

24 February 2023

Committee Secretary

House of Representatives Standing Committee on Regional Development, Infrastructure and Transport
PO Box 6021

Parliament House

Canberra ACT 2600

Via email: rdit.reps@aph.gov.au

IPWEA Submission to the Federal government's inquiry into the implications of severe weather events on the national regional, rural, and remote road network

Dear Chair of the Committee,

The Institute of Public Works Engineering Australasia (IPWEA) welcomes the opportunity to present its submission to the Federal government's inquiry into the implications of severe weather events on the national regional, rural, and remote road network.

IPWEA is the peak association for infrastructure asset managers and professionals who deliver public works and engineering services. Representing close to 5,000 members and an online community in excess of 40,000, IPWEA is the industry leader in infrastructure planning, delivery and operation and has a strong history and interest in road management.

On behalf of the IPWEA membership, our response to the Terms of Reference can be found on Page 6. We believe setting the scene and contextualising our response is critical in understanding the broader issues at stake. Therefore, our submission is aligned to our:

1. White Paper (2022): *"Best practice asset management of essential public infrastructure"*, and
2. Our position of applying a scalable and consistent framework and educational pathway for long-life infrastructure managers that enhances the quality of life for our communities.

Our experience has demonstrated that the right legislative framework, supportive guidance, tailored/appropriate training and follow up, will lead to significant improvement in the performance and management of local road infrastructure. This in turn will lead to effective outcomes by mitigating risks and avoiding, at times, unnecessary additional investment.

IPWEA is proud to promote professionalism, education and knowledge sharing to enhance the quality of life for our communities through a well-planned and resilient infrastructure and we look forward to working with the Australian Government in this endeavour.

Should you have any queries regarding our submission please by all means contact me directly for further discussion.

Yours sincerely



David Jenkins
IPWEA CEO

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Setting the Scene

National local government-controlled road length, valuation, and expenditure

Although national highways, state and arterial roads carry the major portion of the road traffic by volume, local governments are responsible for approximately 678,000 km road by length.¹ This represents approximately 77% of total road length in Australia.

While valued at approximately \$133bn, the estimated replacement cost of the local government-controlled road network is in the order of \$204bn.²

This represents an investment of approximately \$8,100 for each of the 25.3 million people in Australia as of June 2020.³

Figure 1 shows the proportion of local government controlled sealed and unsealed roads as a proportion of the Australian road network.

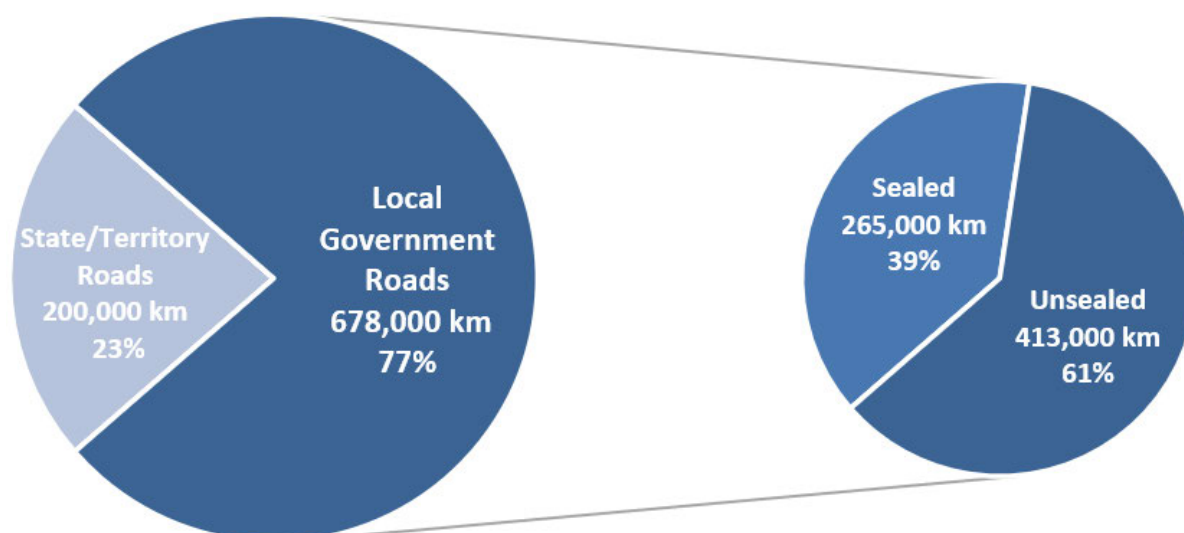


Figure 1 Local government-controlled roads as a proportion of the Australian road network
Source: National State of the Assets Report (ALGA, 2021, p.30)

Of the 678,000 km of roads controlled by local government in Australia, 265,000 km (39%) are sealed, and 413,000 km (61%) are unsealed.

In 2019-20, local government spent \$8.4 billion on transport infrastructure.⁴

¹ National Local Roads Data System, (NLRDS, 2020) operated by IPWEA. The NLRDS aggregates existing sources of local government road data and information to provide a consolidated national local roads reporting system.

² Sealed and unsealed roads only. Excludes bridges, major culverts, and other ancillary assets such as streetlighting, footpaths, cycleways, etc. Data Source: NLRDS.

³ ABS cat. no. 3101.0 - Australian Demographic Statistics, June 2020, TABLE 4. Estimated Resident Population, States and Territories (Number) – Australian Capital Territory population excluded.

⁴ 2019-20, ABS cat. no. 5512.0, TABLE 4, Total Local General Government Expenses by Purpose: Transport.

Of this expenditure, approximately \$3.9 billion (46%) was spent on maintaining, replacing, and upgrading existing and constructing new sealed roads and \$1.4 billion (16%) was spent on unsealed roads, (Source: NLRDS).

National local government-controlled road groupings

Table 1 provides an overview of the local government-controlled roads in Australia grouped by rural agricultural, remote, urban metropolitan and regional councils. The groupings are based on the Australian Classification of Local Government (ACLG).⁵

Table 1 Local Government-controlled Roads in Australia by ACLG (2020)

	Rural Agricultural	Rural Remote	Urban Metropolitan	Urban Regional	TOTAL
Local road length (km)	320,000	85,000	93,000	180,000	678,000
%	47.2%	12.5%	13.7%	26.6%	100%
Population	1,487,177	216,606	16,305,749	6,906,985	24,916,517
%	6.0%	0.9%	65.4%	27.7%	100%
Population per km	5	3	175	38	37

Population is based on 2019 ABS cat. 3235.0 data for 537 local governments.

The cost of maintaining a kilometre of local government-controlled road in urban metropolitan councils is shared between 175 people, while the cost is shared between less than five people per kilometre in rural agricultural and remote council areas.

The cost of maintaining a kilometre of local government-controlled roads in rural and remote areas of Australia is shared between less than five people per kilometre.

This is partly a consequence of lower population density and councils in the rural/remote areas having responsibility for all, but the higher order roads generally controlled by the state and territory road agencies.

⁵ The Australian Classification of Local Governments (ACLG) classifies councils into 22 categories according to their population, socioeconomic characteristics, and their capacity to deliver a range of services to the community. When applying the ACLG groupings for this submission, each council was assigned into one of four categories depending on their rural or urban classification, broadly as follows:

- Rural:
 - Agricultural – small, medium, large, and very large populations; and
 - Remote – very small, small, medium, and large populations.
- Urban:
 - Metropolitan - capital cities, developed (suburban) and urban fringe metropolitan councils; and
 - Regional - non-metropolitan councils with urban centres in regional areas

This analysis indicates there up to 35 times more people available to share the operating cost per kilometre of the local road network in urban metropolitan areas compared to those in rural and remote areas of the country.

It also highlights, in part, the financial challenges, levels of service and risk exposure communities face utilising the local road network based on where they are located.

Regional, rural, and remote local road network

Based on the Australian Classification of Local Government (ACLG), the sealed and unsealed road length by ACLG between 2010 and 2020 is shown in Figure 2.

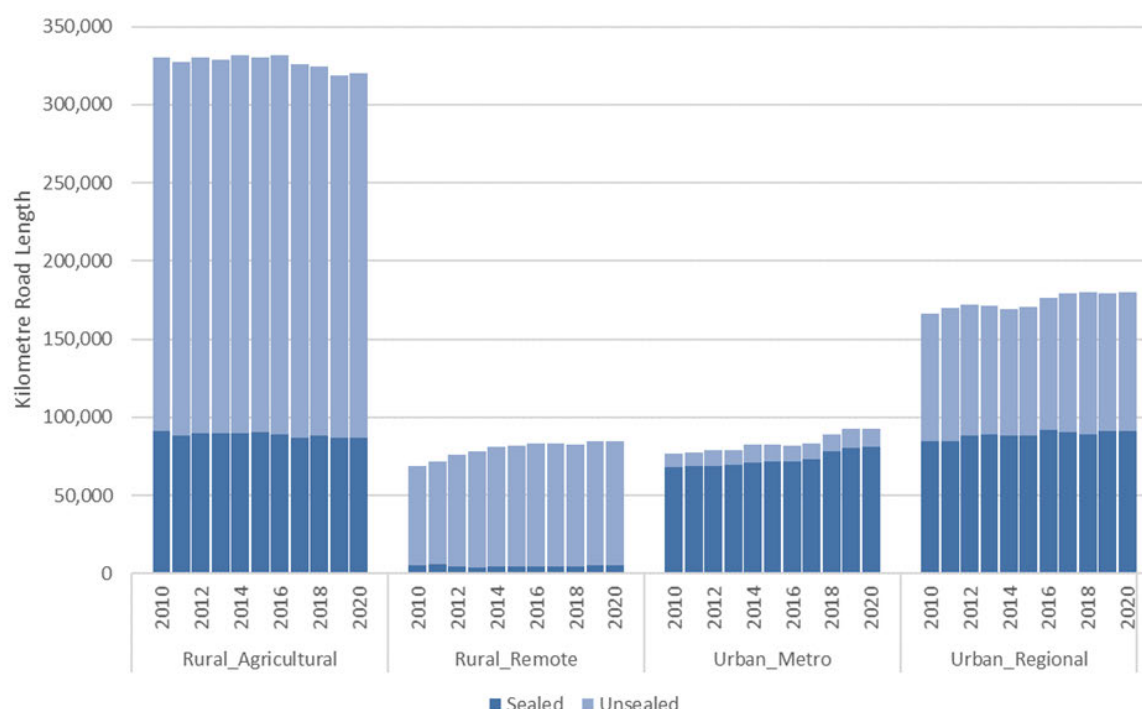


Figure 2 Sealed and Unsealed local road length by ACLG (2010-2020)
Source: National State of the Assets Report (ALGA, 2021, p.31)

According to the 2021 Australian Local Government Association's (ALGA) National State of the Assets (NSoA) Report, approximately 585,000 km (86%) of the total local road length in Australia is controlled by rural (agricultural and remote) and urban regional local councils. The remaining 93,000 (14%) is controlled by urban metropolitan local councils.

585,000 km (86%) of the total local road length in Australia is controlled by rural (agricultural and remote) and urban regional local councils.

Approximately 80,000 km (94%) of local roads controlled by rural remote councils are unsealed, compared to 12,000 km (13%) controlled by urban metro councils.

While the state and territory road agencies have control of some roads in regional, rural, and remote parts of the country, it is local government that has primary (either directly or indirectly by contract to the state/territory) responsibility for most of the road infrastructure in these areas.

The strategic imperative

The benefits of good infrastructure asset management are well understood. IPWEA's White Paper (2022) "Best practice asset management of essential public infrastructure" provides clear evidence and recommendations why implementing effective asset management practices is important.

Unfortunately, the reality is, it is often only when things go wrong due to poor asset management that proper focus is given.

Failure of infrastructure networks that deliver services generally occur when maintenance and construction practices are poorly applied, and inadequate investment is made in asset management capacity and a skilled workforce. Significant failures can result from both a lack of strategic thinking to prevent failures and a poor response when they do happen.

IPWEA asserts that it is imperative to take a strategic approach to the planning and overall management of long-life infrastructure such as roads and bridges. There are demonstrated benefits and cost savings of taking a strategic long-term approach to the way we manage infrastructure. The consequences of ineffective short-term decision making (e.g., deferring essential maintenance and/or underfunding ongoing operations) are well understood and generally have greater direct costs to the asset owner and greater indirect costs to the users of the assets in the medium to long-term.

Figure 3 provides a diagrammatic overview of the investment risks and opportunities when infrastructure assets such as local roads age.

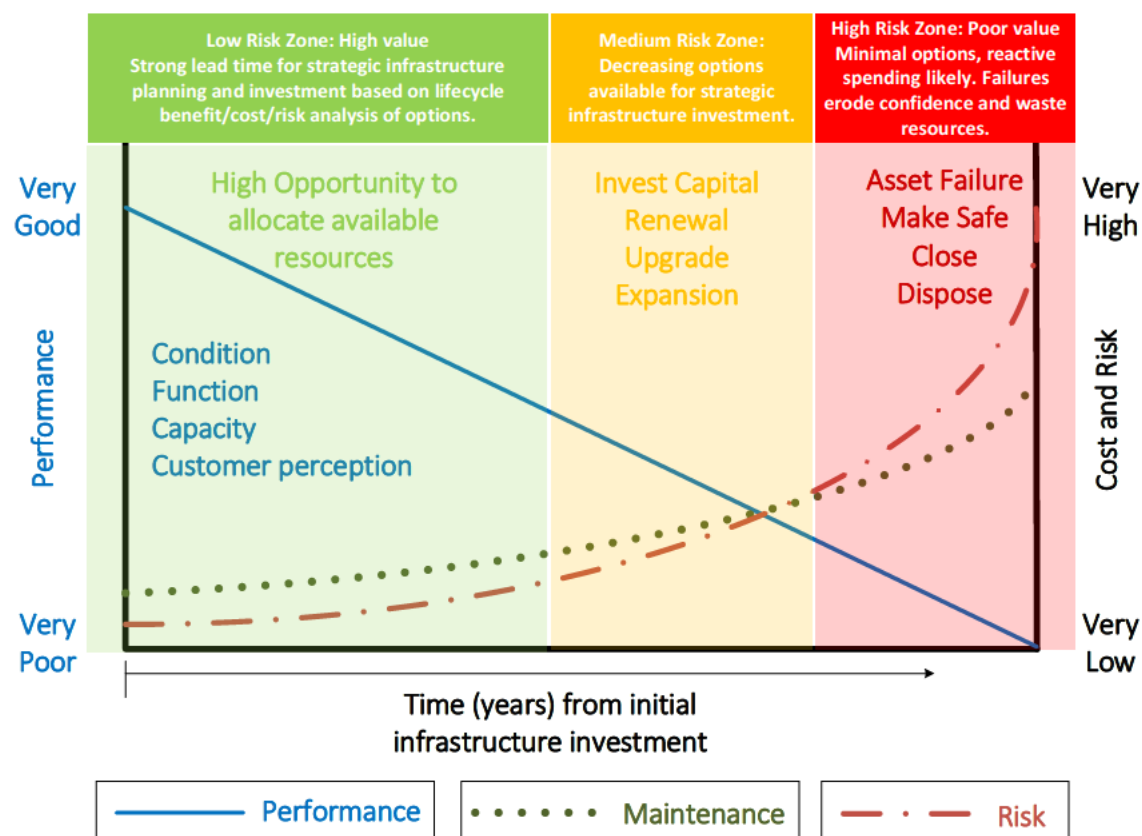


Figure 3 Infrastructure investment risks and opportunities

Figure 3 shows us that in the early life of an infrastructure asset the performance (i.e., service) levels are generally quite good, and risk and maintenance costs (i.e., failure rates) are low. As assets age, maintenance costs increase impacting risk and performance outcomes. The opportunities for better

strategic planning and investment of long-life infrastructure are much greater in the early phase of an asset's life, resulting in greater distribution of community wealth and lower lifecycle costs.

Early intervention supported by a planned maintenance and renewal strategy mitigates risk to our communities.

While it's not possible to control the weather and the risk it poses for the road network, it is evident that the consequences of failure (and their implications) of unprecedented weather events can be mitigated with early intervention and better strategic planning, investment and decision-making.

Some would argue parts of the local road network are currently being managed in the red 'High Risk Zone' shown in Figure 3.

Better skills, knowledge and long-term planning is needed

Engineers have expressed for a long time that poor planning in the design phase of a new road project and insufficient investment in planned maintenance activities when the asset is in operation, results in increased costs and risks in later years.

Despite this knowledge, and a mandate for road asset owners to have adopted Asset Management Plans in place, ALGA's NSoA Technical Report highlights one third of councils do not have an asset management plan adopted for their major assets, or if they do, they are out of date. For those that did have AM Plans in place, more than 50% DON'T align their AM Plan forecasts with the Long-term Financial Plan. This is a very concerning observation and begs the question how, and with what confidence, investment decisions are being made on critical assets such as the local road network.

Engineers are key to presenting and delivering resilient and affordable options for our communities to invest in. Ensuring these options are duly considered in the planning phase of any investment decision is crucial.

Clearly, there is more work to do in this space and IPWEA recommends Long-term Financial Plans of road owners be audited to ensure alignment with the performance, cost and risk trade-offs communicated in the Asset Management Plan (IPWEA White Paper Recommendation N^o4).

An appropriate audit program ensures a level of assurance that asset management and financial planning information is reliable and compliant with legislated requirements thus mitigating the risks for government and communities.

IPWEA also argues that to achieve a better national outcome requires a skilled workforce of educated professionals, including maintenance and construction workers with a clear purpose and career path.

A 'business as usual' approach will accentuate financial pressures from ongoing severe weather events. It is imperative to employ better skills, knowledge and long-term planning and maintenance through facilitating sound asset management practices.

Our response to the Term of Reference

The government's Term of Reference has placed a particular focus on resilience. The Terms are:

- Road engineering and construction standards required to enhance the resiliency of future road construction;
- Identification of climate resilient corridors suitable for future road construction projects;
- Opportunities to enhance road resilience through the use of waterproof products in road construction;
- The Commonwealth's role in road resilience planning; and
- Any related issues.

The resilience imperative

Clearly there is a focus on resilience, so what is that exactly? In the context of road networks and long-life infrastructure more generally:

Resilience is the measure of adaptive capacity of people, communities, built environments, businesses, economy, infrastructure and natural ecosystems to respond and adapt to the demands of a short-term shock or long-term stresses.⁶

Resilient infrastructure can absorb and adapt to disruptive events and rapidly recover. It can also adapt to changes in the type of demand and be utilised differently when circumstances change.

Resilience is not just about functioning after an emergency. Adopting a resilience approach ensures all infrastructure networks generate resilience co-benefits. Attention should be given to build qualities such as flexibility, robustness, integration, resourcefulness, inclusivity and continuous learning into infrastructure networks and services.

The need to provide more resilient infrastructure systems will only intensify in the coming years as dependence on interdependent infrastructure and technology continues to grow and evolve. Resilient infrastructure has the potential to improve the reliability of service provision and increase asset life.

Building resilience can involve a package of management measures (such as changing maintenance schedules) and structural measures (e.g., raising the height of bridges to account for sea level rise) or using natural infrastructure (such as protecting or enhancing natural drainage systems).

Flexible, adaptive approaches to infrastructure can be used to reduce the costs of building resilience given uncertainty about the future. Decisions about infrastructure should consider relevant uncertainties to ensure resilience across a range of potential future scenarios on an ongoing basis.

Resilient infrastructure reduces, but may not fully eliminate, the risk from a disruption or event. Resilience means that the risks have been considered and managed to achieve an acceptable level of performance given the available information, and that capacities to withstand and recover from disruption are in place.

In this submission, we define infrastructure resilience as the ability of road assets and networks to anticipate, absorb, adapt to and/or rapidly recover from a potentially disruptive event.

⁶ International Infrastructure Management Manual (IPWEA, 2020)

1. Road engineering and construction standards required to enhance the resiliency of future road construction;

Given many of our members are employed in the transport sector, most operate at the coalface of innovation in road management, construction, and maintenance. Public works engineers are well positioned to provide input to the best techniques and materials to mitigate risks and increase opportunities in the most cost-effective way.

We also have several members contributing to the many research projects and guidance publications undertaken by Austroads and the Australian Road Research Board (ARRB).

As technical specialists, IPWEA supports the work of Austroads and ARRB who are heavily invested in road materials science and provide high-quality, practical and impartial advice, information, tools and services that aim to build greater resilience in our road networks.

IPWEA takes the view that road engineering and construction standards are regularly reviewed, updated and are generally sound. The current state of the road network is not a reflection of the engineering and construction standards but of the ability of the industry to apply them.

We know engineers within the local government sector are in short supply. 'Big build' projects are attracting experienced engineers from local government. Anecdotally, many councils have been de-engineered to the point that unskilled generalists are project managing construction and maintenance of roads that demand high quality control. This is a high-risk scenario to operate in.

Appropriate legislated registration of qualified engineers, as is occurring in some states, along with a trained, skilled and capable workforce is essential to ensure infrastructure is delivered to a quality standard and people competencies are maintained to manage the road network.

Furthermore, the delivery of appropriate, good quality road pavement designs that are fit for purpose are being compromised by short-term decisions to reduce capital outlays. Together with increased heavy vehicle use on the road network, this will see pavement and sealed surface renewal demand increase significantly in future years due to short-term decisions designed to save only the upfront capital investment.

IPWEA is a key partner of Standards Australia®, and as a Nominating Organisation, we value this relationship and the specialist knowledge our members contribute to the standards development and review process.

One such Standard we strongly encourage the government to consider in its inquiry is 'AS 5334-2013: Climate change adaptation for settlements and infrastructure - A risk-based approach.' This Standard provides a general and widely applicable approach and framework for decision-makers in all organisations that have a role in the commissioning, planning, design, approval, construction, maintenance, management, operation and decommission of settlements and infrastructure.

2. Identification of climate resilient corridors suitable for future road construction projects;

IPWEA recommends Infrastructure Australia be the lead agency in advising the Commonwealth government on climate resilient corridors suitable for future road construction projects. In support of this recommendation, IPWEA also recommends Infrastructure Australia work with lead agencies in the road transport sector such as its State and Territory counterparts, Austroads, ARRB, Planning Institute of Australia, etc. and IPWEA.

A suggestion from our membership supports the Loddon Mallee region in Victoria as a potential resilient corridor suitable for future road construction research projects. The region is exposed to wide

variations in climate and has experienced severe weather events in 2011, 2016, 2018 and 2022. Due to its low-lying terrain, floodwaters are generally slow moving and road pavements stay inundated for longer periods of time. It is only a few hours from Melbourne and readily accessible for universities and other research organisations. There are several different trials for recycling through the Loddon Mallee waste and resource recovery group that could feed into this as well.

3. Opportunities to enhance road resilience through the use of waterproof products in road construction;

The waterproofing of sealed road pavements in Australia is predominately applied via a sprayed bitumen seal and/or an asphalt wearing course. The waterproofing capabilities of these road surface treatments can be maximised by careful selection of materials and are also heavily reliant on good construction practices that produce road surfaces that are free of flaws. They also require ongoing upkeep to ward off forms of distress that provide access points for the ingress of water.

It goes without saying that sprayed seals and asphalt wearing courses are an important element in the road system in Australia. Since Australia is sparsely populated with large distances to cover, properly maintained sealed roads are an absolute necessity.

With that said, bitumen doesn't last forever. Over time bitumen oxidises and becomes brittle making it susceptible to cracking allowing the ingress of water. A timely resurfacing treatment can cost effectively revive the existing aged pavement surface, quickly restoring skid-resistance and waterproofing capabilities.

The reality for most local road owners in Australia (i.e., local government) is they tend to defer this activity at the expense of other non-road related tasks that are deemed a higher priority. This leads to accelerated deterioration and a reduced level of service to road users.

Appropriately resourced inspection regimes coupled with 'timely' planned maintenance activities will ensure defects are kept to a minimum. Road pavements are more likely to withstand severe rain and flood events when inspection regimes coupled with 'timely' planned maintenance practices are employed.

The tendency to under resource necessary and appropriate inspections and react with unplanned maintenance activities can have undesirable environmental, reputational, financial, and social impacts.

The same principle applies to unsealed road pavements that are more susceptible to severe weather events given their lack of protective 'waterproof coating' and the use of generally lower standard materials in their construction than sealed roads.

The key message, and opportunity, is 'timely' intervention and better planning. Our Strategic Imperative statement explains this concept in more detail.

IPWEA maintains the view that any waterproof product and application process that is proven to reduce defects, failure rates and extend the life of a road pavement in a viable and cost-effective way should be supported.

To assist road managers in this endeavour, IPWEA's 'Practice Note 12.2: Climate Resilient Materials for Infrastructure Assets' provides information on climate resilient materials that can be used in the design and maintenance of infrastructure assets such as local roads.

The key objectives of Practice Note 12.2 are to:

- introduce asset managers to construction materials and practices that can increase resilience to different climatic hazards;
- provide a decision framework for material selection that considers their effectiveness and sustainability; and
- provide case studies that demonstrate the application of resilient construction materials and practices.

Increasing the climate resilience of bitumen is one of five materials considered in assisting road managers to make robust and defensible decisions in their selection of affordable options that increase the life of road pavements and lower overall lifecycle costs. The use of methodologies to improve water damage capability of roadways, particularly after storm event damage, is crucial when considering whole of life costs. A small increase in the cost of an enhanced refurbishment to increase resilience will more than pay for itself if it negates the loss of the road the next time there is a flood event. Replacing like for like, time after time, is a failed approach.

4. The Commonwealth's role in road resilience planning;

Our emphasis is on prudent management, maintenance and timely renewal of existing road infrastructure. Renewal is just as essential a component to a resilient Australian economy, as is any investment in new infrastructure built in the future.

IPWEA believes the Commonwealth's role in road resilience planning is to ensure a pragmatic approach and framework for decision-makers is followed in the commissioning, planning, design, approval, construction, maintenance, management, operation and decommissioning of road infrastructure.

Of particular importance is to ensure that any grant funding, provided by the commonwealth or other funding bodies, for renewal of road assets post disaster damage (e.g., storm event) is not predicated on building like for like. The reconstruction design must be based on a sound risk management / engineering assessment of resilience building opportunities and documentation of the cost / benefit of spending a bit more up front to save significant funding over the life of the asset and eliminating repeat events with the same damage occurring time and time again.

This raises the issue of 'betterment' and 'mitigation' in the Federal Government's Disaster Recovery Funding Arrangements (DFRA). A common issue faced by our members is the burdensome and at times complicated nature of the approval process, particularly for future proofing rebuilds. Despite the best efforts and intent of our members, the recurring message is improvements in the approvals process is needed.

Coupled with improvements in the planning and approval phase is the Commonwealth's role in building a culture of organisational resilience.

A resilience assessment will likely identify opportunities to build organisational resilience. Common areas of focus for organisational resilience are:

a. Crisis Leadership:

Crisis leadership is the process of responding to an organisation's challenges and preventing them from occurring in the future. Most crisis leaders emphasize the needs of their employees and customers by providing emotional support. For instance, they might acknowledge their concerns and maintain clear communication throughout the crisis. People who use this leadership style also focus on the long-term implications of challenging events. By analysing response methods, revising them and asking for support from employees and customers, they can develop effective plans to manage future crises.

b. Financial resilience:

Road managers should consider how infrastructure losses associated with major hazard events would be funded – for example, insurance, special levies, drawdown of financial reserves, loans or by deferring renewal programmes and accepting a lower level of service and or higher risk exposure in the future. An important part of financial resilience is having robust asset valuations and preparing for and mitigating the potential financial liability in the event that an unexpected disaster event occurs by keeping their asset management plans up to date.

The need for risk-based programming of multi-generational investment by road agencies and the community is key.

c. Emergency Management capability:

Having strong Emergency Management plans and arrangements in place for internal response and external agency coordination can help to reduce recovery times.

d. Supply chain resilience:

Road managers should ensure that all aspects of the supply chain for operations and maintenance have their desired level of resilience. In addition to the internal teams and departments within the organisation, the supply chain may include contractors, utility suppliers, supplies of plant, materials, spares, etc. The weaker links are usually the first to break when any chain is put under increased tension. Supply chain resilience should consider aspects such as supplier response arrangements, capability and capacity of suppliers, alternative supplier networks and availability of spare parts and materials.

e. Ensure road owners report their resilience approach:

Risk and resilience are inseparable when it comes to delivering services from road infrastructure. The outcome of a rigorous risk management process should be more resilient infrastructure. However, resilience has many moving parts that are not always fully considered in a risk assessment. A formal resilience assessment will help road managers consider all those aspects relating to providing resilient infrastructure services, such as leadership, culture, and change-readiness.

The Commonwealth can ensure road owners report their resilience approach in their Asset Management Strategy and supporting AM Plans. Doing so in a scalable and consistent way will ensure equitable funding is allocated to where the greatest need is.

5. Any related issues.

A major challenge for Australian road managers planning their approach to dealing with the impacts of climate change is to build an understanding of how to adopt and develop strategies to build an appropriate level of resilience to the impacts they anticipate.

An effective way to do this is to ensure that climate change adaptation is considered as part of existing management and decision-making processes in accordance with AS 5334-2013: Climate change adaptation for settlements and infrastructure-A risk-based approach.

As a minimum, IPWEA believes road managers should:

1. Identify and report high level risks to decision makers.
2. Ensure critical services and assets are understood and considered by staff involved in maintenance, renewal, and acquisition decisions.
3. An organisational risk management policy, framework and process is in place.
4. An asset criticality framework has been developed and critical assets are recorded in the Asset Management Information System (AMIS).
5. Activity and program risks are identified in the risk register and regularly updated and monitored.

6. Management strategies for highest risks and most critical assets are developed and documented in the infrastructure asset management strategy and supporting asset management plan(s).

Road managers should look to optimise expenditure and incorporate best practice asset management principles in accordance with the International Infrastructure Management Manual (IIMM).

Focus area 1: Infrastructure Planning and Investment

Objective: Focus on planning and design, and influence land use and transport planning to ensure investment improves current risk outcomes.

IPWEA asserts that good infrastructure planning and timely investment of lifecycle activities is a priority.

Clarity is needed around forecasting lifecycle costs, services and risks when retrofitting existing assets and building new assets in response to changing circumstances. This is best done by aligning and integrating the asset management planning task with the financial strategy of the asset owner.

Government has made significant headway, over the last 20-years or so, in delivering services to their communities by increasing investment to extend the life of ageing assets and renewing existing assets.

However, many indicators suggest more can and should be done to mitigate hazards, lower risk and avert an increase in the severity of weather events on the national regional, rural, and remote road network while maintaining a financially sustainable position.

Our experience across the country shows that financial sustainability for most (not all) local governments can be achieved. The question is at what price, level of service and risk? Most current asset management plans fail to answer this question.

This will require a strategy and plan to be developed based on revenue, service level and risk trade-offs – not on aspirational and possibly unaffordable infrastructure investment based on poor data and analytical research skills.

Governments will need to make strategically aligned decisions; and audit committees will need to assume a role in considering and reporting the risks facing the financial sustainability and social wellbeing of our communities.

Solid commitment in this area should cement the federal government's role in the next iteration of the Australian Infrastructure Plan and associated Climate Change Adaptation Plans.

Good money spent in the wrong places is a risky tactic and happens often. This can be averted with better frameworks that focus on capability (i.e., skills, regulation, and audit) and capacity building (i.e., resource allocation and training) ensuring sustainable community assets and services into the future.

A 2018 Local Government Skills Shortage Survey completed by almost half of Australia's councils revealed almost 70 per cent of local governments are facing a skills shortage whilst the skills gap increases.⁷

Key occupations such as engineers and town planners, building surveyors, environmental health officers and project managers topped the list.

In the survey, all council staff revealed the need to improve soft skills, particularly those relating to digital technology.

⁷ ALGA, 2018, Local Government Workforce and Future Skills Report.

Seventy per cent said they were poorly equipped for future digital demands with 70 per cent having done no forecasting of changing skill requirements arising from digital disruption.

Having regard to the magnitude of the local government-controlled road network, all three levels of government must cooperate in the development of policies, strategies and programmes aimed at providing: a sustainable funding model, appropriate technical resources, and community engagement so that road infrastructure resilience can be improved, and the level of risk reduced.

Key actions are:

1. Implement and maintain a credible, consistent, and scalable Asset Management and Financial Planning & Reporting Framework across all levels of government.
2. Account for rural and urban differences in population, climate, and topography in each government's Climate Change Adaptation Plan.
3. Audit the Long-term Financial Plans of road owners so that they account for the service, cost and risk forecasts and trade-offs reported in the Strategic Asset Management Plan.
4. Acknowledge retrofitting existing and acquiring new assets to improve resilience outcomes needs to be backed by credible and reliable science.
5. Focus on capability (i.e., skills, regulation, and audit) and capacity building (i.e., resource allocation and training).

All this is detailed in IPWEA White Paper: *"Best practice asset management of essential public infrastructure"*.

Focus area 2: The need for a nationally consistent functional road hierarchy classification and reporting system

The aggregation of road information in the form of a common road classification system is essential for road planning and management.

A function-based road classification system allows comparison of roads across the network performing a similar function despite carrying different traffic types and volumes.

Most if not all road engineers agree a functional road classification system will:

- Promote greater consistency of travel for road users;
- Improve planning processes, such as Integrated Regional and Local Transport Planning, Local Government Planning Schemes, and state-wide planning processes;
- Provide a basis for effective management during natural disasters; and
- Provide greater consistency in responses for traffic management, road safety and day-to-day operations of the road network.

An initial road hierarchy was published in Australia by the National Association of Australian State Road Authorities (NAASRA, now Austroads) in 1989. The NAASRA hierarchy dealt primarily with the National, State and Regional Road network but did not adequately address the local road end of the spectrum, nor did it deal qualitatively with the unsealed network.

A 1998 Austroads report 'AP-129-98 Responsibilities for local roads' attempted to clarify responsibilities for local roads across the three tiers of government and identify areas where greater consistency may be beneficial.

Although much progress has been made in this area, the responsibilities for local roads remain inconsistent across the nation.

A consistent road classification and reporting system remains an issue

While administrative responsibilities are clear, the lack of functional definitions between the State and Local Government controlled road network introduces uncertainty in areas of policy, standards, funding and road safety outcomes.

It is proposed to use the work published by Austroads as a basis to reinvigorate the development of a nationally consistent functional road hierarchy and reporting system to address issues that have persisted for many years.

Recommended Action: Develop and implement a nationally consistent functional road hierarchy and reporting system.

Our Recommendations

Our key focus is on education and the role of smart data, information and knowledge application by skilled practitioners to guide sensible and affordable decisions on infrastructure priorities.

We hope this inquiry leads to large-scale action in a scalable, consistent, and pragmatic way.

IPWEA has reviewed the items listed in the Terms of Reference, consulted with its membership via each of the IPWEA State Divisions and our Technical Reference Group known as the Asset Management Committee.

In summary, we submit the following recommended actions for consideration in the government's inquiry into the implications of severe weather events on the national regional, rural, and remote road network.

Recommendations:

1. Long-term Financial Plans of road owners be audited to ensure alignment with the performance, cost and risk trade-offs communicated in the Asset Management Plan.
2. Ensure the use of 'AS 5334-2013: Climate change adaptation for settlements and infrastructure-A risk-based approach' in any major infrastructure investment decision.
3. Infrastructure Australia be the lead agency in advising the Commonwealth government on climate resilient corridors suitable for future road construction projects.
4. Ensure a pragmatic approach and framework for decision-makers is followed in the commission, planning, design, approval, construction, maintenance, management, operation and decommissioning of road infrastructure.
5. All three levels of government cooperate in the development of policies, strategies and programmes aimed at providing: a sustainable funding model, appropriate technical resources, and community engagement so that road infrastructure resilience can be improved, and the level of risk reduced.
6. Develop and promote a nationally consistent functional road hierarchy and reporting system.