

Committee Secretary
Senate Standing Committees on Environment and Communications
PO Box 6100
Parliament House
Canberra ACT 2600
Email: ec.sen@aph.gov.au

27th July 2017

Dear Sir/Madam

Re: Current and future impacts of climate change on housing, buildings and infrastructure

The Northern Alliance for Greenhouse Action (NAGA) is pleased to take this opportunity to submit a response to the the Federal Inquiry into the current and future impacts of climate change on housing, buildings and infrastructure.

NAGA is a network of nine northern Melbourne metropolitan councils working to achieve significant emissions abatement and build the regions resilience to climate by delivering effective programs and leveraging local government, community and business action. Our members include the cities of Banyule, Darebin, Hume, Manningham, Whittlesea, Yarra, Melbourne, Moreland, Moreland Energy Foundation Limited, and Nillumbik Shire Council. NAGA formed in 2002 to share information, coordinate emission reduction activities and cooperate on research and develop innovative projects.

We understand the terms of reference of this inquiry to investigate the following:

- a. recent and projected changes in sea level rises, and storm surge intensity;
- b. recent and projected changes in temperature and precipitation;
- c. recent and projected changes in extreme weather, including heatwaves, bushfires, floods, and cyclones;
- d. recent and projected changes in natural coastal defence systems including coral reefs, kelp and mangrove forests;
- e. the impact of these changes on the vulnerability of infrastructure in coastal areas;
- f. the impact of these changes on water supply and sewage treatment systems;
- g. the impact of these changes on transportation, including railways, roads and airports;
- h. the impact of these changes on energy infrastructure, including generators and transmission and distribution lines;
- i. the impact of these changes on health, education and social services infrastructure, including hospitals, schools and aged care;
- j. the impact of these changes on private and public housing;
- k. the impact of these changes on public recreation and tourism facilities;
- l. the impact on financing and insurance arrangements for housing, buildings and infrastructure;
- m. the adequacy of current state and Commonwealth policies to assess, plan and implement adaptation plans and improved resilience of infrastructure; and
- n. any other related matters.

In our submission we would like to focus on a number of areas where our council members are experiencing the impacts of these changes and also some of the opportunities for adaptation.

1. Impacts of climate change on local government operations and service delivery

Local governments are on the frontline when dealing with the risks and impacts of climate change. The impacts of climate change are already taking their toll on local governments ability to deliver critical services to their community.

Climate change acts as a risk multiplier, where existing risks are exacerbated by more frequent and extreme weather events, and hotter and drier conditions. An example of the cumulative impacts of climate change on council operations and services is detailed [here](#).

Already across the NAGA region, our member councils are undertaking a range of actions to address projected climate change impacts and vulnerabilities, either through defined climate change adaptation strategies, complementary issue specific (e.g. health and wellbeing or integrated water management) strategies or via projects jointly delivered with Victorian Government or Commonwealth Government funding.

NAGA has recently completed a substantial regional climate change integrated vulnerability assessment and action plan called *Adaptation in the North*. The plan identifies key vulnerabilities across the region and priority actions over the next five to ten years.

There are many important reasons why adaptation is a key consideration in the decision making of our council members today:

- Rising insurance premiums and liability issues for local government
- Financial sustainability; small investments today will avoid larger costs in the future
- Duty of care
- Strong community expectation that local governments are preparing for climate change
- The multiple benefits of adaptation responses such as improved health and wellbeing, lower energy bills, lower maintenance costs.
- Existing climate impacts are already more frequent and more intense than previous decades

2. Diversifying and decentralising water supply

Many of the risks and vulnerabilities identified in our *Adaptation in the North* relate to projections of reduced water availability for the region as well as an increased intensity of rainfall events. It is important that the region can maximise opportunities for alternative water sourcing and plan for flexibility as rainfall patterns change by diversifying our water supply, improving water use efficiency and redirecting storm water overflow. This will be increasingly important as the population in the region is expected to increase in the coming decades.

In the NAGA region, the majority of bulk water is provided through the Yan Yean Catchment and Toorourrong Reservoir which in turn supplies a number of suburban service reservoirs. Bulk water to the North East of Melbourne's North is also supplied via the Sugarloaf Reservoir. All reservoirs in the NAGA region are within Bushfire Prone Areas. As climate change increases bushfire activity, this water infrastructure faces increased risks. Runoff following a bushfire can wash ash and sediment into reservoirs, impacting the ability to provide suitable drinking water for up to several months until water quality improves. As an example the Toorourrong Reservoir and catchment was significantly impacted by the 2009 Kilmore-Murrindindi fire.

NAGA therefore considers diversifying and decentralising water supply to be an important strategy for building climate change resilience in the region. We see government efforts should seek to address water waste on a system level, which will require working across multiple policy areas of federal, state and local government. NAGA councils are demonstrating leadership in this area, such as the City of Banyule's [Stormwater Harvesting Project](#), a \$6 million project to capture stormwater, filter out pollution and store the stormwater underground for use in irrigating sports fields and open spaces. This project was a positive example of a unique partnership between Banyule City Council, state and federal governments and Ivanhoe Grammar School.

3. Food security

Climate change will affect regional food security through prolonged droughts and sudden extreme events including bushfires, on top of existing pressures of urban growth and population pressures and rising energy costs. An analysis of Victoria's food supply chain found that there are significant food security risks in the region for the future, in particular to the provision of critical and non-exchangeable foods such as fruit and vegetables. A key part of building resilience to these future food security risks is to strengthen and diversify the regional food economy; food that is grown and processed locally and sold primarily for local or regional markets. Urban and peri urban food production facilitates opportunities for local management of harvested rainwater, waste water and nutrient waste. Also, promoting local food reduces energy and transport demand, builds community and social cohesion, creates local employment and can also help to reduce other climate

change risks such as heatwaves and flooding. NAGA advocates for better recognition and support of urban food production at the state and federal level.

4. Infrastructure and climate change

NAGA strongly supports an infrastructure resilience assessment test for new major capital works at the federal level, but emphasise that this test should be as comprehensive as possible. This could be achieved by adopting the Australian Standard “Climate change adaptation for settlements and infrastructure” as part of the approval process. This could be a standalone requirement or incorporated into environmental impact assessments. This would allow for major projects to be independently assessed for consideration of climate change impacts and transparent and open to public scrutiny.

In addition, NAGA also recommends that resilience assessments be undertaken for non-major capital works and existing infrastructure. NAGA and the Eastern Alliance for Greenhouse Action (EAGA) have been developing and trialling a regional building vulnerability assessment tool with ARUP that could be supported and extended to non-council buildings (www.naga.org.au). Local governments have also identified a priority need to incorporate climate change risks into asset management planning more broadly to include roads, street trees, footpaths, drains etc.

5. Climate impacts on electricity infrastructure

Many of the risks from heatwaves, bushfires and storm events are exacerbated by power failures. These risks have been realised in recent extreme weather events and act to further threaten vulnerable members of the community and disrupt council business continuity.

In a 2009 report prepared for the Energy Networks Association, Parsons Brinckerhoff estimated that the cost to energy networks from climate change is estimated to be \$2.5bn over the next 5 years. They estimated that the largest proportion of this cost arises from the requirement to augment networks to accommodate the increase in peak demand largely associated with air-conditioning use. This is likely to be a conservative estimate as the past few years has seen increased bushfire activity, increased intensity of storm events, and hotter and drier conditions.

As much of Victoria’s electricity infrastructure is approaching the end of its lifecycle in the next 10 years, now is an important time for the policy settings to help drive this transition in a least cost, equitable way. NAGA considers that Victoria has an enormous opportunity to strategically upgrade its grids to ensure a decentralised and decarbonised energy system going forward, and one that is resilient to the impacts of climate change.

Furthermore, low income households are particularly vulnerable to climate change, with high power prices and outages during heatwave events and other extreme events leading to higher morbidity and mortality risks, particularly for the aged. There is mounting evidence to demonstrate that the installation of solar PV supports greater capacity for cooling in households where energy costs represent a large proportion of ongoing living costs. Council staff in our regional workshops shared anecdotes of low income households avoiding using any cooling in heatwaves because of fear of a high power bill. The ability of the technology to provide low cost energy throughout the day means these householders can cool their homes without fear of ‘price shock’. NAGA is currently delivering a program with three other greenhouse alliances to deliver [solar PV for low income households](#) to reduce dependency on centralised electricity.

We understand that the [Energy Networks Association](#) has developed an industry methodology and tools to support members in managing climate risk and resilience across core network business activities and to ensure consistency in factoring climate change risk in future network investment decisions.

It is not clear to us if any of the networks have used the manual to develop their own climate change risk assessments, and also how this will orientate their business decisions towards distributed generation.

We recommend the COAG energy council request that climate change risk assessments and adaptation plans be undertaken by every electricity network in Australia. This could be an annually updated process that is transparent and published as an appendix to the Annual Network Planning reports. It should also seek to identify actions that can be undertaken in partnership with other stakeholders not just rely on traditional network solutions of infrastructure upgrades.

6. Improved consideration of climate change within building and construction code

Current state and Commonwealth policy and regulation are failing to act on the opportunity to manage/address climate change impacts via the existing mechanisms we have available. The building regulations and planning scheme are inadequate to ensure that private development is required to address the impacts of climate change, in particular heat impacts from both Urban Heat Island and thermal comfort of buildings. Specifically, federal policy support and funding should be directed to recognise the function of open space and trees in the planning and building process to

reduce ambient air temperatures during hot weather. This is of particular value in areas that are undergoing a significant level of higher density development activity, exacerbating the urban heat island effect.

The principle planning control relevant to stormwater in Victoria is Clause 56.07-4 of the Victorian Planning Provisions. The clause is the primary mechanism for retaining stormwater on site and therefore allows for the provision of water harvesting and flood water retention during heavy rainfall events. The clause does not apply to the subdivision of commercial or industrial land and to site developments that are developed prior to being subdivided. It therefore has limited applicability in established suburbs and progressive local governments have needed to introduce local planning scheme amendments in order to bridge this gap.

Water efficiency requirements could also be strengthened for example by setting higher minimum standards for the WELS rating scheme.

7. Strengthen national ESD measures in planning and support best practice ESD design

NAGA has long advocated for stronger environmentally sustainable design controls in the planning and building process than currently exists. Many NAGA councils have progressed this through the introduction of ESD and Water Sensitive Urban Design local planning policies. We recommend that the federal government work to improve national ESD outcomes and encourage better integration between the planning and building systems.

8. Critical need to improve public housing quality with a focus on thermal comfort

A number of councils have been working on programs to retrofit existing public and social housing to withstand current climatic conditions. For example the City of Moreland have recently undertaken a project called Cooling Communities. Whilst many Moreland residents are able to protect themselves by adapting their homes – installing shading, insulation, draught proofing, air-conditioning, trees, plants and grass – those in social housing have limited ability to adapt their homes and gardens.

To help understand how social housing properties can be improved and the role Councils can play in supporting this the Department of Environment, Land, Water and Planning awarded Moreland City Council \$80,000 to implement upgrades to 10 social housing properties in Moreland. This project has delivered important outcomes for social housing residents, but this type of work needs dramatic scaling up across the country, not just within the city of Moreland.

9. Support sustainable transport planning and infrastructure

Metropolitan Melbourne is growing at an unprecedented rate and public transport is struggling to keep up with demand. NAGA recognises that to achieve many of the objectives of the 20 minute city there needs to be a dramatic increase in funding for cycling, walking and public transport infrastructure. There is a clear need for planning guidelines to promote cycling infrastructure within cities, between cities and in catchment areas for increasing rail patronage. In addition, there are many best practice examples across the world that offer creative solutions to some of the same transport problems faced by greater Melbourne. For example, the London Play Streets project, where each month traffic is blocked off for three hours in select streets and is opened for pedestrian use.

In addition to the promotion of cycling and pedestrian infrastructure, there should be greater emphasis on public transport infrastructure, recognising that the past decades have focussed heavily on roads and relying on car and truck based transport. The Federal Government should also seek to power public transport through renewable energy similar to the recent decision by the Victorian State Government to power Victorian trams through a solar Power Purchase Agreement (PPA).

The Federal Government has a critical role to play in growing the industry for electric vehicles and other low emissions vehicles, through a combination of incentives and standards. NAGA members have demonstrated leadership in supporting EV infrastructure over the past five years. The City of Melbourne was the first council in Australia to introduce EVs into its fleet and the municipality includes public recharging stations. The City of Moreland with Victorian Government support was the first in Australia to install a fast charger as part of the electric vehicle trial and continues to have the largest number of charging stations within a municipality. The Moreland Energy Foundation Ltd (MEFL) has also installed an electric charging station and own and operate an EV that stimulates interest and engagement amongst the community. Melbourne's northern metropolitan region has the potential to be a pioneering region for EV adoption to prepare the ground for mass market EV deployment. Electric vehicles suffer from a demand-infrastructure conundrum, as there is little incentive for people to buy EVs until there is appropriate supportive infrastructure, while those that may be willing to invest in the infrastructure will hold back until there is enough vehicles on the road to support the investment. Industry analysis suggests that in other jurisdictions where EV uptake is strong, such as Copenhagen and California, success has been underpinned by legislation and government incentives to reduce emissions.

Thank you for the opportunity to make a submission to this inquiry. Please contact David Meiklejohn if you would like further information, case studies or any clarification regarding the issues raised in this letter.

Yours sincerely

David Meiklejohn

NAGA Executive Officer

The views represented in this submission do not necessarily represent the views of all NAGA members individually.