

17<sup>th</sup> February 2020

Via Email : enquiries@infrastructurevictoria.com.au

To whom it may concern,

**RE: Infrastructure Priorities for the Regions**

Thank you for the opportunity to provide comment on Infrastructure Priorities for the Regions consultation by Infrastructure Victoria.

The Goulburn Broken Greenhouse Alliance (GBGA) is a formal network of 13 regional and rural councils spread across northern and north eastern Victoria. The GBGA membership also includes the two Catchment Management Authorities in the region and DELWP(Hume). Council members are the cities and shires of Campaspe, Moira, Shepparton, Strathbogie, Mitchell, Mansfield, Murrindindi, Benalla, Wangaratta, Alpine, Towong and Wodonga. Populations in these municipalities vary from 5000 to 63,000 and land area ranges from 433 to 6673 sq.km, with associated networks for provision of transport, water, sewerage and other services. The GBGA has existed since 2007, working with its members on climate change projects, advocacy and information sharing.

The GBGA region covers three of the regions identified for analysis by Infrastructure Victoria; Loddon Campaspe, Goulburn and Ovens Murray. This submission relates to these three regions together and where necessary separates regional specific issues. In these regions, the GBGA and members have conducted detailed modelling to understand the changes and impacts that will be faced in the regions.

## **Preamble - the 2016 30-Year Infrastructure Strategy**

The 2016 infrastructure strategy acknowledged the need to transition to lower energy supply and use and improve the resilience of critical infrastructure.

Climate change will impact on all the objectives listed in the 2016 strategy. Increased heatwaves are already affecting public health and impacting on disadvantaged people and climate change is affecting local economies, especially agriculture production and many industries depending on this sector. Climate shocks have resulted in unprecedented impacts to communities and the environment from fire, storm and flood. Mitigation and adaptation cannot be treated as separate from the other objectives, and need to be integrated in all infrastructure planning. As an example, the increased social housing recommended in 2016 must be built to be comfortable and energy efficient in the hotter drier climate of the future. The current National Construction Code does not achieve the standard needed, and intervention is needed to achieve this crucial outcome, or housing projects risk perpetuating disadvantage.

The granularity of climate change projections and impacts at regional and local level in Victoria has increased dramatically in recent years, including downscaled projections produced in 2019 in the DELWP/BOM/CSIRO.

The projections can be examined at local level, as has been done in north east Victoria to produce projections of specific climate factors in 2030 and 2050. Examples are numbers of days over 35 or 40 degrees, frost days and rainfall days over 35 degrees and days of rainfall of specific values. The project also produced maps indicating future catchment runoff. This type of information is relevant to understand the future performance of assets like road, rail, and stormwater infrastructure and housing. Climate understanding in Victoria is advancing to a degree that can inform strategic infrastructure planning and ensure investment in resilient infrastructure for the future.

It is a tenet of climate change that past experience cannot predict future climate, due to expected step changes in climate, temperature in particular. For this reason the comparative advantages identified in the regional reports may change, especially for specific commodities and associated industries. General agriculture advantage compared to other regions may remain, as all Victoria will be affected by climate warming. The regional reports identify Loddon Campaspe, Goulburn and Ovens Murray regions are highly dependent on agriculture and food processing industries. It is important that infrastructure planning recognises the need for flexibility to enable regions have the opportunity to adapt as future conditions develop.

Inclusion of climate change planning in all infrastructure aspects is an overarching need in revision of the 30-year infrastructure strategy, but for the regional review underway, the GBGA will make the following observations.

## Renewable energy

A significant industry across all 3 regions is the rapid growth of renewable energy. This is likely to be a much higher contributor to the region's economies than the methodology in the reports have identified. Energy is identified as an emerging industry in Benalla, Wodonga, Strathbogie and Campaspe. It is not clear why municipalities with similar solar gain - Wangaratta and Shepparton – have not been included.

The Hume Renewable Energy Roadmap has identified renewable energy opportunity across the Goulburn and Ovens Murray regions with the following key infrastructure needs:

- Significant large scale solar energy generation to the grid can be realised with urgent implementation of the AEMO recommended upgrade of the South Morang-Dederang-NSW transmission line. (AEMO 2018 Integrated System Plan). Upgrade of the Western Victorian transmission network would also benefit Hume capacity.
- The Ovens Murray region has significant sites for pumped hydro energy storage (PHES). A detailed study by ANU shows high quality sites could store around 1260 GWh. Of these 570 GWh of PHES is in four areas co-located with the region's existing high voltage network.
- Many smaller communities in the Ovens Murray and Goulburn region suffer restricted network capacity which constrains solar rooftop and local solar development. These communities also suffer regular blackouts during storms and hot weather. The community energy group Totally Renewable Yackandandah has worked with Mondo Power to build and evaluate Distributed Renewable Energy (DER) based on community micro-grids.

Mondo is now planning to evaluate opportunities at a regional scale to integrate small scale solar, micro-grids into the grid, using data and communications technology to realise peak pricing and demand management opportunities. DER also has islanding potential during emergencies.

- Biomass for energy is an untapped resource across all 3 regions and likely to grow into a significant industry over the next 10 years.

The most critical infrastructure needs for the region in order to realise these benefits is the upgrade of the transmission infrastructure. However, technology allows areas with lower solar gain to generate significant solar power. This is important for DER and can provide independent energy capacity for communities exposed to power blackouts due to transmission capacity, heatwaves and other emergencies.

#### **Recommendations:**

- **Address the current gap in the reports about the role renewable energy will play in the regions over the next 30 years. This should recognise renewable energy is an opportunity and infrastructure priority for the three regions for solar development.**
- **Include investigation and development of the Ovens Murray region's significant pumped hydro storage opportunities to provide network stability to renewable energy development.**
- **There is a critical need to work with AEMO to plan and support upgrade of network capacity to allow ongoing solar development in all three regions, and contribute to Victorian targets for renewable production and decarbonisation.**
- **Include DER as a developed technology to assist communities restricted by centralised supply and grid restrictions**

## **Agriculture and climate change**

The reports identify “all agricultural industries will be exposed to the potential impacts of climate change”. This point is critical to the consideration of future infrastructure needs for the three regions as it cannot be assumed that past economic advantages will continue in the region without substantial shifts in the types of agriculture in the region. The regions have undertaken significant research to understand the future of agricultural commodities.

The key pieces of academic and industry work about the future of climate change in our regions are the ‘Climate Smart Agricultural Development’ mapping in 2016 (GBGA) and ‘Embedding Climate Adaptation in Agriculture’ (2019 NECMA). The projects have analysed and mapped the future productivity of more than 20 commodities. This shows the northern plain across the 3 regions is particularly affected by increased heat and reducing water availability. Much of this area is the irrigations district, currently having high productivity and economic value.

Mapping shows that areas may change in use eg from grazing to cropping, which could change the transport network needed. This is relevant in the upper reaches of the regions, which will maintain relatively favourable conditions for agriculture in the future, but have lower transport capability.

As noted in the preamble the 2019 project by the North East Catchment Management Authority also analysed future climate factors that were identified by producers to be

important in decision about future capital investment options. This will contribute to decision about adaptation in the regions.

Climate Smart Agricultural Development

<http://www.gbga.com.au/climate-smart-agriculture-development.html>

<http://www.gbga.com.au/story-map---climate-smart-ag.html>

Embedding Climate Adaptation in Agriculture

<https://www.necma.vic.gov.au/Solutions/Climate-Change/Embedding-Climate-Adaptation-in-Agriculture>

#### **Recommendations:**

- **Integrate and analyse how existing climate change and agriculture research indicates changed infrastructure priorities**
- **Ensure that infrastructure priorities are robust against multiple climate change scenarios and can be justified on a least regrets basis.**

## **Transport Infrastructure**

- **EV Charging and Hydrogen Refuelling**

As this is a 30 year strategy there is a need to consider how transport will rapidly change over that time as identified in Infrastructure Victoria's [own study](#) in 2018.

The GBGA is collaborating in the CVGA led project across 55 local governments exploring investment needs in public electric vehicle charging infrastructure. This project is partnering with DELWP and is called "[Charging the Regions](#)". The project has identified the need for State Government and Local Governments to work together to roll out a dense network of charging points as well as facilitate private investment.

In addition, as more and more heavy vehicles move towards electrification or hydrogen fuel cell technology there will be an increased demand for refuelling stations to ensure the regions are not disadvantaged. The Hume Renewable Energy Roadmap identified the Hume freeway corridor and the Shepparton region as candidates for hydrogen fuel centres, with a majority of regional truck movements and 25% of Victoria's truck registrations in the Shepparton area.

- **Climate change impacts on road infrastructure**

Climate change is already accelerating the degradation of roads through hotter drier conditions and more extreme weather events. Also road construction is a significant contributor to national greenhouse gas emissions and there is an opportunity to shift to more low carbon road materials. This will require careful planning and trials of new road materials that are both low emissions and more resilient to the climate projections for the 3 regions. Regional councils find that they cannot access existing option for greener asphalt as manufacturing capability is concentrated in Melbourne. Regional Roads Victoria could play a role in trialling and adopting low carbon materials and improving regional capacity.

#### **Recommendations:**

- **Identify the need for a dense network of public EV charging infrastructure and key hydrogen refuelling in the 3 regions.**

- **Ensure road infrastructure is planning for climate change projections and roll out of lower emissions road bases.**
- **Use planned infrastructure upgrades and new construction to establish supply of low carbon materials in the regions.**

## **Addressing Regional Disadvantage**

- **Digital Inclusion**

The 'Addressing Regional Disadvantage Through Infrastructure' analysis identified access to key services as reducing disadvantage for example to transport, education, jobs, housing and health services.

One enabling infrastructure type is digital inclusion. The 2018 Australian Digital Inclusion Index identified the north (Goulburn and Ovens Murray) and west regions having the lowest digital access in Victoria. This included lowest technological access scores indicating the need for infrastructure to overcome this disadvantage.

Resilient communications technology is essential to maintain digital information and communications during the increasing incidence and intensity of natural emergencies projected due to climate change. It is also essential for development of industry and business, using smart technology for communications as well monitoring and control.

- **Green Infrastructure and links to socio-economic disadvantage**

One of the key challenges for the region is green infrastructure as the cities and towns face hotter and drier conditions. It refers to designed and natural vegetation found in urban areas, including public parks, recreation areas, remnant vegetation, residential gardens, street trees, community gardens, as well as innovative and emerging new urban greening technologies such as rain gardens, green roofs and green walls.

A critical challenge across the region is ensuring our communities can stay safe, healthy and resilient despite climate impacts such as more extreme heatwaves. Councils have an important role to play in reducing this vulnerability by investing in street trees, irrigated parklands and shadeways etc. Despite councils across the region doing what they can with limited budgets and investing in urban forests and street trees additional funding will ensure that these initiatives can be expanded and coordinated across the region. A matched fund for local governments to access to support Green Infrastructure in the next 5 years would significantly improve the resilience of towns and cities going forward.

### **Recommendations:**

- **Prioritise investment in technology to improve digital inclusion in these regions, with priority for communities likely to suffer increased emergencies.**
- **Include green infrastructure in the consideration of infrastructure priorities**
- **Recognise the link between regions with socio-economic disadvantages and lack of green infrastructure**
- **Identify the need for greater levels of co funding to support provision of green infrastructure across the region**

## Infrastructure resilience to extreme events

Climate change has created the conditions for damage from extreme fire and storm events and flash flood in the upper catchments, knocking out communications, power supply, public health services and essential community assets. In the Ovens Murray, local renewable energy and micro grids are being implemented and offer an option to maintain services when grid supply is damaged. Alternate systems are needed to maintain communications during emergency management and recovery. Damage to water supply and sewer treatment and failed supply of fuel and food all need to be anticipated, with alternate options in place as well as emergency shelter.

### Recommendations:

**Implement a systematic approach to create adaptable and resilient infrastructure to equip all communities with essential services that are resilient to emergency events. This could include local grid and service capacity to operate as islands for the extended periods needed until core services are reconstructed.**

## Built infrastructure and climate change

Under climate change, there is increased potential damage to facilities across the region, leading to increased maintenance costs, reduced asset lifespan, and reduced service delivery capacity. Ensuring any new builds particularly major projects assess vulnerability to climate change is crucial. Existing buildings and other assets should be prioritised for vulnerability assessments and required upgrades particularly where they are critical assets.

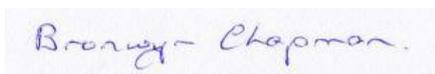
All major projects being designed for the region need to aim for the highest sustainability standards and be as resilient as possible for future climate projections. For buildings this should see at least 6 Green Star for all government buildings and 6 Star on the NABERS ratings. In addition, buildings should be assessed as to their vulnerability for future climate change projections.

### Recommendation

- **Ensure any new assets are built to withstand future climate projections for the regions and meet highest sustainability standards**
- **Prioritise existing critical assets for vulnerability assessments and required upgrades**

Thank you for the opportunity to make a submission to this update of Infrastructure Victoria's 30 year strategy. Please do not hesitate to contact me if you require further information or would like to discuss any of these issues. We look forward to your response.

Yours sincerely,

A handwritten signature in blue ink that reads "Bronwyn Chapman".

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