22 February 2023

Committee Secretary
House of Representatives Standing Committee on Regional Development, Infrastructure and Transport
PO Box 6021
Parliament House
Canberra ACT 2600
By email rdit.reps@aph.gov.au

Dear RDIT Standing Committee,

Inquiry into the implications of severe weather events on the national regional, rural, and remote road network

Thank you for the opportunity to have input into this important issue regarding the nations road network, its vulnerability to severe weather events, and the intensifying impacts of climate change.

The Victorian Greenhouse Alliances (VGAs) are formal partnerships of local governments and statutory agencies driving climate change action across Victoria's municipalities. The regionally-based Alliances' work across their networks, communities and partners to deliver regional mitigation and adaptation programs and have been active for over 21 years with some 45 council and agency member organisations. This includes the implementation of joint initiatives that provide economies of scale and enable projects typically beyond the reach of individual councils and agencies. Our project work is complemented by targeted advocacy, capacity building activities and regional partnerships.

In recent years our Members and their communities have been severely impacted by drought, bushfires, floods, storms and the COVID pandemic. The VGAs are committed to the business case of addressing climate change. We deliver on climate risks, unite and build upon collective climate actions, and bring new opportunities – from the far reaches of the Murray River, across the breadth of Victoria's productive heartlands, to the coastal fringes of the Great Ocean Road, Otways, and Gippsland's Great Lakes.

Climate change affects communities when it damages and destroys public infrastructure and assets. Local government is responsible for managing 87 per cent of Victoria's roads, and in any 'business-as-usual' financial year, approximately 10 per cent of a council's income is spent on maintaining its roads.

Regional and rural roadsides, contain critical assets such as bridges, signage, culverts and drains, remnant vegetation and cultural heritage. A single extreme event over a few days can have multiple harmful impacts to vast areas of the road network and affect the safety, wellbeing and finances of communities, regional business and government for many months and years. The cost of addressing an event like Black Saturday, which for instance impacted 600km of roadsides and 24 bridges in Murrindindi Shire alone, stretches into the billions of dollars. In the recent Victorian floods in north-east Victoria in the space of one month works to repair damaged non-council roads making up far less klm, was estimated at $89.8 million. Rural and regional councils do not have the financial and human resources to even identify the potholes let alone fill them. However, there have been many learnings from Councils who have dealt with these extreme events. These are articulated to the Standing Committee via the following Recommendations.

<u>Recommendation 1:</u> Federal government funded program to support neighbouring regional councils to purchase and utilise shared innovative and modern predictive road maintenance technologies and staff training in their use

Although not all predictive technology is the silver bullet, poorly timed reactive maintenance is more expensive and less effective, and is often used by councils stretched for resources and contemporary information. Predictive maintenance approaches aim to lower cost over the lifespan of a road or pavement, increases road performance, provides optimal long-term planning capability, and integrates risk management into asset maintenance planning[1]. Those councils who do undertake predictive maintenance, current degradation curves, maintenance and capital spends consider the more extreme weather conditions bought by climate change, which a simple reactive replacement program is largely unable to do.

A shared, climate-predictive maintenance program requires:

- Surveys of sealed and unsealed road conditions using modern equipment such as laser-based devices and drones[2]
- The installation and use of predictive modelling software that is integrated with existing local government road data systems to forecast specific road conditions and maintenance locations, without labour-intensive manual processing
- Councils to utilise future climate data modelling for their region
- Support of staff to build expertise and to be fully trained in the set-up, programming, and use of new technologies and data interpretation

Local Government should have access to up-to-date climate data and projections, particularly in terms of sea level rise, flooding and inundation, to determine if adaptive intervention is needed when reconstructing damaged assets such as roads, bridges, and drainage infrastructure. This information and detail about the intervention and adaptive action needed is only useful when costed, so when impacted by extreme weather events an organisation can be immediately proactive in its repair or replacement. However many regional councils have no capacity to resource this modelling.

Many local government organisations in regional areas consider the financial costs of survey equipment and modelling software out of the reach and skill of their organisations, and reactive repair work more within their remit. However a reactive approach is more expensive and less effective in the long term, as a road will continue to deteriorate and in time requires more substantial works to raise its condition to a satisfactory level. The Victorian Auditor General found that on average, councils spend six times more to reconstruct a road than to reseal it (p36)[2]. A predictive approach will become more critical as climate-generated environmental events become more extreme and regular. A shared approach to own/lease equipment as collectives of councils mitigates risk through the addition of shared knowledge, skills, financial impact and the provision of access to a broader survey network when large-scale regional climate events take place.

[1] Karimzadeh, A. Shoghli, O., Predictive Analytics for Roadway Maintenance: A Review of Current Models, Challenges & Opportunities, 2020, Civil Engineering Journal, Vol 6, No 3,.
[2] Maintaining Local Roads, Victorian Auditor-General's Report 2021

<u>Recommendation 2:</u> Increase capital funding to local government which does not account for a road system impacted by extreme weather events, and decrease funding bureaucracy which does not account for regional resourcing

The financial impacts of undertaking reactive maintenance are experienced well beyond local government organisations. The recent flooding events in regional Victoria saw many roads and bridges washed away, with others undrivable due to severe damage. Such damage cut residents and business off from townships, and producers off from customers and markets for many weeks at a critical period of the year in one of the most productive areas of Australia.

The backlog of freight movements has been felt through supply chains into cities, rail and ports, and the longer trips forced by the damaged roads has put both agricultural producers and transport businesses at risk financially. The increased transport routes also increased greenhouse gas emissions at a critical period following Australia's commitment to reducing emissions to net zero by 2050.

To manage extreme events Council's need access to more appropriate capital money to build fit-for-purpose assets that can withstand an extreme event such as a flood. The newly formed Rural Road Alliance has called for an emergency funding package totalling nearly $5.5 billion. Those who are included in this Alliance are the GrainGrowers, National Farmers Federation, ALGA and Australian Livestock and Rural Transporters Association. GMCA supports this proposed funding package.

Additionally, the process to have claims approved for those roads that are damaged is prohibitive. Councils have to prove that the roads were in a certain condition before they were damaged due to the betterment rules that are in place. With paucity of access in regional areas to resources – even in relatively normal times, such as contractors, project managers, quarries etc, being able to claim for roads that are damaged by an extreme weather event and have them reinstated to the standards as per the International Design Manual would considerably reduce the down-time experienced by communities.

<u>Recommendation 3:</u> Support a whole-of-industry shift to use of recycled road-making materials with the formal creation of regional skills-based networks to progress the national road infrastructure circular economy.

Some recycled materials used in the making of roads have been comfortably utilised for up to 20 years by some local government organisations. However, despite excellent results, many recycled materials remain unused at a level that can provide confidence for those seeking to invest in producing recycled product, and clients such as local government. Lack of awareness and education is a key barrier to uptake, for instance the Australian Road Research Board reports "…*when there is a lack of understanding or confidence in recycled products, there is no encouragement to develop new processing plants to facilitate their implementation*." (p.68) [3]:

[3] Australian Road Research Board, 2022, Best Practice Expert Advice on the Use of Recycled Materials in Road and Rail Infrastructure: Part A Technical Review and Assessment.

3.1 Support ongoing formal regional skills-based networks of local government infrastructure and waste staff, private contractors and organisations, and research organisations, focussed on education, material life-cycle-assessments, pilots, and procurement policy and methods.

Many smaller local government organisations do not have the resources to test and transition on their own, as their knowledge-networks and staffing capacities are highly limited and subject to constant churn.

Funding support for regional, localised knowledge-sharing, inter-sectoral networking, demonstrations and field-trips in order to open doors to sector-wide uptake across public and private industry will assist large-scale changes and share responsibility. This will particularly benefit regional and rural councils, where the majority of Australia's road-making and maintenance occurs.

3.2 Create, and enhance vocational education on use of recycled and low impact materials for road construction aimed at local government, the waste sector, and private sector.

Extensive research has resulted in the following recycled material applications being successfully tested to replace or partially supplement applications including asphalt, crushed rock, binder modifier, aggregate, capping, subbase, and backfill material[3]:

- Crushed concrete from construction and demolition;
- Crushed brick from construction and demolition;
- Crushed glass from construction, demolition, manufacturing and household waste;
- Reclaimed asphalt pavement from maintenance rehab of existing roads;
- Crumb rubber from ground end-of-life tyres and conveyor belts;
- Ground granulated blast furnace slag from steel making by-products;
- Fly ash from by-product of black coal combustion
- Bottom ash from by-product of black coal combustion and waste to energy facilities
- Recycled ballast from reconditioned fouled ballast
- Recycled plastics from commercial, industrial and municipal waste

A number of these recycled materials have been proven to outperform traditional virgin road materials in extreme conditions, and their use in roadmaking is able to divert hundreds of thousands of tonnes of waste from landfill. For example when mixed as a sand replacement with concrete Recycled Crushed Glass (RCG) is generally reported to result in an increase in compressive strength[3] and geopolymer concrete does not suffer from 'concrete cancer', reducing maintenance costs. This information is not widely understood nor prioritised by local government. The use of recycled waste concrete and brick in road construction is estimated as able to divert approximately 8000 tonnes of construction waste from landfill per kilometre of road construction.

There is strong support for alternative treatments that indirectly minimise environmental impacts of road maintenance and renewal activities.

A few further, specific examples include:

- Use of Warm Mix Asphalt includes the following benefits:
    - Significant emissions reductions (55% less fuel, 46% less CO2, 63% less CO 81% less SO2, etc.)
    - While maintaining similar performance outcomes, warm mix asphalt use facilitates increased use of RAP (reclaimed asphalt pavement) of up to 50% when compared with standard hot mix asphalt

- Reductions in use of new binder
- Structural benefits – with longer life in the right conditions, including decreased oxidation and better compaction
- Better OHS outcomes – whilst not a strict environmental benefit, this is a further advantage

- Use of Micro Surfacing also has significant benefits:
  - Preventative maintenance can reduce larger requirements for reactive maintenance and reduce renewal needs (links with recommendation #1)
  - Environmental and cost savings result from this
  - There is also significantly lower energy consumption, as it is applied at ambient temperature, meaning reduced greenhouse gas emissions.

However implementation of new alternative materials into road construction is not a simple process and may be considered to be more expensive than business as usual (BAU). For example, if the price of geopolymer concrete is compared with BAU, the initial cost for geopolymer may be higher, but maintenance costs are reduced and the product has a greater longevity guarantee, resulting in a similar, or slightly lower overall cost than BAU, with additional advantages. Often precise mixes between materials to avoid adverse reactions are required, and thus it is critical that every level of government support industry, contractors and staff through upskilling, and continuous skills enhancement via courses and support of ongoing knowledge-networks. This includes those in the waste sector as collection, storage and contamination are well-known barriers to the success of this initiative (p.iii)[4].

3.3 Enhance communication and participation between local governments and the Australian Government to enable meaningful action on the National Waste Policy Action Plan Annexure 2022.

It is encouraging to see that the *National Waste Policy Action Plan Annexure 2022* (NWPAPA) aims by 2025 to have prioritised the development of national standards and specifications, or adopted appropriate international standards and specifications, for the use of recycled content in a broad range of capital works projects, **prioritising road and rail**. The use of standards around recycled content is strongly welcomed, however more is needed to support a whole-of-industry shift [5].

We welcome the NWPAPA aim to establish a baseline of recycled content used in road construction, by 2024. This is designed to enable reporting against a baseline, to indicate the growth in this field. However, while the project is led by the Australian Government, "All Governments" are required to participate in this action. To date there has been little communication with local government, to enable this to occur and no meaningful support to encourage the use of recycled content in roads. This must be addressed urgently in order to meet the 2024 timeline[6].

[4] Australian Road Research Board, 2022, Best Practice Expert Advice on the Use of Recycled Materials in Road and Rail Infrastructure: Part A Technical Review and Assessment.
[5] Action 3.06, National Waste Policy Action Plan Annexure 2022 (p7)
[6] Action 4.01 National Waste Policy Action Plan Annexure 2022 (p9)

<u>Recommendation 4:</u> Support all councils to incorporate asset vulnerability assessments as 'business as usual' practice based on long-term climate change forecasts, and the resulting financial impacts on local government assets.

A number of Victorian Greenhouse Alliances, namely South East Councils Climate Change Alliance[7] (SECCCA), and Goulburn Murray Climate Alliance (GMCA) have, and are currently undertaking asset vulnerability assessments across their memberships.

In the context of road construction, asset vulnerability assessments are focussed on a full benefit cost analysis approach and enabling climate change risk to be embedded in organisational asset planning and decision-making.

To this end climate impact financial analyses are incorporated into;

- how much extra an asset or service will cost to maintain or deliver assuming no adaptation action;
- how much extra councils can expect to pay to respond to damages or pay in insurance;
- How much would be the expected cost of making assets resilient; and
- how might income streams to councils, contractors, and ratepayers be impacted by climate change impacts to the asset/s.

The weighing up of other indirect costs, such as health impacts to employees and contractors, are also taken into account in such an assessment.

Regional local government relies solely on grants to undertake such assessments, which although currently considered novel, should be business as usual considering the regularity of extreme environmental events impacting these municipal assets. The lack of access to financial and knowledge resources to undertake asset vulnerability assessments is an enormous barrier to most regional local governments.

It has been via the Victorian Greenhouse Alliances that the concept and implementation of Asset Vulnerability Assessments in local government, including of local roads, has emerged.

We thank you for your time in considering our submission and look forward to reviewing the Government's response to this consultation.

If you require further information, please do not hesitate to contact the Goulburn Murray Climate Alliance Executive Officer on behalf of the signatories below.

Kind regards

Carole Hammond | Executive Officer
GOULBURN MURRAY CLIMATE ALLIANCE

[7] https://seccca.org.au/projects

Councils and contacts

- Barwon South West Climate Alliance (BSWCA), Sue Phillips, Executive Officer, sue.phillips@bswca.org
    - City of Greater Geelong
    - Golden Plains Shire
    - Surf Coast Shire
    - Borough of Queenscliffe
    - Colac Otway Shire
    - Warrnambool City Council
    - Moyne Shire
    - Barwon Water
    - Wannon Water
    - Corangamite Catchment Management Authority
    - Glenelg Hopkins Catchment Management Authority
    - Deakin University

- Central Victorian Greenhouse Alliance (CVGA), Annika Kearton, Chief Executive Officer, ceo@cvga.org.au
    - Ararat Rural City Council
    - Ballarat City Council
    - Buloke Shire Council
    - Central Goldfields Shire Council
    - Gannawarra Shire Council
    - Greater Bendigo City Council
    - Hepburn Shire Council
    - Loddon Shire Council
    - Macedon Ranges Shire Council
    - Mildura Rural City Council
    - Mount Alexander Shire Council
    - Pyrenees Shire Council
    - Swan Hill Rural City Council

- Goulburn Murray Climate Alliance (GMCA), Carole Hammond, Executive Officer, eo@gmca.org.au
    - Alpine Shire Council
    - Benalla Rural City Council
    - Campaspe Shire Council
    - Greater Shepparton City Council
    - Indigo Shire Council
    - Mansfield Shire Council
    - Mitchell Shire Council
    - Moira Shire Council
    - Murrindindi Shire Council
    - Towong Shire Council
    - Strathbogie Shire Council
    - Wangaratta Rural City Council
    - Wodonga City Council
    - Goulburn Broken Catchment Management Authority
    - North East Catchment Management Authority
    - Victorian Alpine Resorts

- Gippsland Alliance for Climate Action (GACA), Tiffany Harrison, Coordinator, tiffany.harrison@gccn.org.au
    - South Gippsland Shire Council
    - East Gippsland Shire Council
    - Latrobe Shire Council
    - Wellington Shire Council

This letter has been approved through the Greenhouse Alliances governance structures but may not have been formally considered by individual members. The submission does not necessarily represent the views of all members.