



SUBMISSION
INQUIRY INTO CLIMATE RESILIENCE

Legislative Council Environment and
Planning Committee

“Allowing the dog to wag the tail.”

CONTENTS

1. EXECUTIVE SUMMARY.....	4
2. SUMMARY OF RECOMMENDATIONS.....	7
3. ABOUT POLAR ENVIRO	9
4. RESPONSES TO TERMS OF REFERENCE.....	10
(a) The main risks facing Victoria’s built environment and infrastructure from climate change and the impact these will have on the people of Victoria.	10
Broader risks and impacts	10
Polar Enviro Recommendation 1.....	11
Specific and relevant risks and impacts.....	11
CASE STUDY: Mitigating the risks of electric, battery-reliant exit signs	12
Polar Enviro Recommendation 2.....	13
(b) How the Victorian Government is preparing for and mitigating the impacts of climate change on our built environment and infrastructure.	13
Is delivery keeping up with policy?	13
Built Environment Policies	14
Polar Enviro Recommendation 3.....	15
Circular Economy Policies and Ecosystem	16
Protection of the Environment Policy (PEP): Mandating Recycled Content.....	17
Circular Design Guidelines for the Built Environment	17
Polar Enviro Recommendation 4.....	18
Guidance from Infrastructure Victoria.....	19
Australian Government Circular Economy Ministerial Advisory Group.....	21
Australian Government Environmentally Sustainable Procurement (ESP) Policy	21
(c) Barriers facing Victoria in upgrading infrastructure to become more resilient to the impacts of climate change, including barriers in rebuilding or retrofitting infrastructure, including but not limited to, issues relating to insurance and barriers faced by local government	23
Product and Performance Standards	23
Polar Enviro Recommendation 5.....	24
Case Study: Resistance to low-to-no operational carbon photoluminescent exit signs in the construction industry	25

POLAR ENVIRO SUBMISSION

Polar Enviro Recommendation 6.....	26
A case of the tail wagging the dog?	26
Case Study: Bureaucratic Barriers to low-to-no operational carbon exit signs	26
How important is it to align the talk with the walk?	27
Grasping the opportunity	29
Polar Enviro Recommendation 7.....	29
Polar Enviro Recommendation 8.....	30
A case of costly, imported, unsafe and linear road treatments	30
Case Study: "Colourful Compromise: The Hidden Costs of Victoria's Surface Treatments"	30
Ensuring Victoria's Social Procurement Framework is fit-for-purpose	32
Green tick and green washing	32
Building an ecosystem for preferred low-carbon products and technologies .	33
Local Content and Sustainability Supply Register (LCSSR).....	33
Polar Enviro Recommendation 9.....	35
Specific barriers for Local Governments	35
Polar Enviro Recommendation 10.....	37
Polar Enviro Recommendation 11	38
(d) The adequacy of the current Victorian planning system as it relates to its adaptation to, preparation for, and mitigation of climate change impacts.	38
Polar Enviro Recommendation 12.....	39
Linking other Acts with the Planning and Environment Act 1987	39
Polar Enviro Recommendation 13.....	39
(e) What more could be done to better prepare Victoria's built environment and infrastructure, and therefore the community for future climate disaster events...	39
Polar Enviro Recommendation 14.....	40
5. CONCLUSION	41
6. GLOSSARY	42
Appendix 1: Local Content and Sustainability Supply Register (LCSSR)	44
Appendix 2: Financial and Environmental Benefits of Local, Sustainable Built Environment Products	45

1. EXECUTIVE SUMMARY

We have called this submission ‘allowing the dog to n.’ For this to happen, policymakers need to be proactive rather than reactive. Timely and integrated delivery and action are possible if government tackles the risk-averse nature of the bureaucracy as well as public policy that is not fit for purpose because it cannot deal with constant technological changes.

Polar Enviro thanks the Environment and Planning Committee for this opportunity to submit to its Inquiry into Climate Resilience.

Our focus in this submission is on the following Terms of Reference of the Inquiry:

- (a) Risks and impacts of climate change on the built environment;
- (c) Barriers to upgrading infrastructure to become more climate-resilient;
- (d) Adequacy of the current planning system;
- (e) What more could be done to better prepare Victoria’s built environment, and
- (f) Further inquiries and investigations.

We applaud the Committee for its focus on the built environment. It is an area where there is a huge capacity to help facilitate the transition to net-zero and ramp up the decarbonisation of the economy, while also helping grow the circular economy.

At the outset, we believe most of the policy settings in Victoria are nearly correct, with the exception being for the need to significantly ramp up Circular Economy Policy. Much of the policy ‘heavy lifting’ has been done.

Unfortunately, the same cannot be said regarding the effective and timely delivery of these policy settings.

Victoria has led jurisdictions around the world in setting ambitious climate targets before, and it can lead again to improve climate resilience, meet emissions reduction targets, grow the circular economy, reduce e-waste and focus more on hard-to-abate sectors including the built environment.

Unlike others in the community, we do not believe that throwing money at these challenges is possible or necessary. Given Victoria’s Budget position following Covid 19, it is sensible to prioritise life cycle costing and to demand value-for-money circular and longer-lasting products.

As the benefits of Victoria’s rapid electrification of its energy network are being realised, we believe there needs to be a complementary shift in focus towards the embodied carbon emissions associated with the materials and processes used to construct and maintain infrastructure and buildings.

Embodied carbon is gaining attention as a significant contributor to overall emissions from the built environment. For instance, in 2019, embodied carbon constituted about 16% of Australia's built environment emissions.¹ It is concerning that without intervention, embodied carbon could account for 85 per cent of Australia's built environment emissions in 2050. This could further hinder our stated objective of reaching net zero emissions in line with the Paris Agreement.²

Solutions for the built environment that reduce both operational and embodied carbon therefore represent the best opportunities to grow Victoria's circular economy. This will help our infrastructure and buildings become more resilient to the risks and impacts of climate change.

Polar Enviro believes enduring legacies of this Inquiry could result in:

- Better alignment of climate change policy with procurement across both State and Local Government;
- A much stronger circular economy legislative framework and delivery ecosystem;
- Clear and strong incentives and 'teeth' to enforce the uptake of preferred local and recycled content.
- Leading the country in addressing imminent risks to recycling and landfill of volatile and unnecessary batteries.
- Help grow sovereign manufacturing in Victoria, and
- Improve the return on investment and bottom line of State and Local Governments.

We have developed 14 recommendations that address sequentially the Committee's Terms of Reference and support these legacies and the need to address the current misalignment between policy and delivery. Our number one priority we believe would have the greatest impact on sustainability and growing Victoria's circular economy would be for the Victorian Government to establish a Local Content and Sustainability Supply Register (LCSSR) – see Recommendation 9.

This can be done cost-effectively if policymakers and bureaucrats embrace significant opportunities to better comply with and enable relevant policies and regulations.

Importantly, not only will the adoption of this and our other recommendations improve the sustainability of the built environment, it will also significantly improve safety outcomes for all users.

¹ Clayton Utz, November 2021. Insights: How Australia's building and construction sector is responding to the "hidden" issue of a building's embodied carbon, accessed at <https://www.claytonutz.com/insights/2021/november/how-australias-building-and-construction-sector-is-responding-to-the-hidden-issue-of-a-buildings-embodied-carbon> on 27 March 2024.

² Green Building Council of Australia and thinkstep-anz, 2021. Embodied Carbon and Embodied Energy in Australia's Buildings accessed at <https://gbca-web.s3.amazonaws.com/media/documents/embodied-carbon--embodied-energy-in-australias-buildings-2021-07-22-final-public.pdf> on 12 June 2024.

POLAR ENVIRO SUBMISSION

Finally, we know that our submission is reflective of many of the issues that several local manufacturing businesses are experiencing in Victoria. We socialised our submission with these businesses and there was resounding support for the recommendations that were developed.

2. SUMMARY OF RECOMMENDATIONS

Polar Enviro Recommendation 1

That the Committee endorse Infrastructure Victoria's 10 recommendations in Weathering the Storm: Adapting Victoria's infrastructure to climate change. Further, the Committee should request that the Victorian Government to provide a substantive response and implementation strategy in response to the report and recommendations.

Polar Enviro Recommendation 2

That the Committee call on the Victorian Government to undertake a review of the risks and impacts that loose and embedded batteries pose to landfill and waste facilities in Victoria. This review should also include considerations of the risk to climate resilience, the shift to a circular economy and the opportunities to transition to battery-free and unpowered exit signs.

Polar Enviro Recommendation 3

That the Committee recommend the Victorian Government review its Built Environment Climate Change Adaptation Action Plan 2022–2026 and the Critical Infrastructure Resilience Strategy 2015 for action much sooner, in response to the Committee's Final Report.

Polar Enviro Recommendation 4

That the Committee recommend the Victorian Government support the national adoption of Infrastructure NSW's Decarbonising Infrastructure Policy and Decarbonising Infrastructure Measurement Guidance.

Polar Enviro Recommendation 5

That the Committee recommend that the Victorian Government require that projects specify compliance with the NCC instead of technology-specific Australian Standards, which could help grow Victoria's circular economy and improve climate resilience.

Polar Enviro Recommendation 6

That the Committee recommend the Victorian Government leverage its significant purchasing power to prioritise the procurement of operational carbon photoluminescent exit signs for all government buildings and projects to encourage wider industry adoption.

Polar Enviro Recommendation 7

The Committee request that the Minister for Planning to issue a Ministerial Direction to address the current bureaucratic blockages to the uptake of NCC-compliant photoluminescent exit signs as this is also consistent with a number of Objectives in the Building Act 1993.

Polar Enviro Recommendation 8

The Committee could recommend that administrative barriers to implementing low-to-no operational carbon exit signs within the Victorian School Building Authority and the Victorian Infrastructure Delivery Authority be reversed so that schools, hospitals and other government buildings can benefit from low-emission technologies.

Polar Enviro Recommendation 9

That the Committee recommend the Victorian Government establish a Local Content & Sustainability Supply Register (LCSSR) or similar to increase the uptake of sustainable, circular and/or local products and technologies and build climate resilience.

Polar Enviro Recommendation 10

That the Committee recommend the Victorian Government and Parliament establish a separate Inquiry into the adequacy of current financial monitoring and reporting of Local Governments in Victoria. This additional Inquiry could also investigate whether more flexibility is needed around borrowing caps and increased availability of low interest loan facilities for Victorian Councils who need to maintain damage caused to roads and other infrastructure from climate change.

Polar Enviro Recommendation 11

That the Committee recommend the Victorian Government consider ways it can include Local Government in actions to promote the uptake of more circular, longer-lasting products and technologies. This may also include how both can work together to progress a Decarbonising Infrastructure Policy and Decarbonising Infrastructure Measurement Guidance, as per Polar Enviro Recommendation 4.

Polar Enviro Recommendation 12

That the Committee recommend the Victorian Government explore ways its planning system can increase the uptake of low-to-no emission, longer life cycle, recycled content products. Options may include:

- As-of-right approvals when certain requirements are met;
- Fast-tracking applications that meet and/or exceed agreed performance levels of low-to-no emission, longer life cycle, recycled content products;
- Ministerial Call-ins, and
- Standard form contracts as proposed by Infrastructure Victoria and Infrastructure NSW as discussed earlier in our submission.

Polar Enviro Recommendation 13

That the Committee recommend the Victorian Government review how other legislation contributes to or hinders the Planning and Environment Act 1987, including climate change objectives. This could include Regulatory Impact Statements (RIS) to assess the impact of new or amended regulations including any overlaps or conflicts as required under the Subordinate Legislation Act 1994.

Polar Enviro Recommendation 14

That the Committee recommend to the Victorian Government that further guidance be rolled out across both State and Local Governments to:

- Define how to set an emissions baseline;
- How to measure carbon, and
- How to identify carbon reduction strategies.

3. ABOUT POLAR ENVIRO

Polar Enviro is a 100% Australian-owned, Victorian-based, family-owned company that supports local jobs and manufacturing.

Our modus operandi is focused on decarbonising the built environment, growing the circular economy, and helping more people get home safely from work, rest or play.

Polar Enviro includes the Smarterlite, OmniGrip Direct and Vivacity brands established for more than 20 years each.

Polar's commitment to climate resilience is evidenced by successful partnerships with both the Australian Government and the Victorian State Government over recent years, including:

- Circular Economy Markets Fund with the State Government's Sustainability Victoria. Outcomes included Environmental Product Declaration (EPD) Certification for a post-consumer recycled glass High Friction Surface Treatment (HFST) as a 'first line of defence' for at-risk crash locations on roads;³
- Road Safety Innovation Fund with the Federal Department of Infrastructure, Transport and Regional Development. Outcomes included the development and demonstration of 4 types of Photoluminescent Line Marking as an affordable alternative to electric light on dark and dangerous rural roads, and
- Low Carbon Manufacturing Grant Program: Business Growth Stream with the State Government's Department of Jobs, Skills, Industry and Regions. Outcomes are in train and include the development and delivery of a Photo Luminescent (PL) Emergency and Safety Signs Manufacturing and Assembly Plant. The use of low-to-no operational carbon exit signs reduces both operational and embodied carbon and grows the circular economy.

Our commitment to making a difference to climate resilience, reducing carbon emissions, growing the circular economy, reducing e-waste and improving safety in the built environment has been captured in several relevant submissions over the last few years, including:

- Victorian Government – DEECA (2022): Expert Panel on Victoria's 2035 Emissions Reduction Target;
- Infrastructure Victoria (2023): Inquiry on opportunities to reduce greenhouse gas emissions of Victorian Government Infrastructure, and
- Legislative Assembly Economy and Infrastructure Committee (2023): Inquiry into the impact of road safety behaviours on vulnerable road users.

³ This project was funded by Sustainability Victoria built upon earlier funding to our Research Partner – Australian Road Research Board to develop and refine the post-consumer recycled glass materials.

4. RESPONSES TO TERMS OF REFERENCE

(a) The main risks facing Victoria’s built environment and infrastructure from climate change and the impact these will have on the people of Victoria.

Broader risks and impacts

There have been many studies and reports on the risks and impacts of climate change on Victoria's built environment and infrastructure, published by government and others. As this is not our specialised expertise, we do not wish to comment on these broader risks and impacts.

However, we do believe that the recently released Infrastructure Victoria Final Report - Weathering the Storm: Adapting Victoria’s infrastructure to climate change⁴ is worth mentioning. Polar Enviro made a submission to the Inquiry leading up to this report's publication.

Consistent with our submission, we note the following highlights of Infrastructure Victoria’s Report:

- Case Study: Making Queensland roads more resilient delivers savings.⁵ Infrastructure Victoria cites 7 case studies in 4 representative Queensland regions and using a life cycle costing model, results found that moving to a preventative maintenance strategy meant an extra dollar of spending would deliver \$6.90 in road user cost savings and produce cumulative life cycle savings of nearly \$600 million.⁶
- Benefits-cost ratio (BCR) for flooding adaptation measures. This includes a range of interventions with related BCR ratings for current (2022) and future (2070) conditions, with preventative maintenance scoring the highest of all interventions.⁷

Finally, we believe Infrastructure Victoria has made many sound recommendations to support Victoria’s preparation for and mitigating the impacts of climate change on our built environment and we discuss these in our response to the Committee’s Terms of Reference (b).

⁴ Infrastructure Victoria, February 2024. Report: Weathering the Storm: Adapting Victoria’s infrastructure to climate change. Accessed 6 May 2024 at https://assets.infrastructurevictoria.com.au/assets/Weathering-the-storm_adapting-Victorias-infrastructure-to-climate-change_Final.pdf

⁵ Ibid, page 12.

⁶ National Asset Centre of Excellence, 10 August 2023. Asset Management – accounting for life cycle costing implications and network performance risks of rain and flood events.

⁷ Infrastructure Victoria, February 2024. Op cit page 23.

Polar Enviro Recommendation 1

That the Committee endorse Infrastructure Victoria's 10 recommendations in Weathering the Storm: Adapting Victoria's infrastructure to climate change. Further, the Committee should request that the Victorian Government to provide a substantive response and implementation strategy in response to the report and recommendations.

Specific and relevant risks and impacts

There are several specific risks and impacts relevant to our submission and focus of our technologies used in or on:

- Roads, pavements, open space, and
- Buildings and other infrastructure.

For roads, pavements and open space these risks include:

- The increased frequency and intensity of a range of extreme weather events such as flooding and sea-level rise, heatwaves, fires and droughts, and
- The use of imported short-lived, slippery and plastic-shedding paint-based road and pavement surface treatments.

In relation to the impacts for roads, pavements and open space, two of the biggest include community safety and disruption.

Another impact is that government and business owners are paying a premium for 'linear' products and technologies that are made with a short life cycle and made to fail. This is enabled through a lack of systemic and integrated life cycle costing by government and other asset owners which limits their uptake of more circular products and technologies that are made to last.

Given damage to roads, pavements and open space (e.g. erosion, cracking, expansion, softening of surfaces and undermining of road and other substrates and surfaces) is increasing now as a result of these extreme weather events, government must intervene to say the time to reward the failure models has passed.

Turning now to the risks and impacts for buildings and infrastructure. The increased need for cooling and heating in more extreme weather will drive up energy consumption and costs, as well as causing reliability issues, power outages and increased maintenance and replacement costs In addition to the expected damage when it occurs.

We would also highlight impacts on Victoria's energy grid including load shedding and related challenges that will require products and technologies that reduce energy consumption and are better able to continue working in less reliable supply conditions.

In conclusion, reactive maintenance instead of preventative maintenance. and the continued use of linear products and technologies made to fail, when coupled with the risks and impacts of climate change are Increasing maintenance, material and labour costs across all sectors.

This confluence of issues is also leading to higher insurance costs as well as reduced expenditure available to retrofit buildings with more sustainable and circular materials and equipment.

CASE STUDY: Mitigating the risks of electric, battery-reliant exit signs

Problem Identification: Victoria faces escalating challenges with the disposal of batteries from exit signs, mainly involving nickel cadmium (Ni-Cd) and nickel metal hydride (Ni-MH) batteries. Despite a 2019 e-waste landfill ban in Victoria, significant volumes of these batteries are still improperly discarded, accumulating in landfills and waste facilities. These batteries can be volatile and cause fires, and contain harmful heavy metals such as cadmium, lead, and nickel, presenting serious environmental hazards.

Emerging Concerns: Additionally, more recent versions of lithium-ion batteries are now recognised for their volatility, which significantly contributes to the increasing prevalence of fires in landfills and waste facilities. These newer battery types, while less hazardous in terms of toxic heavy metal content, can still be prone to thermal runaway when damaged and are not sufficiently addressed in the electric, battery-reliant exit sign industry's own Exitcycle Scheme⁸, current publications or regulations.

Existing Initiatives: The Exitcycle Scheme, is designed to tackle this issue. However, the scheme struggles with compliance and enforcement, failing to prevent significant numbers of batteries from reaching landfills. It relies on electricians delivering failed exit signs to a small number of recycling centres which is a flawed model with poor compliance.

Statistical Overview: Recycling rates for end-of-life batteries in emergency lighting remain disturbingly low, estimated at about 5%. Data indicates that around 5 million nickel cadmium batteries are discarded in Australian landfills annually.⁹

Economic and Safety Concerns: As reported in Australia's Waste Management Review,¹⁰ the Australian Council of Recycling (ACOR) and the Australian Organics Recycling Association (AORA) have raised alarms over increasing battery-related incidents causing property damage, injuries, and deaths. These incidents have also shaken the financial stability of the waste management sectors.

Rising occurrences have prompted the Battery Stewardship Council (BSC) to advance the review of B-cycle, a government-authorized battery recycling scheme, responding to economic pressures and over 1,000 battery-related fire incidents reported annually.¹¹

⁸ See <https://exitcycle.org.au> accessed on 28 March 2024.

⁹ See <https://exitcycle.org.au> and <https://exitcycle.org.au/wp-content/uploads/EXITCYCLE-FLYER.pdf> accessed on the internet on 28 March 2023.

¹⁰ Waste Management Review, March 2024. AORA backs bid to reduce battery hazards accessed on 22 March 2024 at <https://wastemanagementreview.com.au/aora-backs-bid-to-reduce-battery-hazards/>

¹¹ Battery Stewardship Council, March 2024. Media Statement: Battery Stewardship Council announces review of B-cycle Scheme to help combat market pressures for industry, access on the internet on 27 March 2024 at createsend.com/t/t-90AA2AC21C75557C2540EF23F30FEDED

Regulatory and Enforcement Gaps: The current legislative, regulatory, and enforcement frameworks are insufficient, undermining government policies aimed at climate resilience, avoiding e-waste, promoting a circular economy and a more effective waste and recovery sector, and reducing emissions.

Innovative Solutions: Market-available, battery-free alternatives like Smarterlite’s Hyperion ET24DSWL Hybrid LED Photoluminescent Exit Signs offer substantial benefits. This product does not have batteries to dispose of and also features the lowest wattage in its category, significantly reducing operational costs and emissions. It boasts a 16-year lifespan—four times longer than traditional battery-reliant signs—and complies with the National Construction Code (NCC).

Additionally, Smarterlite offers an unpowered Photoluminescent Exit Sign, which requires no power and has a lifespan of 30 years, potentially avoiding nearly eight replacements compared to traditional linear models.

Conclusion: Transitioning to battery-free and unpowered exit signs could significantly mitigate the environmental, safety, and economic risks associated with battery disposal. This approach aligns with Victoria’s goals for a sustainable circular economy and represents a practical solution that can be readily implemented to enhance sustainability and safety across the built environment.

Polar Enviro Recommendation 2

That the Committee call on the Victorian Government to undertake a review of the risks and impacts that loose and embedded batteries pose to landfill and waste facilities in Victoria. This review should also include considerations of the risk to climate resilience, the shift to a circular economy and the opportunities to transition to battery-free and unpowered exit signs.

(b) How the Victorian Government is preparing for and mitigating the impacts of climate change on our built environment and infrastructure.

Is delivery keeping up with policy?

We believe most of the policy settings in Victoria are correct, with the exception of the need to significantly ramp up the Circular Economy Policy. Much of the policy ‘heavy lifting’ has been done.

Unfortunately, the same cannot be said for the effective and timely delivery which results in a misalignment between outcomes and objectives and the implementation of policies.

We acknowledge that Victoria was one of the first jurisdictions in the world to legislate a Net Zero target with the Climate Change Act 2017. Many of the government's related actions to prepare for and mitigate the impacts of climate change across all industry sectors and the community are also unparalleled.

The fact Victoria then updated its ambition to be net zero by 2045 underscores its leadership on climate change in Australia and the world.

Several other legislative and policy tools that complement the Climate Change Act 2017 are worth mentioning:

- Adaptation Action Plans (in particular the Built Environment Climate Change Adaptation Action Plan 2022–2026);
- Building Victoria's Climate Resilience;
- Climate Change Strategy;
- Climate-related Risk Disclosure Statement 2022;
- Critical Infrastructure Resilience Strategy 2015
- Financial Reporting Direction 24: The Environmental Performance Cycle;
- General Environmental Duty under the Environment Protection Act 2017, and
- Public Administration Act 2004 (Directors' duties with respect to climate risk).

In addition to the above, implications of climate change are also required under various other legislation, including:

- Building Act 1993;
- Circular Economy (Waste Reduction and Recycling) Act 2021;
- Flora and Fauna Guarantee Act 1988;
- GreatOcean Road and Environs Protection Act 2020;
- Local Government Act 2020;
- Marine and Coastal Act 2018;
- Transport Integration Act 2010, and
- Yarra River Protection (Wilip-gin Birrarung murrong) Act 2017.

Built Environment Policies

Specific reference to the Built Environment Climate Change Adaptation Action Plan 2022–2026¹² is relevant to our submission.

We believe the plan sets a sound conceptual framework for risks, challenges and opportunities that exist in the built environment.

We also agree with the Key Issues identified in the plan for the Built Environment, in particular:

- Strengthening design standards for new buildings and infrastructure;

¹² State of Victoria, Department of Environment, Land, Water and Planning (DELWP) 2022. Built Environment Climate Change Adaptation Action Plan 2022-2026 accessed on the internet on 27 March, 2024 at https://www.planning.vic.gov.au/_data/assets/pdf_file/0034/635965/Built-Environment-Climate-Change-Adaptation-Action-Plan-2022-2026.pdf.

- Retrofitting existing buildings and infrastructure to ensure they are able to adapt and respond to increasing hazard levels and reduce their emissions;
- Preparing for disasters and improving resilience of existing urban areas, and
- Liaising with the financial and property industry.¹³

However, given the prevalence of extreme weather events and the impacts on the built environment and infrastructure are worse than previously modelled, we believe more urgent action is needed.

Polar Enviro Recommendation 3

That the Committee recommend the Victorian Government review its Built Environment Climate Change Adaptation Action Plan 2022–2026 and the Critical Infrastructure Resilience Strategy 2015 for action much sooner, following consideration of the Committee’s Final Report.

Such a review should look at whether, given the prevalence and impacts of extreme weather events, the timing of the proposed short-term (by the end of 2026) and medium-term (by the end of 2031) milestones are adequate.

We also believe the medium-term objective must be achieved by no later than the end of 2028 so that implementation commences, as opposed to the current milestones which are not realistically responding to the current climate challenges we face. We reproduce the current published milestones below.¹⁴

Table 1. Built Environment system adaptation objectives

Timing	Objective
Short-term objective (by the end of 2026)	<p>Policies and standards are strengthened to provide comprehensive support for climate change adaptation and emission reduction across the Built Environment system.</p> <p>Institutional organisations and major infrastructure providers are committed to climate change adaptation and emission reduction as part of the way they operate across the built environment.</p>
Medium-term objective (by the end of 2031)	Climate change adaptation and emission reduction is integrated into all relevant investment and decision making across the Built Environment system.
Long-term objective (by the end of 2050)	The entire Built Environment system is adapted to climate change and contributes to emission reduction.

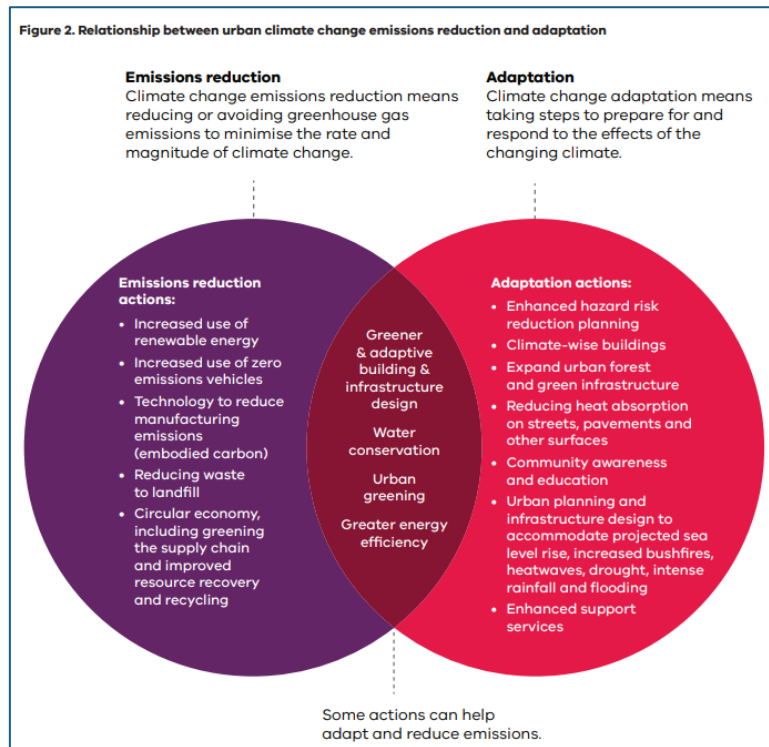
Building on the sound conceptual framework of the plan could also see Victoria leading the nation yet again. We support Victoria taking actions to adapt and reduce emissions, including the following actions taken from Figure 2 as shown on the next page:

- Reducing waste to landfill;

¹³ Ibid, page 36.

¹⁴ Ibid.

- Circular economy, including greening the supply chain and improved resource recovery and recycling;
- Greener and adaptive building and infrastructure design;
- Greater energy efficiency, and
- Urban planning and infrastructure design to accommodate projected sea level rise, increased bushfires, heatwaves, drought, intense rainfall, and flooding.¹⁵



Circular Economy Policies and Ecosystem

While we believe that most of the heavy lifting in relation to policy has been done, one exception that requires more urgent attention in Victoria is the Circular Economy Policy & Framework.

We acknowledge and welcomed the introduction of the Circular Economy (Waste Reduction and Recycling) Act 2021 that provided greater regulation and oversight of Victoria's waste and recycling sectors.

However, there is an urgent need to implement stronger circular economy policies, both in procurement and in requirements for buildings, not only to grow Victoria's circular economy but to allow the circular economy to be one of the key drivers of Victoria's economy as it transitions to a net-zero economy.

Two recent examples from New South Wales (NSW) could be explored.

¹⁵ Ibid, page 12.

Protection of the Environment Policy (PEP): Mandating Recycled Content

The first example includes efforts by the NSW Environment Protection Authority (EPA) that has drafted a Planning and Environment Policy (PEP) for Mandating Recycled Content.¹⁶

The PEP will also require public infrastructure projects to further improve design and construction to reduce carbon and prioritise the use of low-carbon recycled or remanufactured substitute materials derived from waste streams in NSW.

The NSW Government has estimated that using a circular economy approach in the built environment could deliver \$773 billion in direct economic benefits across Australia over 20 years and reduce emissions by 3.6 million tonnes of carbon dioxide per year by 2040. That's equivalent to taking almost 800,000 cars off the road annually.¹⁷

This draft PEP followed the release by the New South Wales Government in February 2023 of Circular Design Guidelines¹⁸ for the Built Environment which is the second example worth exploring in Victoria.

Circular Design Guidelines for the Built Environment

These Design Guidelines encourage and equip government and industry to adopt smart, innovative, and sustainable strategies to:

- Reduce embodied carbon;
- Minimise the generation of waste;
- Improve materials efficiency, and
- Increase the circularity of materials used in projects.

While such guidelines alone will not leverage the at-scale systems change needed to significantly grow Victoria's Circular Economy, they can complement other actions such as standard form contracts also recommended by Infrastructure Victoria, as explored in Guidance from Infrastructure Victoria below.

The second example includes significant efforts by Infrastructure New South Wales (NSW) to follow its Decarbonising Infrastructure Roadmap since 2023, including the release of its

¹⁶ For more information on the NSW Government's efforts to mandate recycled content, go to <https://www.epa.nsw.gov.au/news/media-releases/2023/epamedia230224-nsw-kickstarts-decarbonisation-and-circular-design-in-infrastructure-nsw>

¹⁷ NSW Government, February 2024. Design Guidelines for the Built Environment, page 4 accessed on 1 May 2024 at https://www.energy.nsw.gov.au/sites/default/files/2023-02/NZP_Circular_Design_Guide_2023_0.pdf

¹⁸ See Circular Design Guidelines, go to <https://www.energy.nsw.gov.au/business-and-industry/courses-and-guides/technology-guides/circular-design-guidelines-built>

Decarbonising Infrastructure Policy and Decarbonising Infrastructure Measurement Guidance.¹⁹

Infrastructure NSW's policy and measurement guidance provide instructions to NSW Government infrastructure delivery agencies on expectations for managing upfront carbon in public infrastructure projects, ensuring upfront carbon is a key consideration in early project stages.

We support all four Principles of this Decarbonising Infrastructure Policy, including:

- Apply the Carbon Reduction Hierarchy;
- Assess the upfront carbon impact;
- Engage with the market, and
- Develop a Carbon Management Plan.²⁰

We also support the 28 Mandatory and Optional Actions included in the Executive Summary of the policy.²¹

We note that the policy and measurement guidance were developed with the knowledge of all other jurisdictions in Australia and will be discussed at future Infrastructure and Transport Ministers' Meetings for national adoption, and we would encourage Victoria to support their adoption.

We believe that supporting these principles and actions and supporting the rollout of the same Policy and Measurement Guidance in Victoria will not only lead to a more climate resilient Victoria, but also address a number of the barriers we discuss in our response to the Committee's Terms of Reference (c). In particular, we believe the explicit costing of upfront carbon will:

- Embed contractual performance requirements;
- Support the procurement and detailed design process
- Improve life cycle costing to realise savings, and
- Address historic 'value-managing' out of more circular, longer-lasting products and technologies by contractors and builders.

Polar Enviro Recommendation 4

That the Committee recommend the Victorian Government support the national adoption of Infrastructure NSW's Decarbonising Infrastructure Policy and Decarbonising Infrastructure Measurement Guidance.

¹⁹ New South Wales Government, April 2024. Infrastructure New South Wales Decarbonising Infrastructure Delivery accessed on 1 May 2024 at <https://www.infrastructure.nsw.gov.au/expert-advice/decarbonising-infrastructure-delivery/>

²⁰ Ibid, pages 7-11.

²¹ Ibid.

Guidance from Infrastructure Victoria

In addition to the examples from NSW mentioned above, and as mentioned previously, Polar Enviro was pleased to make a submission on related issues to Infrastructure Victoria's wide-ranging consultation in 2023 that led to the recent publication of its Advice to the Victorian Government: Opportunities to reduce greenhouse gas emissions of Infrastructure.²²

In its advice, Infrastructure Victoria makes many pertinent observations concerning the preparation for and mitigation of climate change impacts on Victoria's built environment. These observations include:

- Reducing carbon emissions from infrastructure can lead to cost savings by design and material innovation, thus responding to the pressures of high inflation, rising interest rates, and waning national and global growth;
- UK Treasury figures from its Infrastructure Carbon Review including reductions of carbon of up to 39% by supply chains achieved average reductions in capital expenditure of 22%;
- Australia's Clean Energy Finance Corporation's estimates that material and design innovation can reduce costs by up to 3% and achieve a 5% to 18% reduction in embodied carbon;
- Conventional procurement approaches can constrain collaboration and innovation;
- The greater use of performance-based specifications helps focus on project outcomes, which avoids waste in design and materials and thus improves productivity, and
- Similarly, this approach can avoid conservative designs that use extra materials, cost more and emit more carbon.

Infrastructure Victoria's Overarching Principles to guide decarbonisation efforts in Victoria are also worth mentioning, including:

- Prioritise non-build or low-build solutions. Aim to get better use from existing infrastructure or modify it to meet changing needs before considering a new build;
- Align approaches with other governments and industry best practices, and
- Clarify the scale and pace of infrastructure emissions reduction to give confidence to industry.²³

We believe the Committee should consider endorsing all recommendations included in Infrastructure Victoria's Advice to Government. In particular, we would support more timely action on adopting and implementing recommendations 2, 4, 5, 6, 7, 8 and 9 as follows:

2. Identify and adopt carbon measurement tools and deliver training across the Victorian Government;²⁴

²² Infrastructure Victoria, 2024. Advice to Victorian Government: Opportunities to reduce greenhouse gas emissions of Infrastructure accessed on 20 March 2024 at https://assets.infrastructurevictoria.com.au/assets/Advice-on-opportunities-to-reduce-greenhouse-gas-emissions-of-infrastructure- Final_2024-03-05-022223_vldi.pdf.

²³ Ibid, page 40.

²⁴ We suggest following Infrastructure NSW's Decarbonising Infrastructure Policy and Decarbonising Infrastructure Measurement Guidance, as discussed above.

4. Update business case guidelines and templates to integrate emissions reduction;
5. Measure carbon in infrastructure cost benefit analysis and make decisions that reduce emissions;
6. Update procurement frameworks and guidance to embed carbon reduction in tenders;
7. Update standard form contracts to include carbon reporting, abatement requirements and further reduction opportunities;
8. Establish carbon management prequalification requirements for government contracts, and
9. Support industry to develop zero or low emissions solutions by testing alternative materials and adopting performance-based standards.

We do not intend to repeat the sound analysis that sits behind each of these recommendations. However, Recommendation 7 above is worth further comment as we believe it has a huge potential to reduce and adapt carbon emissions in Victoria's infrastructure and built environment.

Including clear expectations in standard form contracts would start to address the 'lowest price, highest carbon' bias in Victoria and most other jurisdictions, which we see as a key barrier discussed in further detail in the Committee's Terms of Reference (c) below. We believe the lowest price bias also disguises the reality that more linear products that are 'made to fail' lead to higher costs to Government and other asset owners.

We agree with Infrastructure Victoria in their advice that including binding contractual terms that require emission reduction across these contracts will:

- Incentivise suppliers to seek out and use low-carbon methods, materials, and practices, and
- Stimulate innovation.

We note advice from Infrastructure Victoria that by creating a baseline performance level over time that all suppliers must meet, this creates a level playing field which incentivise suppliers to exceed baseline performance (subject to the appropriate checks and balances).

The Committee could request the State Government explore these standard form contracts, incentives and baseline performance level levers as well as the example provided in Infrastructure Victoria's advice from the Netherlands where company tender prices are discounted if they are certified as an emissions reduction company, depending on their level of certification.

An additional area we believe requires further exploration is compliance, assurance and enforcement to ensure suppliers act in accordance with government specifications and standards while meeting community expectations.

While advocacy, incentives and slowly improving procurement systems are working in some instances, the absence of audits across infrastructure and built environment projects (prioritising those where government is the client) means insufficient data exists to demonstrate value-for-money or carbon reduction outcomes.

We know from our business that product ‘fraud’ and ‘value-management’ is prevalent, having experienced ‘first-hand’ a major contractor telling a government client they will use our Coloured Surface Treatment products that use Australian recycled glass materials but swapping these out for cheaper substitutes during construction, without their client’s approval. The contractor was only caught after their work permanently failed.

We would therefore recommend a whole-of-government review of current and potential audit and assurance measures to demonstrate value-for-money or carbon reduction outcomes.

By way of summary then, we believe that the ‘policy bookcase’ is very sound. We believe the best next steps need to harness the integration of these policies with procurement, incentives, enforcement and capacity building across governments and industry.

In addition to examples and recommendations from NSW and Infrastructure Victoria, there have been two recent developments at the national level that the Committee should consider.

Australian Government Circular Economy Ministerial Advisory Group

The first development concerns the recent release by the Australian Government’s Circular Economy Ministerial Advisory Group of its landmark Interim Report.²⁵

This much anticipated report underscores the social, environmental and economic benefits of growing Australia’s circular economy, and the need to depart from the linear take-make-dispose model that threatens climate resilience.

We support all 20 recommendations in the Ministerial Advisory Group’s Interim Report, and believe Victoria could move quickly to endorse and implement its own versions of recommendations 7 and 10 to embed circular economy principles and actions across key climate policies and regulations.

Over the medium term, we also believe that Victoria must collaborate with other jurisdictions to progress recommendations 14, 17, 19 and 20 from the Ministerial Advisory Group’s Interim Report.

Australian Government Environmentally Sustainable Procurement (ESP) Policy

The second development concerns the recent release of the Australian Government’s ESP Policy.²⁶

²⁵ Commonwealth of Australia, April 2024. Circular Economy Ministerial Advisory Group Interim Report accessed on 25 April 2024 at <https://www.dcceew.gov.au/sites/default/files/documents/circular-economy-ministerial-advisory-group-interim-report.pdf>

²⁶ Australian Government, April 2024. Environmentally Sustainable Procurement Policy accessed on 1 May 2024 at <https://www.dcceew.gov.au/sites/default/files/documents/environmentally-sustainable-procurement-policy.pdf>

POLAR ENVIRO SUBMISSION

The policy will require relevant entities, government and their suppliers to achieve and demonstrate climate, environmental and circularity outcomes in their procurements by applying the corresponding focus areas and principles, as included below.²⁷

Table 1: Environmental sustainability focus areas and principles

Focus Areas	Climate	Environment	Circularity
Principles	<ul style="list-style-type: none"> • minimise greenhouse gas emissions • optimise energy efficiency • use low emissions materials 	<ul style="list-style-type: none"> • optimise water efficiency • use safe and renewable inputs • safely use and dispose of chemicals • actively minimise the creation of waste and the amount that is sent to landfill 	<ul style="list-style-type: none"> • buildings and fit-outs use less materials, minimise waste, can be deconstructed and reused, are designed for adaptability and flexibility • goods are durable, repairable, reusable and/or recyclable • goods have been refurbished or existing goods are reused • goods contain recycled content /recycled materials are used • goods are recycled at the end of useful life • goods are returned for resource recovery through a take-back or end of life scheme • goods are available for lease, rent or product-as-a-service as an alternative to buying outright

One thing missing from this ESP Policy and Guidance Material is the inclusion of ways to promote sovereign manufacturing as well as local content which could strengthen its sustainability and circular outcomes, while at the same time aligning it with a number of other policy priorities shared by both the Australian Government and the Victorian State Government.

This recent development is welcomed as it will result in improved climate, environmental and circularity outcomes by requiring tenderers for government projects to address and report against environmental sustainability, through a Supplier Environmental Sustainability Plan (SESP).

The policy also includes helpful guidance including templates to assist with data collection and evaluation to optimise environmental sustainability, promote innovation and to substantiate environmental claims. This guidance is included in a detailed Sustainable Procurement Guide²⁸ also published by the Australian Government.

The policy comes into effect in two stages from 1 July 2024 and will leverage the Australian Government’s significant purchasing power. This will encourage producers and manufacturers to innovate and provide quantifiable products that have less impact on the natural environment.

Given that more than 70% of a product’s impact on the environment is locked in during its design, this policy and guidance sends an important signal.

²⁷ Ibid, page 7.

²⁸ Australian Government, April 2024. Sustainable Procurement Guide: an environmental focus for Commonwealth entities accessed on 1 May 2024 at https://www.dccew.gov.au/sites/default/files/documents/sustainable-procurement-guide_0.pdf

Governments, including the Victorian State Government can, and should, use their purchasing power through policies that transition procurement away from short-lived, high embodied and/or operational carbon linear products that are made to fail to lower carbon, more sustainable and circular products.

(c) Barriers facing Victoria in upgrading infrastructure to become more resilient to the impacts of climate change, including barriers in rebuilding or retrofitting infrastructure, including but not limited to, issues relating to insurance and barriers faced by local government

As a local Victorian-based family-owned company, Polar Enviro has experienced several barriers in our efforts to decarbonise the built environment, grow the circular economy and help more people get home safely from work, rest or play.

These significant barriers to the adoption of emissions-reducing technologies that will improve the State's climate resilience stem from embedded structural and institutional bias that favours existing technologies, and make any decision to change difficult and unpopular.

Product and Performance Standards

Two key barriers relate to the current regime for products standards and performance in Australia.

Australian Standards are written around specific technologies. These standards are then written into government acts, regulations and project designs so only those specific technologies can be used.

In the case of buildings, for a building developer or owner to change away from old technologies to a newer lower-carbon technologies requires expensive expert advice. This presents a barrier to the more circular products and technologies.

An added complication is that many of those experts are not familiar with the compliant alternatives, are inherently conservative and resistant to change and draw their information from linear product suppliers who have a vested interest in no change.

Experts can overly rely on the bias of dominant old-tech industry lobby groups and companies whose investment in short-lived technologies undermines our shift towards low-to-no carbon alternatives.

The more vested interests that benefit from failure models (i.e. providing short-lived linear products and technologies) there are, the less likely a timely shift to lower-carbon innovations will be. This delays the need to move to a more climate resilient economy and community.

We believe the current process of specifying products according to Australian Standards could also be seen as being anti-competitive, particularly when a standard or reference to a specific

standard, prevents or increases the costs for another NCC compliant, lower-emissions product from being used.

We therefore believe that Australia's current product standards regime is not fit-for-purpose, overly preferences older, more linear made-to-fail products and technologies and promotes the vested interests of suppliers of these older technologies. Those suppliers are influential in making and updating the standards.

While we appreciate that this regime is outside of the ambit of the Committee's terms of Reference there is a significant impact that such a regime could have and as such deserves consideration. Indeed, we would note that the current system of standards undermines shift towards lower-carbon, circular products and technologies.

This contrasts with the advice from Infrastructure Victoria and findings from the UK Treasury's Infrastructure Carbon Review that 'reducing carbon reduces cost when decarbonisation is prioritised early and over the long term'.²⁹

It also contrasts with the aforementioned advice from Infrastructure Victoria that:

- While new carbon management requirements may add costs and time for government and industry before requirements become the norm, fit-for-purpose procurement processes can save projects time, labour and costs;
- The greater use of performance-based specifications helps focus on project outcomes, which avoids waste in design and materials and thus improves productivity, and
- Similarly, this approach can avoid conservative designs that use extra materials, cost more and emit more carbon.³⁰

Polar Enviro Recommendation 5

That the Committee recommend that the Victorian Government require that projects specify compliance with the NCC instead of technology-specific Australian Standards, which could help grow Victoria's circular economy and improve climate resilience.

This approach would reduce the cost of changes in technology if the right performance outcome is still achieved.

²⁹ Infrastructure Victoria, 2024, page 20.

³⁰ Ibid, page 22.

Case Study: Resistance to low-to-no operational carbon photoluminescent exit signs in the construction industry

Problem Identification: Despite being included in the National Construction Code (NCC) for more than a decade and being part of a global movement, the adoption of photoluminescent exit signs remains limited within the Australian construction industry.

This technology, which offers lower emissions and life cycle costs (with a life cycle of 16 and 30 years compared to between 2-4 years for electric, battery-reliant exit signs) face resistance largely due to entrenched industry standards and the vested interests of companies profiting from traditional electric, battery-reliant signs.

Industry Dynamics: Designers often default to specifying older technology due to familiarity and the perceived hassle of obtaining approval for innovative, non-standard solutions.

This institutional inertia is reinforced by major industry players who have spent years shaping and promoting existing standards written around products that they sell. Innovations introduced by these dominant firms are usually welcomed, whereas they position similar advances from competitors as disruptive and potentially unsafe. This is usually conveyed via industry organisations.

Example of Market Resistance: The prevalent business model in the electric, battery-reliant exit sign industry exemplifies this resistance. Many companies benefit financially from the frequent failure of electric, battery-reliant exit signs.

This "failure model" includes importers profiting from the continuous sale of new and replacement signs. Additionally, electrical contractors, facilities managers and safety inspectors make money and mark up related costs from the replacement of electric, battery-reliant exit signs and the mandatory bi-annual inspections of these failure-prone signs.

Government Intervention: In response to these challenges, the Victorian State Government has implemented the Low Carbon Manufacturing Grant Program: Business Growth Stream. This initiative has provided up to \$250,000 to support the development and establishment of Photoluminescent Emergency and Safety Signs Manufacturing and Assembly Plant.

This project aims to transition manufacturing from New South Wales to Victoria, enhancing the production of low-to-no-carbon safety signs.

Expected Outcomes: The grant is intended to increase the production and use of photoluminescent exit signs, reducing both operational and embodied carbon emissions. By promoting these signs, the initiative seeks to overcome industry resistance and foster growth in Victoria's circular economy.

Conclusion: The case of low-to-no-power, battery-free photoluminescent exit signs illustrates the broader challenges faced by low-carbon innovations in industries dominated by entrenched interests and outdated standards.

Government intervention is necessary to disrupt established business models and promote environmentally sustainable technologies.

Polar Enviro Recommendation 6

That the Committee recommend the Victorian Government leverage its significant purchasing power to prioritise the procurement of low-to-no operational carbon photoluminescent exit signs for all government buildings and projects to encourage wider industry adoption.

A case of the tail wagging the dog?

Polar Enviro's experience is that existing bureaucratic and anachronistic workplace cultures in key government departments can often present unnecessary barriers, leading to situations where the tail wags the dog, rather than the other way round.

A by-product of this means that the pace of change to sustainable products is not as rapid as it could be and is holding back a large number of domestic manufacturers.

This is despite these departments acknowledging more sustainable and circular solutions that support their (often legislated) objectives to reduce emissions and related environmental and social goals.

We will outline three Case Studies of where bureaucratic, anachronistic workplace cultures and practices override more laudable climate goals in State Government Departments.

Case Study: Bureaucratic Barriers to low-to-no operational carbon exit signs

Problem Identification: The Victorian Building Authority (VBA) demonstrates an anachronistic approach to interpreting regulations regarding exit signs, which contradicts the objectives outlined in the Building Act 1993. These objectives aim to enhance safety, reduce construction costs, promote energy efficiency, and support a competitive building industry. However, VBA's outdated regulatory interpretation hinders the adoption of innovative, environmentally friendly photoluminescent exit signs.

Institutional Inertia: A significant lack of technical knowledge and loss of corporate memory at junior levels within the VBA exacerbates this issue. These staff members often rely on and disseminate marketing materials from traditional industry groups that resist change, thereby favouring costlier, higher-carbon products that the members of the industry groups import and sell.

Impact of Bureaucracy: This bureaucratic resistance has led to prolonged and unnecessary discussions with the VBA, lasting over 18 months, despite the availability of straightforward

solutions that align with government policies without compromising safety. Building owners and designers, influenced by this conservative stance, continue to specify outdated technology for exit signs, mistakenly believing that any deviation requires complex approvals.

Misinformation and Lobbying: The VBA's reliance on non-technical, biased information from old-tech industry lobbies further discourages the shift toward low-carbon solutions. This misinformation is directly distributed to clients, significantly impacting decisions in favour of traditional technologies.

Quantifiable Losses: Modelling indicates a substantial reduction in the uptake of photoluminescent exit signs, with more than 170,000 potential sales lost due to this anachronistic and bureaucratic situation. This loss translates into significant environmental and operating savings that have been lost.

Over 16 years (life cycle of Smarterlite's Hybrid LED Exit Sign) these sales would have saved Victorian building owners \$339 million in operating costs, saved 109,589 tonnes of carbon and avoided 1,365 tonnes of e-waste.

By 2045 (Victoria's net-zero target) these sales would have saved \$400 million in operating costs, saved 143,835 tonnes of carbon and avoided 1,700 tonnes of e-waste.

Over the 30-year life cycle of Smarterlite's unpowered photoluminescent exit signs, these sales would have saved \$574 million in operating costs, saved 205,479 tonnes of carbon and avoided 2,304 tonnes of e-waste.

This affects the potential for local job creation and sovereign manufacturing in Victoria and also results in missed opportunities for substantial environmental benefits as included in the objectives of the Building Act 1993.

How important is it to align the talk with the walk?

Ensuring the public service has a culture of adoption that is aligned with legislative goals is necessary to facilitate the adoption of innovative, energy-efficient technologies. This alignment will not be achieved by simply stating the benefits of such alignment, but actively working to achieve it.

The commercial building sector is an example where more active and deliberate action is needed.

A 2020 report commissioned by the Australian Department of Industry, Science, Energy and Resources, on behalf of COAG Energy Council and produced by Common Capital included a

review of financial incentives currently and potentially available to support improved energy efficiency in the existing commercial buildings sector.³¹

The report analyses a number of barriers and complex problems in this sector and concluded that innovation grants that focus on emerging high-efficiency technologies have by far the highest benefit-to-cost ratio of any incentives currently being utilised around Australia.³²

This same report highlights the benefits of governments taking action, including:

- Supports job creation across the supply chain;
- Energy efficiency improves affordability;
- Energy efficiency increases asset values of buildings and facilities;
- Energy savings at peak times reduce system costs and avoid price rises;
- Reduced energy consumption leads to reduced greenhouse gas emissions;
- Energy efficiency improves health and wellbeing, and
- Energy efficiency delivers broad economic benefits.³³

Aligning with Common Capital's report, it is notable that calls for governments to significantly boost low-emissions products was strongly supported by the Council of Capital City Mayors (CCCM) in their 2023 submission to the Australian Government's Climate Change Authority (ACA) Inquiry into setting, tracking and achieving Australia's emissions reduction targets.³⁴

CCCM recommended an 'energy efficiency first' principle be added into relevant national laws and policies.

The Climate Council in their submission to the same ACA Inquiry went one step further in recommending that all levels of Australian governments should collaborate to develop a well-designed system of energy efficiency targets and that Local Government must be included in the development and implementation of the National Energy Performance Strategy.³⁵

³¹ Common Capital, October 2020. Final Report – Financial Incentives for energy efficiency upgrades to existing commercial buildings, prepared for Australian Department of Industry, Science, Energy and Resources accessed at [Financial Incentives for Energy Efficiency Upgrades to Existing Commercial Buildings.pdf \(archive.org.au\)](#) on 11 June 2024.

³² Ibid, page 120.

³³ Ibid, pages 12-13.

³⁴ Council of Capital City Mayors, July 2023. Submission to Climate Change Authority Inquiry - setting, tracking and achieving Australia's emissions reduction targets, accessed at [Public Submissions - Setting, tracking and achieving Australia's emissions reduction targets - Climate Change Authority](#) on 13 June 2024.

³⁵ Climate Council, July 2023. Submission to Climate Change Authority Inquiry - setting, tracking and achieving Australia's emissions reduction targets, accessed at <https://www.climatecouncil.org.au/resources/submission-to-setting-tracking-and-achieving-australias-emissions-reduction-targets/> on 17 June 2024.

Australian Super also supported these efforts, recommending in its submission that the ACA ensure that future policy should include a focus on cultivating markets, encouraging innovation, and stimulating demand for low-carbon products and services.³⁶

Grasping the opportunity

Given the widespread stakeholder support for governments to boost their own procurement of low-carbon and energy-efficient products and the likelihood that the Victorian State Government and Local Governments have millions of exit signs in their buildings, it is not hard to grasp the opportunity that is being lost because of misaligned policy and delivery.

Relying on a business-as-usual, failure model is not conducive to achieving sustainability outcomes. Participants and decision-makers can unknowingly outsource the management of their facilities while still believing they're getting good environmental outcomes.

This problem can be tackled by easy policy and regulatory measures. But only if governments are willing to say, 'enough of failure, let's use our power as the policymakers and the clients to make change and lead.' Most importantly, this would turbo-charge Victoria's circular economy and see it continue to be a leading jurisdiction.

There is an easy, risk-free solutions to cut through this unnecessary bureaucracy to ensure the 'dog is allowed to wag the tail' in Victoria.

Given the many documents, contracts and specifications are already written around existing standards relating to electric, battery-reliant exit signs, the VBA should request a Ministerial Direction enabling the direct replacement of exit signs covered by the relevant Australian Standard – in this case AS 2293 for emergency escape lighting and exit signs - with photoluminescent exit signs.

A Ministerial Direction need only state that where any document (e.g. designs or in an Essential Safety Manual) refers to AS2293, then NCC Specification 25 also applies, would immediately remove the costly barriers to the adoption of the low-to-no emissions and low-to-no e-waste technology.

Polar Enviro Recommendation 7

The Committee request that the Minister for Planning to issue a Ministerial Direction to address the current bureaucratic blockages to the uptake of NCC-compliant photoluminescent exit signs as this is also consistent with a number of Objectives in the Building Act 1993.

³⁶ Australian Super, July 2023. Submission to Climate Change Authority Inquiry - setting, tracking and achieving Australia's emissions reduction targets, accessed at <https://consult.climatechangeauthority.gov.au/australias-emissions-reduction-targets/public-submissions/view/119> on 17 June 2024.

This recommendation is consistent with policies to reduce emissions, life cycle costs and e-Waste. It is also consistent with steps the Victorian Government takes from time to time to ensure the delivery of positive climate outcomes such as efforts to exempt the State Electricity Commission (SEC) from competitive neutrality policies.

Similar to the above Case Study, there are small administrative changes that could be made to design manuals and related documents used by the Victorian School Building Authority and the Victorian Infrastructure Delivery Authority when referencing AS2293.

For example, by simply replacing references to AS2293 with a reference to any products in the NCC permit any compliant technologies to be used.

Polar Enviro Recommendation 8

The Committee could recommend that administrative barriers to implementing low-to-no-carbon exit signs within the Victorian School Building Authority and the Victorian Infrastructure Delivery Authority be reversed so that schools, hospitals and other government buildings can benefit from low-emission technologies.

A case of costly, imported, unsafe and linear road treatments

The role of integrating transport, land use and climate policy has never been more urgent for Victoria. We acknowledge the machinery of government reforms taken by the State Government as a critically important foundational step towards such integration.

Future actions, therefore, must include ways and means to increase the agility, technical expertise, assurance and enforcement, and timely decision-making by the department. We are concerned that without these next steps, several climate and related goals will not be met, including:

- Mode shift including more active transport trips;
- Making infrastructure (especially roads) more resilient to climate and extreme weather events, and
- Growing Victoria's circular economy by using local waste streams and recycled content.

Case Study: "Colourful Compromise: The Hidden Costs of Victoria's Surface Treatments"

Problem Identification: In Victoria, the widespread use of non-compliant, short-lived, and imported paint-based Coloured Surface Treatments (CST) for road markings poses significant challenges.

Despite existing standards and the development of a new national specification intended to ensure safe, durable, and cost-effective surface treatments, bureaucratic hurdles and enforcement lapses lead to the frequent application of inferior products.

Standards and Specifications: Victoria's current and impending specifications (Specification 431) aim to ensure that surface treatments for bus lanes, bike lanes, pedestrian crossings, and placemaking projects are skid-resistant and durable.

Locally produced OmniGrip CST, using post-industrial recycled glass, meets and exceeds these specifications, demonstrating superior longevity of 5+ years and compliance in tests conducted by the Australian Road Research Board and CSIRO.

OmniGrip CST delivers long-term value-for-money (through superior life cycle and reduced maintenance and operational costs), in contrast to cheaper imported alternatives that often fail within 1-2 years on heavily trafficked roads, despite a required lifespan of five years according to Victoria's specifications.

Enforcement Challenges: The enforcement of these standards is notably weak. Contractors are permitted to self-declare their compliance with the specifications, with minimal independent verification. This system only requires that products last beyond a 12-month defect liability period, rather than the intended five-year lifespan, fostering a cycle of frequent replacements and increased costs. This also exposes users to slipping on slippery paint-based surface treatments.

In Victoria, the Department of transport and Planning relies on its Contract Superintendent asking for tests, which doesn't happen, instead of mandating testing of completed surfaces to demonstrate for compliance.

Comparison with Queensland: Queensland's approach to managing CST illustrates a proactive stance against such issues. Queensland has implemented a mandatory prequalification process for CST materials, coupled with mandatory onsite testing on every project to ensure compliance.

This rigorous approach has revealed that many products previously used are not in fact compliant and cannot provide test results from historical installations in Australia, showing they will last five years. Those same products continue to be used in Victoria.

In contrast, OmniGrip CST was evaluated under the Transport Infrastructure Product Evaluation Scheme (TIPES) in Queensland, affirming its compliance after five years on roads.

Environmental and Economic Impacts: The frequent reapplication of substandard CSTs in Victoria leads to higher life cycle costs, increased emissions from maintenance activities, and significant microplastic pollution. As the short-lived CSTs deteriorate, they contribute to environmental degradation by entering waterways through runoff.

Proposed Solutions:

Mandatory Independent Testing: Introduce mandatory NATA testing for skid resistance, and texture depth testing, similar to Queensland’s model, to ensure that all CST products meet safety and durability standards before widespread application.

Prequalification of Products: Require all CST products to undergo a prequalification process to verify their compliance with the specifications for a minimum of five years, particularly in heavy traffic areas. Victoria could simply amend its specifications to say that only TIPES registered products can be used.

Public Transparency: Enhance transparency by publicly reporting the results of CST compliance testing and the performance of installed materials, holding contractors accountable for their product’s performance.

If you include Local Government roads that do not have to comply with Specification 431, the current situation is costing Victorians tens of millions of dollars due to non-performance, leading to the increased risk of road trauma and higher maintenance costs.

Ensuring Victoria’s Social Procurement Framework is fit-for-purpose

We believe there is an urgent need to integrate and support efforts prescribed in Victoria’s Social Procurement Framework, by more clearly validating and improving access to more sustainable and circular products for the built environment and in infrastructure.

We provide a number of suggestions for consideration by the Committee below, including:

- Mandating the use of low emissions technologies across all facets of the project (and not just ‘following a green tick’ approach);
- Mandating the use of materials diverted from local and Australian waste streams, and
- Leading Australia by adopting a Local Content and Sustainability Supply Register (LCSSR).

Green tick and green washing

The current piecemeal and ‘green tick’ approach to prioritising, incentivising, and procuring low-emission and waste stream materials and technologies in Victorian Government infrastructure projects and buildings undermines its laudable emission reduction targets.

This ‘green tick’ approach also:

- Leads to superficial outcomes where visual and symbolic actions across some but not all facets of infrastructure ignore critical environmental factors such as life-cycle assessments and resource consumption;
- Embeds fragmented policies and practices that lead to unintended consequences such as missed opportunities to optimise the use of local waste streams and low emissions technologies in buildings and infrastructure;
- Exposes government to claims of greenwashing;

- Neglects social and economic factors including equitable access; local job creation; manufacturing sovereignty, as well as community resilience, and
- Delays systems and transformational changes needed.

One recent example of a “green tick” approach delivering suboptimal outcomes involves the protected bike lanes along St Kilda Road in Melbourne.

As contractors had achieved their “reduced carbon tick” with special asphalt, they opted out of using recycled glass in their green surfaces and chose lower cost ‘paints’ that are already wearing away.

Building an ecosystem for preferred low-carbon products and technologies

Like many local manufacturers or low-to-no-carbon products for built environment and infrastructure projects, we have experienced a great deal of good will across government, but slow delivery in relation to the preference of low-carbon products and technologies we offer. Some of the good will includes discussions we have had with organisations such as ecologiQ and the Industry Capability Network to attempt to increase the uptake of products that help to decarbonise Victoria’s economy.

We have had several meetings and discussions with both organisations, and we have benefitted in limited ways as a result of their advocacy and networking functions. However, more significant policy, regulatory and other ecosystem actions need to be taken to turbo-charge actions that make Victoria more climate resilient.

Local Content and Sustainability Supply Register (LCSSR)

Partly in response to the limited functions for government and related agencies to grow the circular economy and prefer low-carbon products and technologies, we believe there is a need to establish a Local Content and Sustainability Supply Register (LCSSR), which can complement the existing Social Procurement Framework and meet other financial goals.

An LCSSR (see Appendix 1 for a modelled option) could form the basis of a pre-qualification or assurance system, in keeping with Infrastructure Victoria’s Recommendation 9.³⁷ It must also be accompanied by publicly available audits and reporting of the scheme’s achievements.

We acknowledge the early leads taken in Victoria through its Buy Recycled Directory facilitated by Sustainability Victoria and in South Australia through its Circular Products Register to increase the uptake of local, recycled and lower carbon products for the built environment. However, given the importance of moving to more circular products and fittings in built environment and infrastructure projects, more focus needs to be given to validate and improve on these early leads.

³⁷ Infrastructure Victoria, 2024, op cit, page 9.

The introduction of a LCSSR would also address a gap we have discussed with Sustainability Victoria and several Ministers and Parliamentary Secretaries.

The Department of Treasury and Finance's Construction Supplier Register (CSR), which is an open pre-qualification scheme for suppliers of construction works and services interested in Victorian Government building and construction projects.

However, as the CSR only includes consultants and builders, it does not include pre-qualified low-to-no-carbon products and fittings that will help Victoria meet its climate change and circular economy goals.

This situation entrenches the aforementioned failure model that Victoria can no longer afford. It is typified by:

- The dominance of imported products and construction materials with very high replacement and life cycle costs and embodied carbon;
- Design-and-construct contracts based on the lowest price usually winning, thwarting the early inclusion of more sustainable, circular and local products that are 'value-managed' out, and
- A weak assurance and compliance regime to incentivise and enforce the delivery of low-to-no carbon local and recycled content.

We believe the creation of a LCSSR is also consistent with the following Ministerial Directions and Instructions for Public Construction Procurement, including:

- Agencies must act in a manner consistent with the following procurement principles:
 - (a) value for money, taking into account —
 - (i) the total benefits and costs over the life of the goods, services or works procured;
 - (ii) environmental, social, and economic factors; and
 - (iii) any risk related to the procurement; as well as
 - (e) encouraging appropriate innovation and responsiveness in the supplier market.³⁸

An LCSSR could be engineered to prefer not only environmental but also employment and other economic factors. The model we have discussed with the aforementioned stakeholders included a 'heart-health' type approach whereby categories could include:

- Sustainable Low-Carbon Products;
- Circular products;
- Local Content (all parts of products) of >55%, and
- Climate risks and Impacts.

³⁸ State of Victoria, Department of Treasury and Finance, 2018. Ministerial Directions and Instructions for public construction procurement, Guiding Principles 1.2 accessed on the internet on 3 April 2024 at <https://www.dtf.vic.gov.au/ministerial-directions-and-instructions-public-construction-procurement/guiding-principles-direction-12>

Polar Enviro Recommendation 9

That the Committee recommend the Victorian Government establish a Local Content and Sustainability Supply Register (LCSSR) or similar to increase the uptake of sustainable, circular and/or local products and technologies and build climate resilience.

app

Specific barriers for Local Governments

Financial barriers

We acknowledge the pressures facing all levels of government, and in particular the increased call on public funds to maintain and repair damage caused to the built environment and infrastructure from extreme weather events.

We also acknowledge that Local Governments in Victoria work within a rate-capping environment and are historically risk-averse when it comes to raising debt to meet their capital works obligations.

However, looking more closely at the financial and infrastructure position of Local Governments in Victoria reveals a mixed picture, as well as some worrying trends.

A concerning trend among many Local Governments is their Capital Replacement Gap (the rate of spending on infrastructure with its depreciation) and their Asset Renewal Gap (the rate of spending on existing assets through renewing, restoring, and replacing existing assets).

Many are not meeting their community's infrastructure needs as judged by the annual report by Victoria's Auditor General.³⁹

It is also true that many Local Governments are either risk averse when it comes to their indebtedness levels or their access to income sources to cover borrowings is low. There also appears to be a knowledge gap as to how their balance sheets can be better utilised.

The Municipal Association of Victoria (MAV) highlighted related trends and concerns in its submission to the Australian Parliament's Inquiry into Local Government Sustainability being undertaken by the House of Representatives Standing Committee on Regional Development, Infrastructure and Transport.⁴⁰

³⁹ State of Victoria, Victorian Auditor General's Office Review of Local Government Performance 2022-2023 accessed on the internet on 20 March 2024 at <https://www.audit.vic.gov.au/report/results-2022-23-audits-local-government>

⁴⁰ Municipal Association of Victoria, Melbourne 2024. Submission to the Parliamentary Inquiry Into Local Government Sustainability, accessed at https://www.aph.gov.au/Parliamentary_Business/Committees/House/Regional_Development_Infrastructure_and_Transport/Localgovernmentsustaina/Submissions on 6 June 2024.

Key among the MAV's concerns is the fact that State-based financial reporting ignores a number of emerging issues and as a result, decisions taken by the State Government in how it monitors the financial sustainability of Councils simply conceal fundamental issues.

The MAV highlights:

- Accounting surplus rather than underlying surplus is frequently used. Total cash is also referred to rather than unrestricted cash. In both cases there are significantly distorted by money that is ringfenced from operational uses, such as developer contributions;
- Over time the State has included upgrade expenditure when calculating asset renewal gaps, rather than purely maintenance expenditure. This provided a significant boost to a number of councils that appear to be meeting targets but is inaccurate, and
- Even absent of a rate cap, councils are constrained by the capacity of their community to pay additional costs. In many cases, communities with the least ability to pay are also the most expensive to service due to factors such as socio-economic disadvantage and small and disparate populations.⁴¹

The MAV's concerns are also amplified by LaTrobe University's Climate Change Adaptation Lab in their submission⁴² to the same inquiry, including that:

- The increased impacts of climate change, including concurrent events, and compounding and cascading impacts, will place additional pressures on LGAs in undertaking these roles, including their operational capabilities and financial capacities.

Latrobe University also points out that while disasters including floods and bushfires understandably receive a lot of public attention, changes to rainfall, temperature and windspeed patterns also present ongoing challenges for Local Government finances as the cost of maintaining assets increases due to the scale and frequency of these demands.

Our focus in this submission on the critical importance of life cycle costing across all levels of government is one strategy supported by LaTrobe University in their submission, where they note:

- As infrastructure is replaced or constructed, higher standards of resilience to climate impacts will be required. This may reduce costs over the lifespan of the infrastructure due to reduced maintenance, indicating the need for increased emphasis on life cycle costing.

Inadequate maintenance of roads

This is one issue that deserves specific attention in this submission, given the critical role that roads play in connecting communities, and damage that can occur as a result of disasters and changes to rainfall, temperature and windspeed patterns.

⁴¹ op cit, page 9.

⁴² LaTrobe University Climate Change Adaptation Lab, May 2024. Submission: Inquiry Into Local Government Sustainability accessed at https://www.aph.gov.au/Parliamentary_Business/Committees/House/Regional_Development_Infrastructure_and_Transport/Localgovernmentsustaina/Submissions on 6 June 2024

While many observers have been critical of falling maintenance budgets, this problem is worsening as a result of the effects and impacts of climate change.

The Australian Flexible Pavement Association (AFPA) highlighted these concerns. In their submission to the Inquiry Into Local Government Financial Sustainability they pointed out that Australian Councils are responsible for 77 per cent of Australia's roads or almost 680,000 kilometres.⁴³

As well as advocating for revised maintenance funding to take into account the increased demands resulting from the effects and impacts of climate change, the AFPA also recommend the increased use of recycled content and innovative repair methods which we also support.

Noting then the financial and capacity constraints mentioned above, and the likely ongoing effects and impacts of climate change on Victoria's built environment, we believe a fresh approach should be taken to measuring and monitoring the financial performance of Victorian Councils.

There needs to be and for there to be more flexibility around borrowing caps and the availability of low interest loan facilities for Victorian Councils who need to maintain damaged roads and other infrastructure. We appreciate that this is not within the Committee's Terms of Reference.

Polar Enviro Recommendation 10

That the Committee recommend the Victorian Government and Parliament establish a separate Inquiry into the adequacy of current financial monitoring and reporting of Local Governments in Victoria. This additional Inquiry could also investigate whether more flexibility is needed around borrowing caps and increased availability of low interest loan facilities for Victorian Councils who need to maintain damage caused to roads and other infrastructure from climate change.

Capacity and cultural constraints

Unlike the State Government that considers budgeting across a four-year cycle, many Local Governments are more strongly focused on their annual budget process and timelines. This favours 'lowest upfront price wins' contracts and procurement in public infrastructure projects. It locks out longer life cycles, recycled content, and other more circular materials.

Remembering the advice to the State Government by Infrastructure Victoria, this costs more and emits more carbon.

⁴³ Australian Flexible Pavements Association, May 2024. Submission Into Local Government Sustainability accessed at https://www.aph.gov.au/Parliamentary_Business/Committees/House/Regional_Development_Infrastructure_and_Transport/Localgovernmentsustaina/Submissions on 6 June 2024.

Given the huge scale of public infrastructure spending by Local Governments in Victoria every year, it seems that there is a missed opportunity to leverage the standard delivery of low-to-no emissions, longer-lasting, recycled content and more circular materials and products.

Standardisation could be achieved several ways, and may include:

- Alignment of the Local Government Act 2020 and the Planning and Environment Act 1987 and the Climate Change Act 2017;
- Building climate change mitigation, adaptation and circular economy capacity across Local Government in Victoria;
- Incentives through grant funding or other means for Local Governments taking a forward-looking approach to life cycle costing and carbon costing, and
- Adoption and enforcement by Local Governments of DTP Road Specifications.

Polar Enviro Recommendation 11

That the Committee recommend the Victorian Government consider ways it can include Local Government in actions to promote the uptake of more circular, longer-lasting products and technologies. This may also include how both can work together to progress a Decarbonising Infrastructure Policy and Decarbonising Infrastructure Measurement Guidance, as per Polar Enviro Recommendation 4.

Another way to address the historically low levels of debt to fund Capital Works is to educate Local Governments about the fact that low-emissions products in the built environment and infrastructure projects could actually be expensed against the Capital Expenditure Budgets rather than the Operational Expenditure Budgets of Local Governments.

Despite these financial barriers and capacity constraints, the early advocacy and action of Victorian Local Governments needs to be acknowledged. Indeed, any Local Governments are adopting ambitious climate change and circular economy policies and strategies. It is also worth noting that a group of more than 40 Local Governments in Victoria (the Council Alliance for a Sustainable Built Environment or CASBE) are advocating for further sustainable design improvements in the planning system.

(d) The adequacy of the current Victorian planning system as it relates to its adaptation to, preparation for, and mitigation of climate change impacts.

We believe Victoria's planning system could be a very powerful tool and vehicle for the changes needed to ensure Victoria is more climate resilient. Given the barriers and challenges we have outlined in this submission, often the 'left hand of government' does not always know what the 'right hand of government' is doing.

POLAR ENVIRO SUBMISSION

Many anachronistic and overly bureaucratic policies and practices that are misaligned with the goals and objectives of government. It is easy to appreciate why the planning system must urgently shift to being proactive, and less reactive.

There are many ways that the uptake of low-to-no emission, longer life cycle, recycled content products can be turbo-charged through Victoria's planning system.

Polar Enviro Recommendation 12

That the Committee recommend the Victorian Government explore ways its planning system can increase the uptake of low-to-no emission, longer life cycle, recycled content products. Options may include:

- **As-of-right approvals when certain requirements are met;**
- **Fast-tracking applications that meet and/or exceed agreed performance levels of low-to-no emissions, longer life cycle, recycled content products;**
- **Ministerial Call-ins, and**
- **Standard form contracts as proposed by Infrastructure Victoria and Infrastructure NSW as discussed earlier in our submission.**

Linking other Acts with the Planning and Environment Act 1987

As well as reaching agreement on how existing tools can better address the misalignment of government policies and delivery by departments, we believe it is also important that an audit occur of:

- Whether related legislation such as the Building Act 1993, and the Essential Services Commission Act 2001 and the Local Government Act 2020 and the Climate Change Act 2017 contribute to or hinder the Planning and Environment Act 1987, and
- Whether all of these key Acts need to be guided by more urgent climate challenges such as extreme weather events and the need to move towards a circular economy.

Polar Enviro Recommendation 13

That the Committee recommend the Victorian Government review how other legislation contributes to or hinders the Planning and Environment Act 1987, including climate change objectives. This could include Regulatory Impact Statements (RIS) to assess the impact of new or amended regulations including any overlaps or conflicts as required under the Subordinate Legislation Act 1994.

(e) What more could be done to better prepare Victoria's built environment and infrastructure, and therefore the community for future climate disaster events.

In addition to previous recommendations made in this submission, we believe there more can be done to better prepare the community for future climate disaster events, including:

- The need for a more robust circular economy policies and ecosystem;

POLAR ENVIRO SUBMISSION

- Incorporating life cycle carbon estimation, assessment and valuation into State and Local Government business case guidelines and templates
- A greater focus on life cycle of products, and
- An urgent focus on the impact of extreme weather events, and in particular flooding on Victoria's roads.

Enough has been said elsewhere in this submission about the need for a more robust circular economy ecosystem.

We also agree with Infrastructure Victoria that more needs to be done to build the capacity to consider life cycle carbon estimation, assessment and valuation.

Polar Enviro Recommendation 14

That the Committee recommend to the Victorian Government that further guidance be rolled out across both State and Local Governments to:

- **Define how to set an emissions baseline;**
- **How to measure carbon, and**
- **How to identify carbon reduction strategies.¹**

By revising the Victorian Government's Investment Life Cycle and High Value/High Risk Guidelines, project teams across State and Local Governments will be better equipped to integrate carbon considerations into their planning and design processes.

This will facilitate the selection of materials and solutions that align with and contribute to achieving the government's legally binding environmental targets.

As flooding is Australia's most expensive natural hazard, when both tangible and intangible losses are considered,⁴⁴ our view is that road agencies and Local Governments need to adopt more durable, safer and longer life cycle products on roads.

⁴⁴ Duffy et al., The Geneva Association 2020, Flood Risk Management in Australia | Research report.

5. CONCLUSION

In conclusion, Polar Enviro once again thanks the Committee for the opportunity to make this submission.

We believe that enduring legacies of this Inquiry could result in:

- Better alignment of climate change policy with procurement across both State and Local Government;
- A much stronger circular economy legislative framework and delivery ecosystem;
- Clear and strong incentives and ‘teeth’ to enforce the uptake of preferred local and recycled content;
- Leading the country in addressing imminent risks to recycling and landfill of volatile and unnecessary batteries;
- Help grow sovereign manufacturing in Victoria, and
- Improve the return on investment and bottom line of State and Local Governments

6. GLOSSARY

Term	Definition
Circular economy	An economic system designed to eliminate waste and promote the continual use of resources. This approach focuses on designing out waste and pollution, keeping products and materials in use for as long as possible through reuse, repair, refurbishment, and recycling.
Circular products	Circular products are created to be durable, repairable, and upgradable, allowing for their components to be reused, refurbished, and recycled. By designing out waste and pollution, circular products minimise the need for new resource extraction and reduce environmental impacts. They play a crucial role in fostering sustainability by maintaining the value of materials and products through multiple lifecycles, thereby contributing to a regenerative and closed-loop system.
Coloured Surface Treatments	Coloured Surface Treatment: Coloured road surfaces are used to define a lane or space on a road for a specific type of road users (Eg bike or bus lane) or to alert road users to a hazard or risk (eg pedestrian or school crossing). Being a road surface, they must be durable, maintain their colour and be slip and skid resistant so that they function as designed and don't contribute to crashes and road trauma.
Life Cycle Analysis	Life Cycle Analysis (LCA) is a systematic method used to assess the environmental impacts of products throughout their entire life cycle. This includes all phases from raw material extraction, manufacturing, construction, operation, maintenance, and eventual demolition and disposal. Reorienting governments and businesses to consider the overall LCA of products will improve the overall value management proposition.
Linear products	Linear products are designed and produced following a 'take, make, dispose' model, where resources are extracted, transformed into products, used briefly, and then discarded as waste. This approach results in shorter life cycles for products, making them more costly both financially and environmentally.
Low-to-no embodied carbon	Low-to-no embodied carbon refers to the concept of minimising or completely eliminating the carbon emissions associated with the entire life cycle of products. This includes the emissions from raw material extraction, manufacturing, transportation, installation, maintenance, and disposal. The aim is to achieve a significant reduction in the carbon

footprint of these materials and processes, contributing to overall sustainability.

Low-to-no
operational carbon

Low-to-no operational carbon refers to minimising or completely eliminating carbon emissions generated during the use phase of a building or product. This includes emissions from activities such as heating, cooling, lighting, and the operation of electrical appliances and systems. The goal is to achieve near-zero or zero carbon emissions from daily operations, contributing significantly to overall sustainability and climate change mitigation.

Value Management

Normally, value management is a structured approach used to optimise the value of a project, product, or process by identifying and analysing its essential functions and ensuring they are achieved at the lowest possible cost. However, the opposite can often occur when higher upfront cost items can be chosen to achieve short-term project objectives rather than lifetime value.

Appendix 1: Local Content and Sustainability Supply Register (LCSSR)

Construction Supplier Register

- ✗ Not meeting climate change, environment and circular economy policies of Government.
- ✗ Design-and-construct contracts based on the lowest price wins, thwarting early inclusion of sustainable local products.
- ✗ Only lists pre-qualified suppliers of Construction services (consultants) and Construction works (builders).
- ✗ Circular economy and sustainability/local content legislative and delivery ecosystem has no teeth or coordination. SV, ICN and ecologiQ could play much larger roles.
- ✗ Doesn't stop dominance of overseas products and construction materials with very high replacement/life cycle costs and embodied carbon (e.g. Exit Signs and paints).




Local Content and Sustainability Supply Register (LCSSR)¹

- ✓ Victoria can continue to lead the country by establishing a LCSSR 'Tick' which could be comprised of 4 main components:
 1. Sustainable Products
 2. Circular Economy Products
 3. Local content (all parts of the product) > 55%
 4. Reduces climate risks and impacts (e.g. batteries)

Each of the above components could have several qualifying criteria, for example local content (all parts of the product) must be > 55% so that this promotes local jobs.


POLAR ENVIRO SUBMISSION

Appendix 2: Financial and Environmental Benefits of Local, Sustainable Built Environment Products

Smarterlite <small>Reasonable Light for Safety</small>		SmarterLite Environmental Hybrid Exit Signs vs Old Tech Exit Signs						
		# Units	Lifecycle Analysis	Old Tech Operating Cost	SL Operating Cost	 Savings *	 Carbon Saved Kga	
100,000	Annual Average	\$14,088,083	\$2,879,315	\$11,208,768	4,012,956	45,000	87%	
	16 years	\$255,842,656	\$56,902,368	\$198,940,288	64,207,296	800,000		
	30 years	\$422,642,480	\$88,379,440	\$336,263,040	120,388,680	1,350,000		
Target Net Zero Year	2040	\$255,842,656	\$56,902,368	\$198,940,288	64,207,296	800,000	87%	
Inputs								
# of Units	Old Tech Watts	Smarterlite Watts	Old Tech Supply & Install Price	SmarterLite Supply & Install Price	Testing per unit (8 monthly)	Electricity \$/MWh	Old Tech Failure Rate	
100,000	5.8	0.74	\$415.00	\$415.00	\$10.00	\$200.00	Every 4 years	
Assumptions								
<ul style="list-style-type: none"> * Figures include unit price, replacements, installation, 6 monthly testing and maintenance, FM margin (if applicable) and electricity usage Smarterlite useful life cycle for replacing only the LED & Driver unit is 16.4 years - \$160 supplied and installed. E-waste calculated as 2kg for old tech at each replacement and 500g for SL at point of LED replacement 				<ul style="list-style-type: none"> Testing & Certification every 6 months A minimum of 10 per hour for units tested & certified (\$100 an hour) (Old tech Unmonitored) A minimum of 50 per hour for units tested & certified (\$100 an hour) (SL) 				






Benefits of using OmniGrip CST instead of Traditional Paint Products

m ²	Lifecycle Analysis	Standard Paint Operating Cost	OGD Operating Cost	 Savings	Landfill Avoidance	
					 Recycled Glass (tonnes)	 Beer Bottle Equivalent (#)
100,000	Annual Average	\$ 4,200,000	\$ 1,200,000	\$ 3,000,000	700	3,500,000
	2 years	\$ 12,000,000	\$ 12,000,000	\$ -		
	5 years	\$ 24,000,000	\$ 12,000,000	\$ 12,000,000		
	10 years	\$ 42,000,000	\$ 12,000,000	\$ 30,000,000		
Inputs and Assumptions						
# Facilities	m ² per facility	Total m ²	Install of Standard Paint/m ²	Install of OGD Resurface/m ²	Remarketing rate for standard paint	Traffic Management
1	100,000	100,000	\$60.00	\$120.00	Every 18 months	\$0.00

POLAR ENVIRO SUBMISSION



Benefits of using OmniGrip High Friction Surface Treatment compared to high PSV Asphalt

m ²	Lifecycle Analysis	High P SV Asphalt (60 +) Lifecycle Cost	OmniGrip HF Lifecycle Cost	 Savings	Landfill Avoidance for Hybrid HF technology***	
					 Recycled Glass (kilos)	 Beer Bottle Equivalent (#)
100,000	Initial Investment	\$ 4,200,000	\$ 12,000,000	-\$ 7,800,000	420,000	2,100,000
	4 years	\$ 8,400,000	\$ 12,000,000	-\$ 3,600,000		
	8 years	\$ 12,600,000	\$ 12,000,000	\$ 600,000		
	12 years	\$ 16,800,000	\$ 12,000,000	\$ 4,800,000		

Sqm Rate over 12 year lifecycle	\$ 168.00	\$ 120.00	\$ 48.00
---------------------------------	------------------	------------------	-----------------

Inputs and Assumptions

# Sites	m ² per site	Total of HF	Install price of high P SV Asphalt (per m ²)	Install price of OGD HF (per m ²)	Resheeting rate for high PSV Asphalt	OGD HF Lifecycle
100	1,000	100,000	\$42.00	\$120.00	Every 4 years*	18 years**

* High PSV Asphalt (60+ PSV) at VPD of 10,000 as per table in Vic Roads Technical Note TN 42, has an indicative friction life of 2-4 yrs

** OmniGrip HF life based on data collected by ARRB and CSIRO, which was still compliant at 18 yrs post install

*** OmniGrip Hybrid HF uses post-consumer recycled-glass to reduce skidding and decrease braking distances