

Submission for Recycling and resource recovery infrastructure
Evidence base report, October 2019

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1.0 Introduction

Thank you for the opportunity to comment on the Recycling and resource recovery infrastructure, Evidence base report (Report).

We have specific interest in the Report as it impacts on our technology start-up for facilitating efficient and effective reuse of goods and materials. Market insights and evidence-based reports indicated that the opportunities for reuse over recycling and especially disposal in the construction and demolition industry are substantial.

From previous efforts we have discovered that there are no Federal or State Government Grants for facilitating reuse and have also been unsuccessful in securing industry investment, including from accelerator groups, as there are no industry actions or targets around reuse.

We are going to respond to the following specific questions:

- Have we identified the right outcomes for Victoria to aim for (Section 6.0 below)?
- Have we identified the most effective potential actions for government to take (Section 7.0 below)?

Firstly, it's important for the context of this submission that we share a bit about ourselves and our technical start up.

2.0 About the author

Maxen Consulting Group has been around since November 2016 and we have been developing our technological start-up matX – Goods and Material Exchange since September 2018.

To provide “credibility” to this submission below is the extended biography from my nomination for Engineers Australia, Engineer of the Year 2019:

Cherie is an engineer with 20 years expertise in systems engineering, rail stations, design management, project management, policy and governance of major infrastructure projects. Cherie started her professional career in 1999 on New Zealand highway infrastructure before moving into rail infrastructure in Hong Kong, United Kingdom and Australia. She has a Master's in Civil Engineering and a Post-graduate Diploma in Psychology.

Cherie focuses on practical ways to improve decision frameworks, identifying and implementing innovation and increasing industry capabilities. Over the last 3 years, Cherie has worked with Level Crossing Removal Project (LXRP) and defined a completely new role for Victoria: Value Engineering Manager. There she built a dedicated team and partnership with LXRP stakeholders and delivery partners, identified and implemented dozens of high-value sustainable innovations and continuous improvements.

Her work demonstrates that there are substantial economic, social and environmental benefits when we critically and collaboratively examine both chronic and new engineering problems. In practice, this takes grit as the rail industry is steeped in tradition and conservatism as well as being siloed, making it almost impenetrable to change. Her journey has been an exercise in resourcefulness and innovation delivered through an entrepreneurial mindset.

Her previous roles include Systems Engineering Manager and Acting General Manager Engineering with Public Transport Victoria, Project Director for VicTrack Telecommunications, Lead Designer for South Australia's Seaford Rail Extension and Interface Manager on Thameslink Blackfriars, London.

Cherie co-founded and is on the steering committee for System Engineering Society of Australia (SESA) Victoria Transportation Working Group (TWG), is actively involved in industry mentoring and completely passionate about the Commonwealth Scientific and Industry Research Organisation (CSIRO) Science, Technology, Engineering and Maths (STEM) in Schools Program.

3.0 Market insights

Over 2 years ago, as LXRP Value Engineering Manager, I co-founded the LXRP, Material Reuse Working Group (MRWG). Other key stakeholders included Metro Trains Melbourne (MTM), Public Transport Victoria (PTV) (which represented Tourist and Heritage railways), VicTrack, LXRP Program Alliances and the Environmental Protection Agency (EPA). MRWG's mandate was to improve sustainability through:

- increasing visibility and making it easier to facilitate asset reuse, repurposing or returning assets to the State
- improving social value e.g. reusing assets for public art or on Tourist and Heritage railways.

The focus for Value Engineering was to gain insights and maximise commercial opportunities by improving visibility and process. Along the way we discovered the following:

1. The construction boom is causing the cost of new resources to escalate
2. There is currently a lot of focus on recycling and recovery but we also should be looking upstream at reuse. Industry is recycling (including scraping) and disposing of millions of tonnes of perfectly reusable material is a low value outcome

3. It is not possible to accurately predict the size of the reuse opportunity as there is little wholistic data, however our insights combined with documents and studies from Australia, New Zealand and the United Kingdom indicate that the opportunities are substantial.
4. There is an expectation that reuse is already happening efficiently within organisations such as Tier 1 contractors, however this is not the case. There is substantial opportunity for Tier 1 contractors to reuse goods and materials across their project portfolio and then if not needed offer it to others in the industry before considering recycling or disposal. The LXRP Joint Coordination Committee talked of the need for practical tools to support reuse improvements.
5. There is limited or no visibility across the rail industry on the reuse, recycling and disposal of rail assets in accordance with VicTrack's hierarchy
6. There is a willingness to reuse materials however there are significant practical barriers stopping it from happening efficiently or effectively, including fragmented nature of the industry, time critical, space poor, lack of standardisation and turnover of staff. These barriers must be removed if we want to willingly move to a circular economy, and
7. Reusing materials is sustainable, core to the circular economy and will allow public money to stretch further.

Outcomes from LXRP MRWG to May 2019

Include:

- reusing over 7000 tonnes ballast, 3km rail, 2000 sleepers and ground level troughing on within the program
- returning over 5000 tonnes ballast, 5km rail and 1400 sleepers to MTM
- the donation of 5000 tonnes of ballast and 17.5km of rail to the Yarra Valley Tourist and Heritage railway, and
- reserving heritage artefacts for public art and gifting to community interest groups.

<https://levelcrossings.vic.gov.au/media/news/track-donation-gives-fresh-momentum-to-yarra-valley-railway> 26 Jul 2018

Project Director Brett Summers, who heads up the Caulfield to Dandenong Level Crossing Removal Project said 5000 tonnes of stony ballast was being donated along with 17.5 kilometres' worth of steel track.

"In the course of removing level crossings between Caulfield and Dandenong, we've stripped out ground level tracks and replaced them with elevated rail," Mr Summers said.

"This material is completely fit for purpose so it's good to see it being used in this way – it's also the best possible outcome environmentally."

Supporting documentation, Victoria

- Infrastructure Victoria technical reports
- Sustainability Victoria's 2018 Statewide Waste and Resource Recovery Infrastructure Plan (more waste has to be reused in its most economically beneficial form)
- State of Victoria Department of Environment, Land, Water and Planning's Recycling Industry Strategic Plan, 2018.

Supporting documentation, wider Australia

- 2018 National Waste Policy: Less waste, more resources
<https://www.environment.gov.au/system/files/resources/7381c1de-31d0-429b-912c-91a6dbc83af7/files/national-waste-report-2018.pdf>
- 2018 National Waste Policy: Less waste, more resources
<https://www.environment.gov.au/protection/waste-resource-recovery/publications/national-waste-policy-2018>

Supporting documentation and studies, NZ

- ECNZ Licence Criteria for. Construction & Demolition Waste Services
<https://www.environmentalchoice.org.nz/assets/Specifications/EC-59-19-C-D-Waste-Services.pdf>
- BRANZ, 2014, REBRI guides introduction -
https://www.branz.co.nz/cms_display.php?st=1&sn=113
- Eunomia research & consulting, 2016, Joint Waste Assessment for TCC and WBOP
https://www.tauranga.govt.nz/Portals/0/data/council/plans/reserve_management/files/joint_waste_assessment.pdf
- Auckland Council, 2018, Waste Management and Minimisation Plan -
<https://www.aucklandcouncil.govt.nz/plans-projects-policies-reports-bylaws/our-plans-strategies/topic-based-plans-strategies/environmental-plans-strategies/Pages/waste-managementminimisation-plan.aspx>
- Auckland Council, 2014, Low Carbon Auckland -
<https://www.aucklandcouncil.govt.nz/plans-projects-policies-reports-bylaws/ourplans-strategies/topic-based-plans-strategies/environmental-plans-strategies/docslowcarboncopy/low-carbon-strategic-action-planfull.pdf>
- BRANZ, 2014, Benefits of Reducing Waste
https://www.branz.co.nz/cms_display.php?sn=113&st=1&pg=12516
- Auckland Council, 2019, Cost Benefit Analysis of Construction and Demolition Waste Diversion from Landfill – A Case Study Based on HLC Ltd Development in Auckland, July.
<http://www.knowledgeauckland.org.nz/assets/publications/TR2019-009-CBA-on-waste-diversion-from-landfill-homes-land-community-Auckland.pdf>
- BRANZ, 2019, REBRI homepage <https://www.branz.co.nz/REBRI>
- NZGBC, 2019, Green Star -<https://www.nzgbc.org.nz/Green Star>

Supporting documentation, UK

- Embedding circular economy principles into infrastructure operator procurement activities, White Paper, 2016
http://constructingexcellence.org.uk/wp-content/uploads/2016/11/Embedding-Circular-Economy-into-Procurement-MI-ROG-White-paper_October-2016.pdf
- UK CBC Circular economy guidance for construction clients: How to practically apply circular economy principles at the project brief stage
<https://www.ukgbc.org/ukgbc-work/circular-economy-guidance-for-construction-clients-how-to-practically-apply-circular-economy-principles-at-the-project-brief-stage/>

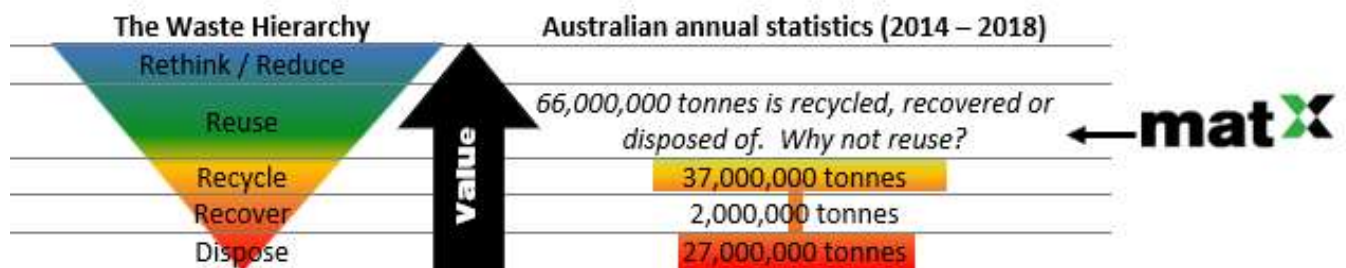
There was willingness from LXP MRWG to address the problem but improvements to reuse capabilities are challenging. Improvements are won through removing practical barriers and aligning with industry constraints.

At that time, we were advised not to priorities material reuse and to transfer governance of the MRWG. However, the opportunities for improving practice were so vast the problem of **HOW TO CREATE SUBSTANTIAL VALUE FROM SUSTAINABLE PRACTICE?** got hold of my imagination.

12 months ago, it became the motivation to independently invest in technology that supports industry collaboration and value creation. The start point was to declare all conflict of interest and then develop a product that removed barriers and would help move sustainability from overhead to profitability. In May 2019, I left LXP to focus on matX full time.

4.0 About matX – Goods and Materials Exchange

We are a tech start up with a practical tool, a minimum viable product (MVP) called matX, short for Goods and Materials Exchange. matX enables businesses to capitalise on resource efficiency through reuse opportunities. The vision is to help transition to the circular economy through objectively demonstrating to matX users that sustainable practice results in economic benefit.



matX aligns with the Australian Government's 2018 National Waste Policy: Less waste, more resources and Sustainability Victoria's 2018 Statewide Waste and

Resource Recovery Infrastructure Plan that more waste must be reused in its most economically beneficial form.

We've come a long way in 12 months, and we have been asking for help: awareness, advocacy and a grant for further development and job creation however we have been unsuccessful with all requests; Infrastructure Sustainability Council of Australia (ISCA) being the exception.

How matX works

The core function of matX is to create the visibility across industries that will enable sustainable practice to move from overhead to profitability.

We started off by searched all over for accessible, human centred tools that removed practical barriers, aligned with constraints and worked with how businesses do business. When we came up empty-handed, we started fresh and matX has a completely unique structure among “buy, sell and donate” platforms.

matX is based on circular economy principles and allows businesses to work how they want to e.g. allows users to create and control their own exchanges and cascade listings to prioritised and trusted collaborators, a big advantage when optimising reuse.

For the effort of one listing users can first check if the good and materials can be used internally on their other project sites, and if not, the listing automatically cascades to ‘external’ Exchanges of trusted collaborators.

matX captures and report on objective data that would support continuous improvements to material reuse and the circular economy.

Interestingly, it turns out the problem matX solves is ubiquitous across many industries including education, medical and farming. E.g. we're talking with Victoria's universities regarding improving utilisation of their unwanted resources, firstly across their own campuses, next with other state universities and TAFES and then offering resources to government schools before offering publicly.

Example

As an example of how matX helps, here is a story from Vic's Big Build. One project was pulling out ground level toughing (GLT) and with no time to find out where else it could be used and nowhere to store it, it was being sold as scrap metal, a low value outcome. A site worker on that project got talking about this over dinner with his brother who was working on a different Alliance and they were about to procure a bunch of GLT for temporary works and they connected the dots. LXRP's MRWG was able to facilitate the transaction. The originating project had a higher value outcome and the receiving project saved procurement costs as they didn't need to purchase new.

matX removes the 'ad hoc' nature from reuse and seeks to stop reuse opportunities being missed everyday within construction companies as well as between them.

Where matX is at:

- MVP online www.matX.com.au
- Trial planned with Tier 1 contractor however this is proceeding without urgency. Second trial in discussion with another.
- LXP will support only after a successful trial
- Working with Infrastructure Sustainability Council of Australia (ISCA) to get it in their iSelect toolkit
- Featured in Renew magazine September p58.

5.0 Motivation for this submission

Below is a snapshot of some of our recent dealings with Government and Government agencies.

We've concluded that Government backing for reusing goods and materials is essential to support continuous improvement and innovation in this area. And we wish to understand if reuse will become an important and recognised initiative for the Victorian and Australian Government.

Initiative	Agency or organisation	Their response	Our response
Secure Government grant	Grant Connect	There are no new GOs published that match your notification profile	Keep looking
Awareness, advocacy and especially a grant for further development and job creation	SV	Unfortunately, Sustainability Victoria (SV) does not currently have any grants available.	Keep looking
Work with Sustainability Victoria to tailor matX	SV	"We're already doing a project using block-chain technology"	ಠ_ಠ
Emailed MP regarding "half a billion dollars sustainability fund"	Office of Clifford Hayes	We are looking at all these ideas currently in the recycling inquiry. Hopefully you have put a submission into that, otherwise email recyclinginquiry@parliament.vic.gov.au and give them your information.	Followed advice (see below)
Requested audience with the recycling inquiry committee to discuss matX.	recyclinginquiry@parliament.vic.gov.au	No response	

Initiative	Agency or organisation	Their response	Our response
Awareness, advocacy and government support	Victorian Government Business Office	The following web link is to Sustainability Victoria (SV) which would seem to be the most appropriate agency for you to discuss your innovation.	See above
Mentorship	Start up Vic	As for mentors - we do not currently have any at the moment. Check back.	Keep looking

6.0 Have we identified the right outcomes for Victoria to aim for?

Overall the Report is a good document however we believe there is a disconnect between the outcomes identified for Government and Businesses.

Specifically, Government has been given outcomes including the following, of which neither intercept with Businesses:

- Resources management hierarchy is applied within circular economy framework, and
- Clear and resilient waste/circular economy policy.

The principles of the circular economy are well defined elsewhere, suffice to say that the greatest potential for improving resource efficiency and contributing to the circular economy in infrastructure delivery occurs during the optioneering, feasibility and early design stages. In the waste hierarchy this is known as rethink and reduce (or equivalent).

The next greatest potential is the reuse of goods and materials:

- Keeping resources in use for as long as possible
- Extracting the maximum value from resources while in use, and
- Keeping products, components and materials at their highest utility and value.

This is followed by lower value outcomes such as recycling and recovering products and materials at the end of life.

While the Report sets out a strong message around the circular economy, this does not translate into Business (or Consumer) outcomes for rethinking, reducing and reusing. The upstream, high value end of the resource management hierarchy and core circular economy principles around are almost absent from the Business outcomes (shown below).

Business Outcome	Rethink / Reduce	Reuse	Recycle	Recover	Dispose
Separation of target materials in public places, households and businesses			✓	✓	
Landfill capacity is taken up slowly	✓	✓	✓	✓	
Waste infrastructure network is effective, efficient, planned, protected, timely and safe			✓	✓	✓
High rates of recycling , resource recovery and diversion from landfill			✓	✓	
Complementary waste-to-energy and composting				✓	
Regulations relevant to markets are fit-for-purpose and inclusive			✓		
Strong end markets and innovation			✓	✓	
High-performing waste management operators			✓	✓	✓
Clean input streams			✓		
Efficient and sophisticated waste management contracts			✓	✓	✓
Supply-demand dynamic equilibrium		✓	✓	✓	
Total outcomes per resource management hierarchy	1	2	10	9	3

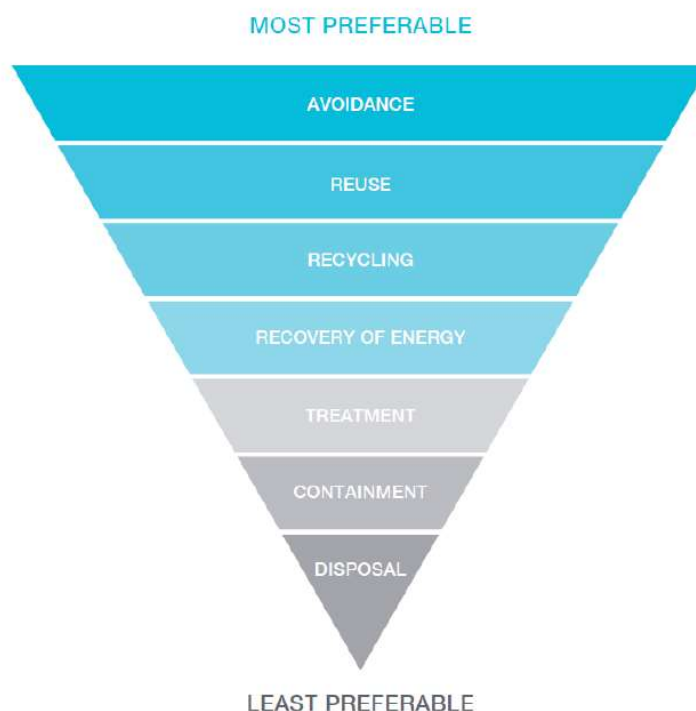
Core to the circular economy

There may be a handful of reasons why this is occurring:

I. There is an expectation that this work is being done by others

As pointed out in the Report the principles identified in the waste hierarchy are enshrined in legislation in Victoria through the Environment Protection Act 1970. In the waste hierarchy, recycling is good, but reuse is better.

Figure 1: Waste hierarchy



The Report also highlights that *the Victorian Government has identified three key objectives for the waste sector in Victoria.... Promote waste reduction, resource recovery and resource efficiency* – Page 28

The Report notes it is complemented by work from several other agencies and organisations including Department of Environment, Land Water and Planning (DELWP), the Environment Protection Authority (EPA) and Sustainability Victoria (SV). In addition, the Victorian Parliament is undertaking an inquiry into recycling and waste management.

We have already investigated to see if any of these agency or organisations were focusing efforts higher up on the waste hierarchy and fundamental to transitioning to circular economy.

- DELWP is focusing on recycling - Recycling Industry Strategic Plan, 2018
- EPA looks at reducing and reuse on a case by case basis
- SV's Statewide Waste and Resource Recovery Infrastructure Plan, 2018 outlines that more waste must be reused in its most economically beneficial form however have advised they are also focused on recycling, and

- We contacted the Victorian Parliament (recyclinginquiry@parliament.vic.gov.au) to talk about goods and materials reuse and received no response.

In the absence of any complementary work being carried out by the Victorian Government to actively engage the circular economy, we think it is important to include reuse in the Report.

II. Rethinking, reducing and reusing is being adequately addressed by industry

Rethinking and reducing is looked at through several lenses at the optioneering, feasibility and early design stages. From involvement with industry and Government, this is happening with a good level of integrity primarily as there is significant checks and balances as well as industry incentives e.g. being the successful bidder for projects.

Market insights and evidence outlined elsewhere in this submission indicates that reuse is not happening effectively both within medium to big businesses and across industry.

The construction and demolition industry contribute approximately 1/3 of the total volume of waste to be recycled and disposed of and this volume is increasing.

III. The focus is on the recycling industry to respond to political pressure and deliver maximum gains

There is currently substantial focus on recycling and recovery but because we're serious about preserving our resources, sustainability and the environment we must also be looking upstream at reuse.

Reuse is relatively low hanging fruit and will take the pressure off the 27,000,000 tonnes heading to landfill without threatening job creation across the recycling sector. Active engagement in the circular economy will create even more jobs.

The Report supports this view. Page 14: *In the longer-term, minimising the amount of waste generated in Victoria is likely to be the single most important driver of a more resilient recycling and resource recovery sector.*

IV. Reuse is in the too hard basket

The Report highlighted an ARUP scenario for Circular Stewards – *Victoria's circular economy policy sees government, industry and the community working together with improved coordination of policy, technology, behaviour, product stewardship and economic prosperity* – page 21

As ARUP points out, improvements to reuse capabilities are challenging. Improvements are won through removing practical barriers and aligning with industry constraints. These barriers and constraints include the fragmented nature of businesses and industries, resource shortages, time criticality, lack of storage, agility to work with short term projects as well as business as usual, changing

organisation structures, turnover of employees, the effort being commensurate to the return and industry culture.

Systematically removing the barriers reveals other underlying problems, however this is the place to start and we have the human centred technology to do it.

V. There is no statistical data on reuse therefore we cannot determine the benefit

Reuse statistics are not being monitored but we have some idea from the scale from the insights outlined above.

A centralised, standardised and auditable SQL (or similar) database for material diverted to higher value outcomes will be essential for improving policy decisions and outcomes.

7.0 Have we identified the most effective potential actions for Government to take?

We have no issue with the outcomes already defined, however we believe the Report would benefit by outlining actions for reusing goods and materials, including both incentives and targets.

We believe the lowest hanging fruit is reuse and therefore the Report has not identified the most effective potential actions for the Government to take.

This view is supported by evidence-based market insights above.

8.0 Summary

Millions of tonnes of waste in Australia is made up of perfectly usable goods and materials in the form of over-orders, offcuts and other unwanted items. All this waste has higher value outcomes than recycling (including scrap), recovery or landfill.

Reusing keeps resources at their highest value and reduces pressure on raw material being extracted from the environment and the associated generation of climate changing water and air pollution from processing and reprocessing.

Improvements to reuse capabilities are challenging. Improvements are won through removing practical barriers and aligning with industry constraints. These barriers and constraints include the fragmented nature of businesses and industries, resource shortages, time criticality, lack of storage, agility to work with short term projects as well as business as usual, changing organisation structures, turnover of employees, the effort being commensurate to the return and industry culture.

As the cost for new resources and disposing of waste increases and if we become more effective and efficient at reusing goods and materials, we approach the tipping point where reuse is a commercial advantage as well as best sustainable practice. This is the tipping point for the circular economy – it is where sustainability stops being the “problems” for the sustainability conscious and

become opportunity and is therefore driven by commercial as well as sustainable practices.

Reuse also takes the pressure off downstream activities such as recycling, recovery and disposal.

It is unclear why reuse has not been identified as a specific outcome and actions for Businesses, especially as the Report points to reuse in multiple places:

- *There is no silver-bullet in improving Victoria's recycling and resource recovery. It is going to take a **range of approaches**, clear strategic targets, policy certainty and a united, persistent effort* – page 5
- *Our role is provide further analysis and advice to support work to enhance the sustainability and resilience of the recycling and resource recovery sector in Victoria now, and help Victoria's long-term transition toward a **circular economy*** – page 6
- **Reuse is not out of scope.** Refer to Section 3.1.3 – page 9
- *The principles identified in the waste hierarchy are enshrined in legislation in Victoria through the Environment Protection Act 1970* – page 10. In the waste hierarchy, recycling is good, but reuse is better.
- It is in line with the potential Government outcomes –Figure 3 on page 13
- *In the longer-term, minimising the amount of waste generated in Victoria is likely to be the single most important driver of a more resilient recycling and resource recovery sector* – Page 14

In addition, reuse is also consistent with:

- Sustainability Victoria's 2018 Statewide Waste and Resource Recovery Infrastructure Plan (more waste must be reused in its most economically beneficial form)
- 2018 National Waste Policy Report

We request the Report be expanded to included measurable outcome and actions for goods and material reuse. Government and Government agency backing is essential to support continuous improvement and innovation in this area.