other business disruption – impact on visitation; impact on operators engagement, financial implications • Organic load composition – potential for disproportionate % of cups to other organics • Visitor buyer behaviour (solution needs to be 'stylish/trendy') • Change to specifications for cups accepted by processing facilities • Patron disposal behaviour – incorrect bin use (items incorrectly going to landfill)

With operator feedback and systems currently in place at Falls Creek it will be possible to put in place a swap-cup system and to replace take-away coffee cups not already compostable with all

compostable cup options. However some planning is needed around the following key points of consideration.

1. Operators will need further engagement before switching to all compostable cups and lids. Education will be required around the benefits of compostable products, processing and collection at a composting facility, and how a swap-cup program would work.
2. Staff education – including those involved in logistics of swap cup program.
3. Further planning will be required on logistics of summer collection. Processing facilities want mixed organic product rather than pure coffee cups. The current collection method can support higher volumes of organic waste input in summer and would then enable more frequent trips in summer to the processor. Organics collection would need to be introduced for summer pick up and would need to be regular, however this may mean small loads and an increase in transportation costs. A lack of summer data means that unfortunately it is difficult to assess what summer organics tonnages would be. Actual summer landfill collection tonnages may be able to be used by the Resort to provide an indication of the amount able to be generated in an average summer to provide adequate estimations of frequency.
4. Further planning is required to identify the best locations for public place bins relative to major takeaway coffee providers to understand where certain bins would be required.

Financial Analysis

Financial analysis indicates that whilst there is less financial benefit removing coffee cups from landfill there are other beneficial drivers to making this change. Table 5 shows that coffee cups represent approximately 2 tonnes of landfill materials for Falls Creek. Diverting this to organic waste saves \$330 in landfill fees. Note that these calculations are based on use of the coffee cup quantities reported in the survey. As such, they may be slightly under-reported. This does not change any of the conclusions or recommendations reached.

The real benefit of removing coffee cups from landfill is in the volume of material. While coffee cups represent a relatively minor weight of landfill waste, the volume they comprise is almost 25%. With landfill space increasingly constrained the volume of waste going to landfill will become more important. Being able to remove 25% of volume from landfill will help Falls Creek Resort meet reduction in landfill targets that may be imposed in future years. Additionally, reducing landfill also reduces carbon emissions, which would enable the resort to better meet climate change mitigation goals.

Table 5: Falls Creek quantities of coffee cups in landfill

Landfill 2019 (kg)	Landfill 2019 volume (m3)	Running cost budget (\$)	Quantity of cups used	Estimate of volume (m3)	Estimate of weight of cups/lids (kg)	Reduction in volume from landfill (%)	Reduction in weight from landfill (%)	Benefit of diversion from landfill (\$)
390,000	722.6	61,230*	134,000	65	2103.8	9.00	0.54	\$330

* Note this figure is contract value estimated from an overall waste budget of \$550,000 annually.

The additional costs of the coffee cup program to infrastructure upgrades and set up costs of the swap cup program are outlined in Table 6.

Table 6: Additional costs of coffee cup program

Costs of new collection receptacles (\$)	Costs of new transfer station infrastructure and transport difference	Potential increase in cost to businesses of c. cups/lids (\$) (Total for each resort)	Swap cup roll out (\$) – based on an initial Green Caffein roll out of 700 cups across 5 operators	Project management and engagement	Design elements (Logo and poster)
52,500*	Additional transport in the event of a change in processor (\$300 per load for transport to Shepparton over Wangaratta)	5,930	5,000**	\$10,000	\$1500

* Note that this includes 15 public place bins at a total cost per bin (including surround and signage) of \$3,500. There are 32 public place bins at Falls Creek but not all would require a coffee cup collection facility. Alternatively, dedicated coffee cup collection points can be purchased from Source Separation Systems for approximately \$800 per bin.

** Note that this cost is \$0 for Huskee Swap as the model passes the upfront capital cost on to the consumer. If Green Caffein is used and rolled out across more than five operators then this cost will be greater than presented here.

Recommendations for Falls Creek

These recommendations are the same for all three Alpine Resorts with some minor differences. There are, therefore, opportunities to collaborate on the development of a funding application and on the implementation of a coffee cup project for efficiency and shared resourcing. In July 2022 Victorian alpine resorts will combine into one management board – Alpine Resorts Victoria. This provides further opportunity for a collaborative implementation project and could also include Lake Mountain and Baw Baw Resorts.

1. Create an engagement plan for change
 - a. Resort championing and promotion of change - what, why, how.
 - b. Incorporate into staff induction at the beginning of each season to garner staff support.
 - c. Harness strengths, mitigate weaknesses: Make use of the Living bin champion; reasonable existing use of compostable cups and support to switch; further engagement with operators to fill knowledge gaps; and activate support for change.
2. Prioritise an 'AVOID' strategy - introduce a reusable cup program
 - a. Considerations - behaviour change required, resort-led marketing and communication opportunities, transient community means cup drop-off points need consideration.
 - b. Choose between Green Caffein and Husky Swap reusable swap cup programs.

- c. Run an internal program (see Table 3) with education to support staff re-usable cup use.
 - d. Align actions with Vail Resorts zero waste by 2030 targets.
 - e. Coordinate those that will be involved in logistics. Have satellite collection points for ease of use by patrons. Include in staff induction.
 - f. Aim to do a survey of the number of reusable cups presented to operators during a set survey period and seek to see an increase (e.g. 5% of coffee purchases in the first year).
3. Phase in whole-of-mountain use of single-wall BioPak or Pak360 (or alternative Australian Standards certified brand if applicable at that time) compostable cups and corresponding compostable lids. Make use of 100% compostable cups to AU standards a requirement across the Resort. Offer group buy to those interested. Design option of bulk buy optional, with the possibility to design a Falls Creek 'earth friendly' coffee cup recognisable design.
 - a. Include an audit of cups used across the Resort to ensure those using compostable cups are using an AS 4736 certified cup and lid.
 - b. Choose between BioPak (widely used at Hotham Resort) and Pak360 (Australian owned, tree free). Both are accepted by commercial composters.
 - c. Offer a bulk buy as an option (a voluntary bulk buy may reduce economies of scale but some operators expressed a desire to retain their marketing options on cups).
4. Introduce coffee cup collection points at all public place bins or consider satellite stations at key locations around resort.
 - a. Priority bins close to food and beverage outlets.
 - b. Supported by clear signage and education.
 - c. Future opportunity - transition to public place organics collection.
 - d. Consider compaction or shredding of cups to reduce volume in public place bins. Note that this requires further engagement with the selected end processor as both shredding and compaction may pose difficulties in processing.
 - e. Consider sort prior to transport to mitigate contamination risk.
 - f. Future opportunity - Seek to improve on-mountain processing opportunities to reduce volume being transported and increase ability to respond to seasonal variation in organic volume.
5. Future opportunity – work with Mount Beauty food and beverage operators to take up compostable cups more widely to reduce contamination, and to implement the swap-cup program for a greater range of places for guests to return cups.

Risk Analysis

Some of the risks identified as being associated with a project to exclude coffee cups from landfill is as follows:

- Not all operators accept the program and switch to compostable cups, increasing likelihood of contamination.
- Guest behaviour and compliance with a new system is not wide-spread, increasing likelihood of cups still being sent to landfill.
- Fluidity (as visitors bring cups from towns off the mountain) between off-mountain and on-mountain provides a source of contamination.
- Uncertainty around what will be accepted in the State-wide organics bins.
- Summer organics produced are too low in volume to be able to be processed

There are also risks associated with joining a swap-cup program. These include:

- Lack of operator uptake, which will reduce options for patrons to return cups and may discourage use of the program.
- High capital cost of the Green Caffeine program could result in a loss if it is not used by patrons. If purchase costs only are considered and compared, each swap cup is worth approximately 30 compostable cups. It would be reasonable to expect costs to equalise after three years so each cup needs to be used ten times per year to achieve a net zero cost

difference after three years. It is important that the number of swap cups starting out is not too high.

- Swap-cups going missing from the system will incur costs. This risk is addressed within both the Huskee Swap and the Green Caffeine models by either shifting initial cup purchase to the patron (Huskee Swap) or through keeping track within the App (Green Caffeine).
- Lack of uptake by patrons is a risk of either program. This risk can be ameliorated by ensuring high visibility and high operator participation both at the Resort and around the region.

Conclusion

This report is the summary of a project that sought to understand the benefits of removing take-away coffee cups from landfill at Falls Creek, Mount Buller/Mount Stirling, and Mount Hotham Resorts, and to identify the key requirements of an implementation project to achieve this goal. Based on the outcomes of this project we recommend that the Resorts work together to apply for funding to remove take away coffee cups from the landfill stream at Resorts. Mount Baw Baw and Lake Mountain Resorts may also be interested in joining the project to make it truly collaborative across Victorian Resorts.

This project has found that if the three participating Resorts removed coffee cups from landfill more than 180 cubic meters of landfill space would be saved. This is important within the context of the Victorian Circular Economy policy (*Recycling Victoria: A New Economy*). Although coffee cups are not yet specifically referenced in single-use plastics to be targeted and the list of acceptable items in organics bins is not yet established, removing coffee cups from landfill helps achieve the broader objectives of the policy and sustainability objectives of associated companies such as Vail Resorts.

A project to remove coffee cups from landfill will be phased, beginning with an education and outreach phase to finalise details of the roll out. A second phase will adopt a swap-cup program and may provide re-usable cups to Resort staff. The third and fourth phases will need to be implemented together and will involve mandating that compostable cups and lids are used by operators at Resorts and establishing a public place collection mechanism.

By replacing take-away coffee cups with re-usable and compostable options Victorian Resorts will establish themselves as being at the forefront of sustainable waste practices.

Appendix 1 – Detailed Table of Cup Pricings

Table 7: Comparative table of compostable coffee cup and lid prices

COMPOSTABLE				
Brand	Product	Price*	Price/unit	Provider
Pak360	Bio/Comp 8oz (90mm) Single wall Print, 1000 carton	\$ 116.00	\$ 0.12	Fletchers
Pak360	Bio/Comp12oz (90mm) Single wall Print, 1000 carton	\$ 134.00	\$ 0.13	Fletchers
Pak360	Bio/Comp 8oz (90mm) Double Wall Print, 1000 carton	\$ 156.38	\$ 0.16	Fletchers
Pak360	Bio/Comp 12oz (90mm) Double Wall Print, 1000 carton	\$ 180.90	\$ 0.18	Fletchers
BioPak	8oz (90mm), Single Wall, 1000 carton	\$ 106.15	\$ 0.11	BioPak (via wholesaler)
BioPak	8oz (280ml) (fits small lid), single wall, 1000 carton	\$ 95.50	\$ 0.10	BioPak
BioPak	12oz (80mm) (fits small lid), single wall, 1000 carton	\$ 107.05	\$ 0.11	BioPak
BioPak	12 oz (390ml) (fits large lid), single wall, 1000 carton	\$ 122.10	\$ 0.12	BioPak
BioPak	8oz (255ml) (fits small lid), double wall, 1000 carton	\$ 148.35	\$ 0.15	BioPak
BioPak	8 oz (90mm) (fits small lid), double wall, 1000 carton	\$ 156.85	\$ 0.16	BioPak
BioPak	12oz (390ml) (fits large lid), double wall, 1000 carton	\$ 184.40	\$ 0.18	BioPak
	Average price of cup		14 cents	
Pak360	Bio/Comp flat lid (90mm) White, PLA, 1000 carton	\$ 77.58	\$ 0.08	Fletchers
Pak360	Bio/Comp flat lid (90mm) White PLA, 1000 carton	\$ 77.58	\$ 0.08	Fletchers
BioPak	80mm, small lid opaque, 1000 carton	\$ 83.75	\$ 0.08	BioPak
BioPak	90mm, large lid, opaque, 1000 carton	\$ 92.80	\$ 0.09	BioPak
	Average price of lid		8.25 cents	
Non-compostable comparison				
Werko	8oz, single wall, 1000 carton	\$ 71.50	\$ 0.072	Werko.com.au
	8oz Double Wall Plain White Paper Hot Coffee Cups - 500	\$ 65.45	\$ 0.131	Paperware.com.au

Fiesta Green	12oz, single wall, 1000 carton	\$ 103.40	\$ 0.10	Fletchers
	12oz Double Wall Plain White Paper Hot Coffee Cups - 500 per carton	\$ 91.85	\$ 0.184	Paperware.com.au
	Average price non-compostable cup		12.175 cents	
	Black 8oz Coffee Cup Lids TP - 100pk, 1000ctn	\$71.94	\$ 0.072	Paperware.com.au
	Black Lids For 90mm dia. Coffee Cups - 1000 per carton	\$75.35	\$ 0.0754	Paperware.com.au
	Average price non-compostable lid		7.4 cents	

* Prices for BioPak and Pak360 include artwork. Prices are valid as of October 2021 but are subject to change.

Appendix 2 – Survey Summary Falls Creek Resort

Falls Creek Survey Response Summary*

17 surveys commenced, 13 completed**.

82% of survey respondents serve hot beverages (i.e. coffee, tea, hot chocolate)

Annually, between 133,900 and 139,100 single-use coffee cups are used[^]

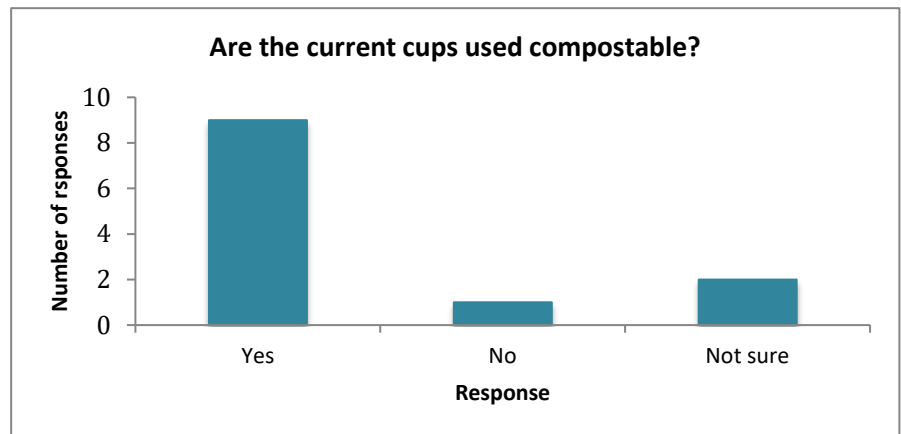
About the cups

The brands - 50%* of cups used are 'BioPak' brand (6 respondents). Other brands used are 'Detpak' (1), Fiesta Green (1), supplied by coffee bean company (1), ingeo (1) and one responded uses 'various' brands.

The sizes – 12oz cups are most commonly used (3), followed by 8oz (2) and 6oz, 10oz, medium and large.

Quantities - cups are purchased in varying quantities, from 'packs of 50', 'cartons', '1000-2000', 'box'.

Are they compostable?



For respondents not already using compostable single-use cups, 66.67% (2) would consider switching the type they use to be compostable and 33.33% (1) responded 'not sure, I would need more information'.

Of the two respondents who answered they would consider switching the type of cup they use to be compostable, 1 respondent said the switch to a compostable cup would need to be cost neutral or cheaper and 1 said they would pay up to 5 cents more per cup.

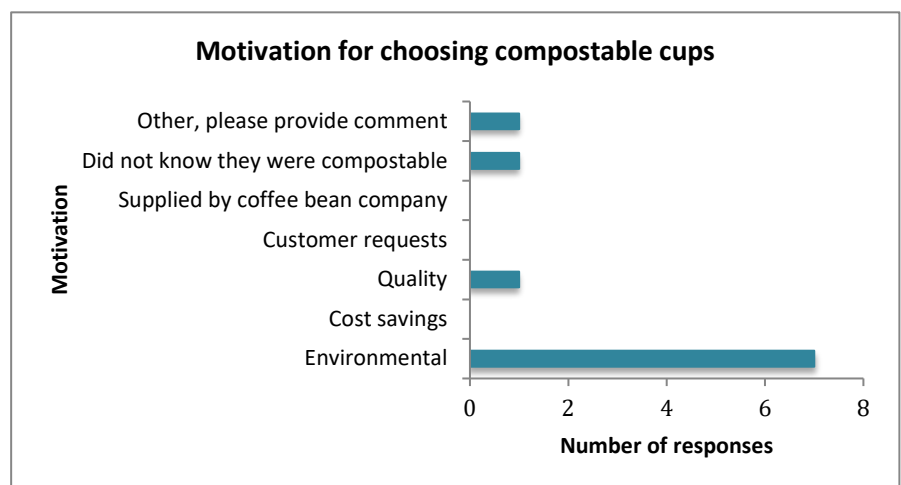
Before switching to compostable cups, the respondents said the following would need to be considered:

- "Durability and heat mitigation"
- "Ease of ordering and supply. Colour of the cup".

Motivation - 87.5% of respondents who answered the question reported 'environmental' motivation for choosing compostable single-use cups.

Comments:

"they cost more than other cups"



* Percentages through-out the survey summary are based on the number of responses to a question not the overall survey response rate. In instances respondents did not answer all the questions.

** At times a survey response represents multiple businesses.

[^] Based on 12 survey responses.

Communication - when asked if their business communicates the use of single-use compostable coffee cups, 37.5% (3) of respondents who answered the question said they did and 62.5% (5) do not communicate the use. Of the three respondents who do communicate the use of compostable cups the following methods are used:

- *"We have three bin systems with extensive signage encouraging cups and lids to compost bins"*
- *"It is written on the cups but we do not promote them any further than that"*
- *"Facebook"*

When asked how patrons know their single-use coffee cups are compostable respondents comments:

- *"We tell them, but prefer customers to bring their own"*
- *"signage"*
- *"It is written on them"*
- *"They don't"*

Competitive edge? - When asked if the use of compostable cups provides a competitive edge or marketing advantage to their business, 25% (2) of respondents who answered the question said 'yes' and 75% (6) answered 'no' (it did not provide a competitive edge or marketing advantage). Respondents commented:

- *"people don't care that much"*
- *"hot beverages are a very small part of our business 1-3% with the vast majority dine in"*
- *"We are working towards dine-in guests to use reusable cups (Huskee)"*
- *"People expect enviro packaging now. If it wasn't they would make comment".*

Feedback? - When asked for comments or feedback on the compostable single-use coffee cups used respondents reported:

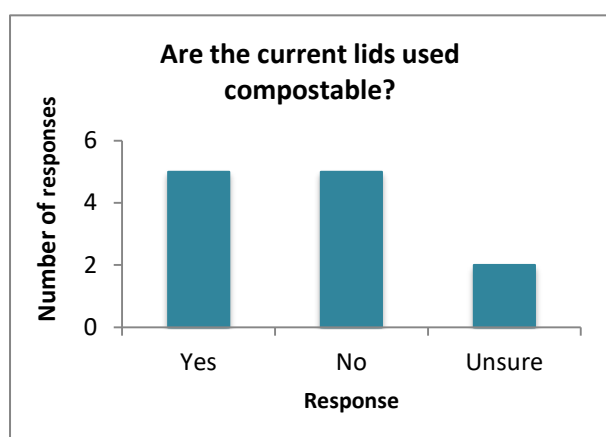
- *"We love them"*
- *"they are being discontinued so will need to find a new brand"*
- *"lids are the main problem now. Businesses need to change to sugarcane lids".*

About the lids

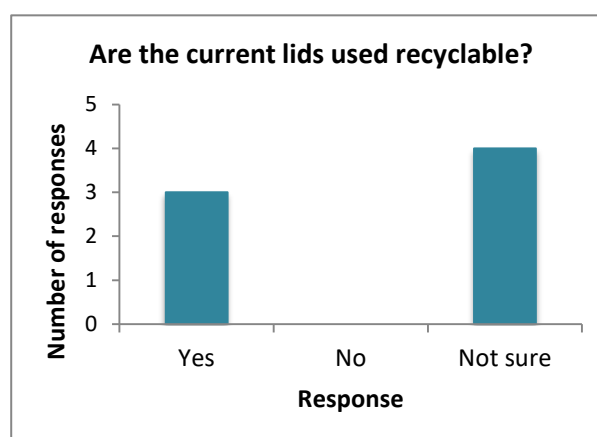
The brands - 50%* of cups used are 'BioPak' brand (6 respondents). Other brands used are 'Detpak' (1), supplied by coffee bean company (1), ingeo (1), one respondent uses 'various' brands and one was 'unsure (purchase through fletchers)'.

Quantities – lids are purchased in varying quantities, '2000', 'sleeves', packs of 100', '1000', 'carton'.

Are they compostable?



Are they recyclable?



* Percentages through-out the survey summary are based on the number of responses to a question not the overall survey response rate. In instances respondents did not answer all the questions.

** At times a survey response represents multiple businesses.

^ Based on 12 survey responses.

For respondents not already using compostable single-use lids, 100% (6) would consider swapping the type of lid used to be compostable. Three (50%) would need the swap to be cost neutral or even cheaper, two (33.33%) would pay up to 5 cents more per cup and one respondent is unsure if they would be prepared to pay more to use compostable cup lids.

Motivation – 100% of respondents (5) who answered the question reported ‘environmental’ motivation for choosing compostable single-use lids. One responded said ‘quality’ was also motivation.

Communication - when asked if their business communicates the use of single-use compostable cup lids, 60% (3) of respondents who answered the questions reported they did and 40% (2) said they did not communicate their use of compostable lids. Of the three respondents who do communicate their use of compostable lids, they commented:

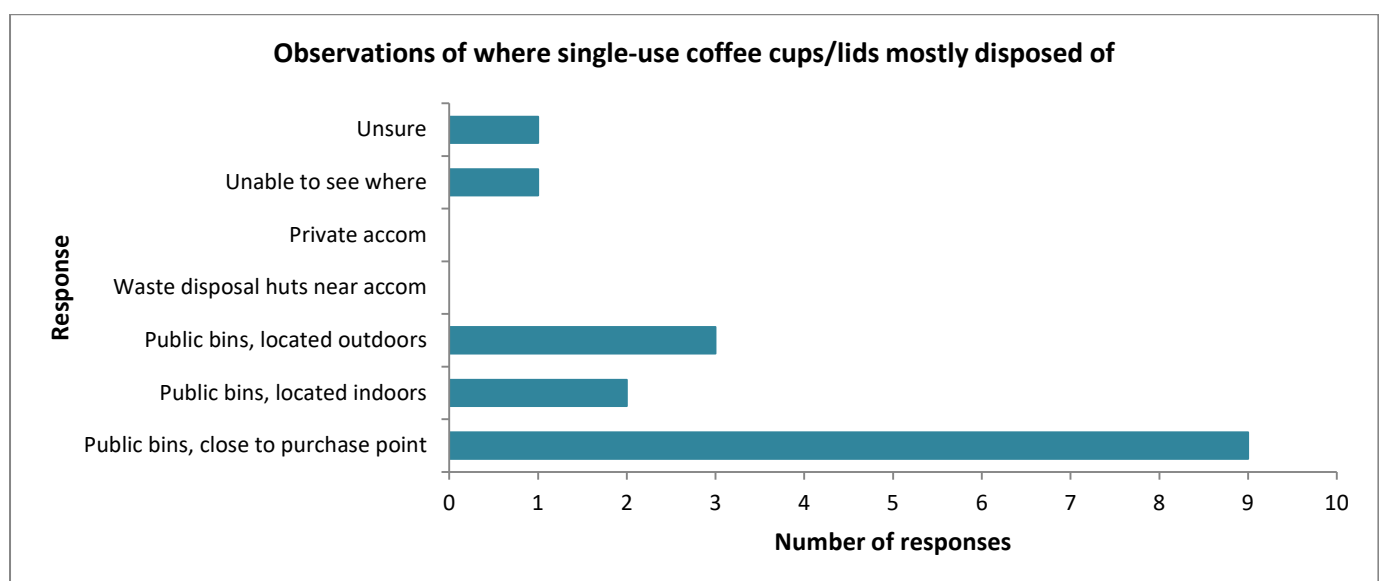
- “we have three bin system with extensive signage encouraging cups and lids to compost bins”
- “Facebook”

When asked how patrons know their lids are compostable, respondents said:

- “We tell them”
- “Signage”
- “They expect them to be”

Competitive edge – 40% (2) of respondents who answered the question believe the use of compostable lids provides a competitive edge or marketing advantage to their business, 60% (3) do not.

Observations of disposal



When asked if patrons seek help from staff with choosing the correct bin a single-use coffee cup or lid goes in 20% (2) said ‘yes’, 70% (7) said ‘no’ and one respondent was unsure. Respondents provided the following comments:

- “but we don’t have public bins near us other than the garbage huts”
- “The process for training all staff an education to deliver the right message for waste is a huge challenge as we need to encourage all seasonal staff to adapt to a new method than they are used to previously and often this is forgotten. In a normal year we would hope to have full staff training on the bins and the process for recycling/waste management for all venues”.

50% (5) of the survey respondents who answered the question said they felt they could help patrons choose the correct bin to dispose their single-use cup and lid in, 20% (2) said they couldn’t and 30% (3) were unsure. A survey

* Percentages through-out the survey summary are based on the number of responses to a question not the overall survey response rate. In instances respondents did not answer all the questions.

** At times a survey response represents multiple businesses.

^ Based on 12 survey responses.

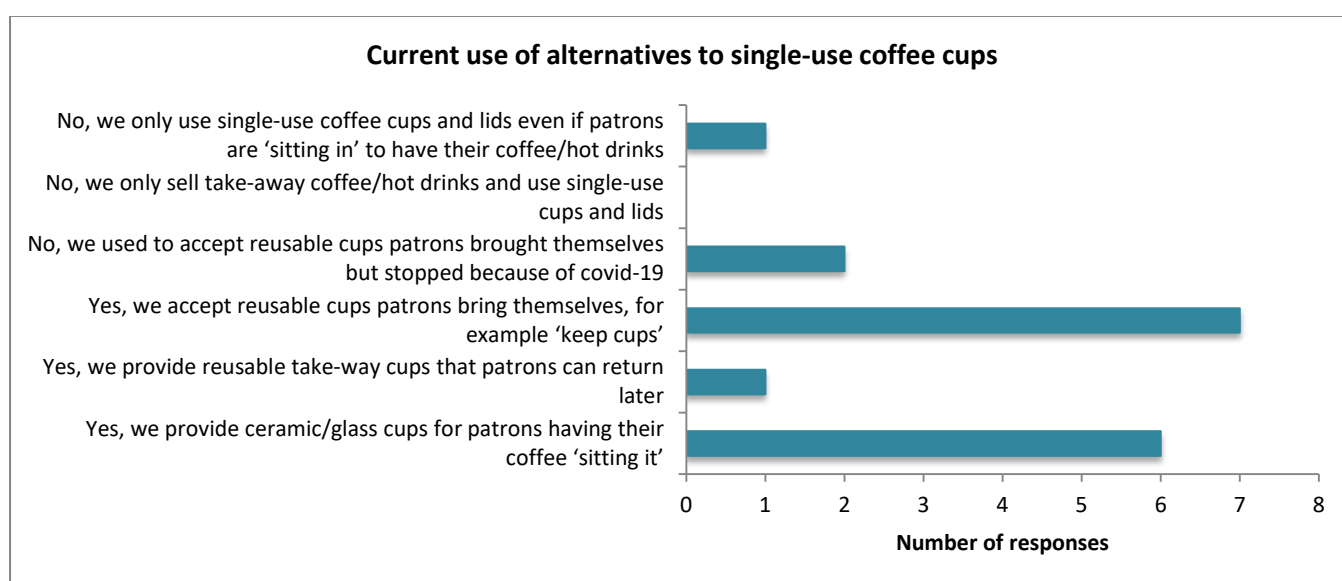
respondent commented *“time is not something on our side to have a discussion about coffee cup disposal when 100 other people are in a hurry to order lunch”*.

Signage - When asked about their interest in the resort providing signage to use at their business to help patrons understand correct disposal of single-use coffee cups and lids 50% (5) said they would like signage provided by the resort, 20% (2) said ‘no’ and 30% (3) said they were unsure. One respondent said *“people take the coffee away, so it wouldn’t be helpful, when they sit down for coffee we have actual coffee cups and saucers”*.

Litter – 40% (4) of respondents who answered the question said they notice coffee cup litter when moving around the resort, 60% (6) said they have not. Respondents commented:

- *“mostly in areas where there are not enough bins, eg. the carpark where people are walking their dogs and having coffee with nowhere to dispose of said cup”*
- *“most people are very good”*
- *“mostly lids and generally close to bin huts”*
- *“too much and not enough encouragement to dispose of properly”*

Alternatives to single-use cups/lids



Survey respondents reported the proportion of hot drinks sold using alternate coffee cups (i.e. ceramic/glass, provided by business, patrons bringing their own cup) as:

- sit in 70% take away 30%
- 15%
- 90% dine in 1% reusable takeaway, the rest is single use
- 40-60%
- 1%
- 90% in glass/ceramic for sit in

Discount - 1 responded said they offer a 10% discount to patrons who bring their own reusable cup, 6 respondents said they did not offer incentives or a discount for patrons who bring their own reusable cup and one responded said *“they smiled more”*. One respondent who did not offer a discount or incentive thought it was a good idea.

Swap cup program - Survey respondents were introduced to the concept of a ‘Swap cup’ program, which are designed to reduce single-use cup and lid use by providing an convenient option for patrons to use reusable cups. Of the 12 respondents who answered the question, 4 indicated they would be interested in being involved in a ‘swap cup’ program, 7 were unsure and said they would need more information and 1 respondent said their business would not be interested in being involved in a ‘swap cup’ program. Information that would be helpful to businesses decision-making about being involved in a ‘swap cup’ program includes:

* Percentages through-out the survey summary are based on the number of responses to a question not the overall survey response rate. In instances respondents did not answer all the questions.

** At times a survey response represents multiple businesses.

^ Based on 12 survey responses.

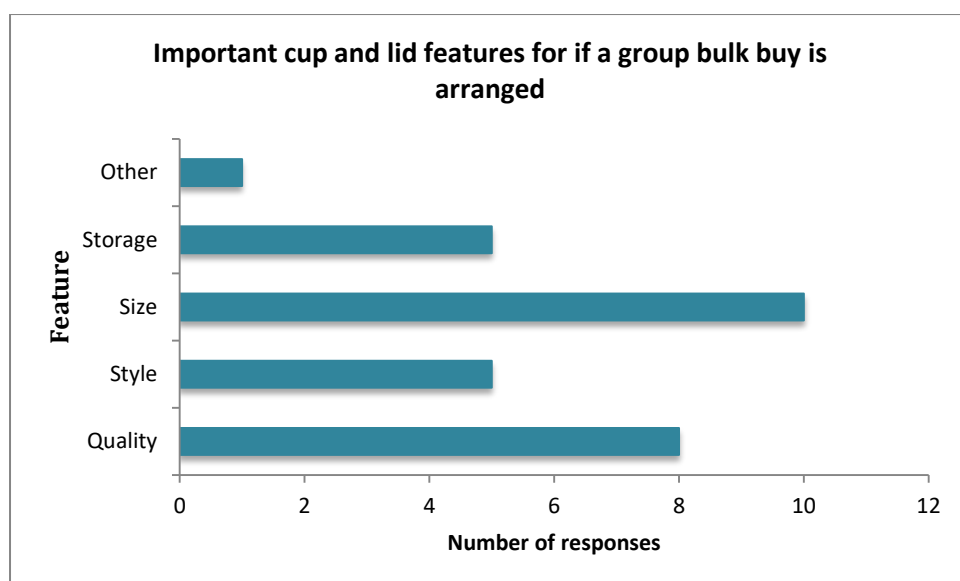
- *"If the cups fit in a cup holder in a car, if people can take them driving this would be a no factor" "...It would be best if it was an Australian product, made from sugar cane or something like that".*
- *"Cost involved. How is a par level of cups maintained."*
- *"The construction of the cups. If they were collapsible then yes as our venues are on piste and we can't expect people to carry their cups".*
- *"Need to know how many businesses were participating so that it is easy and convenient for customers to return the cups to another location".*
- *"Personally I don't think it will work but willing to try. Would need to see the cup and size etc".*

Of the four survey respondents who would be interested in being part of a 'swap cup' program, 3 said 'set up costs are not a barrier to them participating, 1 said they would be happy to pay set up costs of less than \$100 and 1 said they would be interested in being a part of a 'swap cup' program if it incurred no set up costs to their business.

Other comments about a 'swap cup' program include:

- *"I think this is a great idea in theory, but perhaps is not suited to the transient and season visitation that the resort experiences. If we can get towards a better composting process which occurs in Falls Creek this would be beneficial for all and can potentially provide another income stream for on-selling the by-products of commercial composting."*
- *"I don't feel like it is a viable program for here – it feels like the 'green bags' of supermarkets which are becoming more a waste product than a beneficial one"*
- *One time patrons, never see cups again. Have to wash, small space, don't have facilities to wash. Cost of the coffee goes up if staff have to wash cups. Previously purchased 4000 keep cups, did see any again. Programs previously tried to come in and they don't work. Already have 4 bins in a small space.*

Group buying



Comments provided about bulk-buys and the features selected as important to the business:

- *"not interested in bulk buy. General style not going to work. People are selling their brand. Marketing and selling brand – gives good priced coffee cups. Important to differentiate from other coffee suppliers on the hill".*
- *"we would require sizing and quality to be strongly considered"*
- *"must fit our cups"*
- *"Would need to be tasteful packaging, sizing would need to be taken into consideration so COGS of businesses aren't impacted"*

* Percentages through-out the survey summary are based on the number of responses to a question not the overall survey response rate. In instances respondents did not answer all the questions.

** At times a survey response represents multiple businesses.

^ Based on 12 survey responses.

- *“Needs to be good quality, sized within our offering and pricing model, easy to store”*
- *“Storage is limited, so would need to be easily stackable and easy to store”*
- *“All factors are important”*
- *“As long as we could access them as required and not have to store overly large amount at a time”*
- *“6oz is the size we use”*
- *“all are important”*

Other comments

Respondents provided the following comments about single-use coffee cups and lids or reusable coffee cups:

- *“People will contaminate coffee cup bin. Believe change starts with the manufacturers”.*
- *“Maybe just ban them in general. Water is free here, so why is washing up such a big deal. People are on holidays, lets get everyone to slow down and take the time to enjoy their coffee. Die hards can bring their own cups. Lets make slow coffee a new movement in Falls Creek”.*
- *“Less is more”*
- *“It would be nice to see this develop into a real life program where there is some sort of subsidy or incentive provided by resort management which in turn would increase”.*
- *“There are no compostable disposal units in public areas of the resort as yet- this would need to be actioned”.*

* Percentages through-out the survey summary are based on the number of responses to a question not the overall survey response rate. In instances respondents did not answer all the questions.

** At times a survey response represents multiple businesses.

^ Based on 12 survey responses.