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Submission on

Draft Climate Change Policy and Draft Action Plan 2022-2025

3 November 2022

Submitted via:

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<https://yoursay.epa.nsw.gov.au/climate-change-policy-and-action-plan>

Submitted by:

Climate Future

CEN's expert group on the climate crisis

The Community Environment Network (CEN) is a Not-For-Profit Incorporated Association with Deductible Gift Recipient (Charity) status. CEN was founded in 1997, with the goal of providing a network for environmental and community organisations. CEN's mission is to support ecologically sustainable development (ESD) and oppose threats to ESD as defined in NSW Legislation.

The mission of ESD has given CEN a clear purpose which is consistent in meaning throughout Australia and the World. CEN is uniquely based in having the guiding mission of the ESD Principles.

As CEN is a registered charity with the Australian Charities and Not for Profit Commission (ACNC) this means that this body monitors the tax deductible status and provides background information on the Financial Management, Constitution and Office Bearers. The ACNC tick means you can be assured that CEN is a viable, credible and ethical organisation when considering a donation or bequest.

CEN is an Incorporated Association under the NSW legislation. The Executive is elected at the AGM held in June each year. Funds are raised through donations, memberships, events, grants and contracts. All projects and programs within CEN are required to be self-funding and revenue/expenditure neutral in the long term. All CEN financial transactions are reviewed by an independent auditor at the end of every calendar year. The audited financial statements are made public.

Climate Future is a sub-committee of the CEN which has at its core a group of concerned residents which have interest in and or knowledge of the local concerns regarding climate change. CEN supports the Climate Future subcommittee presenting this submission.

Climate Future with the support of CEN:

Object to the Draft Climate Change Policy and Draft Climate Change Action Plan 2022-2025 in their current form.

We support the introduction of a Climate Change Policy and Action Plan (noted as Policy and Plan in this document) but believe the current documents do not sufficiently address the need for action.

It is imperative that Australia prepares for the impacts of Climate Change at all levels and acts urgently to cut emissions.

BACKGROUND

The background for the seriousness of the climate crisis is set out in the following reports:

- IPCC AR6 2021/22 (WGI and WGII reports issued so far)
- IPCC SR15, Global Warming of 1.5°C (2018)
- IPCC SRCCL, Climate Change and Land (2019)
- IPCC SROCC, Ocean and Cryosphere in a Changing Climate (2019)
- UN Environment Program 2018 Emissions Gap Report
- CSIRO, State of the Climate 2020

Refer: <https://www.ipcc.ch/reports/>

We also refer for further detail within the local NSW context to Climate Future reports and submissions:

- Pathway 2022 (an Emissions Reduction Profile, <https://climatefuture.org.au/>)
- NSW Community Plan (2022) (a plan to help the NSW Community respond to the climate crisis, <https://climatefuture.org.au/>)
- Australian Climate Dividend (<https://www.climatedividend.org.au/>)

The implications of this body of evidence are that climate change represents a clear and present danger to human society. The impacts we have seen so far will be dwarfed by the extremes expected in the next two decades. These draft Policy and Plan fail to adequately incorporate the planning necessary to face the climate crisis.

Particular attention should be paid to the threat of tipping points.

No amount of action to reduce emissions will be sufficient if it allows any increases in emissions above current rates and fails to cut emissions quickly enough to remain within the budget set for the 1.5C limit. There is no “good enough” for the physics and chemistry of the climate system. We have left action so late that there is only failure to do enough.

At the time of writing this comment, there are extreme flooding events underway across NSW, which clearly have been exacerbated by the warming of our climate system. Areas not flooded previously have been inundated with property and lives lost. One example of the increase in severity of flooding is the Lismore floods of earlier this year. Flood level reached 14.37m, well above the 1 in 500 level of 13.4m (refer 2014 Lismore Floodplain Management Plan, Appendices Figure A). Some have estimated the flood level to have been 1 in 1000 to 1 in 5000 year events.

The Australian climate has warmed by approximately 1.4 °C over the 1850 to 1900 average and is expected to get hotter still. Not only must we cut our emissions, but we must also try to adapt to the rapidly changing weather patterns and increasing extremes of weather that we are expecting to experience in this and the next decade.

COMMENT

We support the introduction of the EPA Climate Change Policy and EPA Climate Change Action Plan 2022-2025. However, we believe these documents must be more ambitious and contain more urgency towards reducing emissions of GHGs.

The documents include many good ideas and processes that will help us face the challenge of climate change. In particular, we support assistance to the renewable energy sector and electric transport. However, both the Policy and the Plan are missing the one most important part of problem – setting of the necessary targets.

The Plan must include credible targets for emissions reductions and provide an economic sector based process for achieving reductions.

The latest science and reporting indicates that 1.5C should be regarded as the absolute maximum allowable warming to avoid climate catastrophe (refer Tipping Points in NSW Community Plan (2022)). This temperature is the threshold to a number of tipping points in the climate system and is the goal set out in the Paris Agreement and later UNFCCC agreements.

We note that the Net Zero Plan Stage 1: 2020–2030 is not sufficient to enable the 1.5C target to be achieved. The NSW Government website states “*Overall output of carbon dioxide in the atmosphere will continue to rise under both scenarios, contributing to greater concentrations of carbon dioxide and amplifying the effects of climate change.*” (<https://www.soe.epa.nsw.gov.au/all-themes/climate-and-air/net-zero-plan-stage-1-2020-2030>) Ambition must be increased.

We recommend the adoption of the emissions reduction profile set out in Pathway 2022 (noted above). We note that due to time pressure, this pathway would need to be revised each year in the light of global efforts to cut emissions and the remaining budget of allowable emissions.

The Plan must include strong and reducing limits in order to remain within the remaining budget and tackle the demands of the climate crisis. A clear pathway must be stated in the Plan, designed to be consistent with the scientifically necessary cuts to give us a chance of meeting the 1.5C goal. Regulations should then be drafted based on this pathway.

Any limits on release of GHGs must include yearly reductions in the allowed emissions levels to have any real meaning. It is useless to allow emissions to continue at current rates when the science clearly requires rapid, deep and urgent cuts to emissions. Under no circumstances must there be any increases allowed in GHG emissions. Under no circumstances must any industry be allowed to create any new sources of GHG emissions. We reject the use of “emissions intensity” style emissions limits.

Market based instruments - A price on carbon is by far the most economically efficient means of effective reductions in GHG emissions. Refer to the Australian Carbon Dividend for a politically acceptable means of placing a price on carbon. Such a price should be sufficient to create change in the market and rise at a rate sufficient to drive the changes and innovation necessary to make the change to the zero carbon economy.

This submission mainly deals with mitigation as this is the most pressing issue. The scale and scope of climate change is very large and covers every field of human endeavour. We recommend separating out the adaptation from the mitigation efforts to allow clear planning for both. For example, it is very clear and simple what needs to be done for mitigation - reduction rapidly to zero. Comment on adaptation is included at the end.

Review: The Policy and Plan should be reviewed every 1 year, not only in 2025. Reporting must be at 6 monthly intervals. Time is critical here. Climate impacts will evolve rapidly in the next 5 years, requiring government to be more flexible. Hence the need for more regular reporting and review of any policy, plan or regulation related to greenhouse gas emissions and climate change.

Any regulations created under this Policy and Plan must add to the requirements of the Safeguard Mechanism.

Policy Figure A3. The implied emissions allowed in 2040 and 2050 in this Figure are totally unacceptable. The science is very clear on this: that emissions must stop rising, must rapidly reduce from current levels and must reach zero around 2050. Any emissions exceeding the profiles laid out in the IPCC SR15 or the UNEP Gap Reports simply add additional burden to our children and grandchildren to implement negative emissions after we reach zero emissions. (Negative emissions are where GHGs must be physically extracted from the atmosphere and permanently stored. There is no profit to be made in doing this, so governments and communities will need to directly pay for this as a legacy tax.)

Plan P8, Before the co-benefits, insert the following:

Benefits of Climate Change Action

“The need for the EPA to take pro-active action to mitigate and adapt to climate change springs from the fundamental responsibility of government - to protect the community from damage and care for those suffering impacts. The warming of our global climate will destabilize the environment and thus threaten the security of individuals, families and the Australian and wider global community. The atmospheric physics and chemistry revealed by our scientists means that to not act is to commit ourselves to a de-stabilized climate system that presents a real threat to human existence through a collapsing environment.”

Plan P10, Time frames – As noted above, time is pressing and emissions reductions must start immediately. The process of setting the program must be fast-tracked to ensure the goal of 1.5C remains in reach. We note that any adaptation will be useless unless this goal is achieved.

Plan P18, CCMAPS – Climate Change Mitigation and Adaptation Plans must be prepared based on reputable scientific information. The lack of any targets in the Policy and Plan make this unlikely as there will be no rigor

in preparing mitigation pathways. The Policy and Plan must be given stature by inclusion of a adequate Pathway for emissions reductions.

Plan P20, Planning approvals process – The planning process is critical to adaptation. Additional detailed commentary is included at the end of this document on the impacts of climate change and the implications for planning and development approvals.

Plan P31, Mitigation – Pillar 2 is the core of the Plan and must be more ambitious. All economic sectors must be tasked to reduce emissions. Most of the necessary emissions reductions will come from the energy and transport sectors, as there are already viable alternative technologies available now and large improvements are expected in these technologies in coming years. Emissions reductions in these 2 sectors must start immediately and be deep, with 100% reductions expected by 2030 or shortly thereafter. Other sectors will need to be addressed over the longer period to allow for development of suitable technology (e.g. cement production and steel).

Plan P26, Continuing Action 7 (and others) – It is clear that we must not allow any new development of fossil fuels. To this point, we expect that no new export of fossil fuels will be approved. This will by default reduce fugitive emissions. In any case, export of fossil fuels will need to wind down rapidly and eventually be brought to an end. The Policy and Plan must both acknowledge this possibility and provide guidance for the regulated community on the changing of business models.

Plan, CFCs – There does not appear to be any reference to the very high global warming potential fluoridated gases (CFCs and HCFCs). These must be included in the Plan with targets to ensure proper coverage of all GHGs.

Plan P32, Figure 4 – We reject the suggested remaining emissions by 2050 indicated in this Figure. There is simply no way we can expect to stop a complete meltdown of human civilization if we allow the climate to spiral into chaos. This Figure along with Figure A3 in the Policy must be deleted along with any suggestion that industries can continue to emit emissions in this manner.

Plan P35, Sector targets not compulsory – This is unacceptable. We cannot negotiate with the climate. Sector targets must be enforced to be of any use. Without firm sector reduction targets that ramp up over time, there is no reining in of emissions and atmospheric concentrations will continue to grow with consequent climate chaos. This must be removed from the Plan or it is effectively useless as a tool to tackle the climate crisis.

No new licenses to emit GHGs must be allowed. It is clear that we cannot fund any new sources of GHGs or we will fail to achieve the Paris goal the 1.5C limit, see general comments).

Plan P37, **Offsets:-** Any offsets allowed must be certain to reduce the over burden of GHGs within the climate system. For example, growing trees does not achieve this outcome because the carbon captured by the tree or soil can be released in a fire or through rotting of the dead material. All offsets must be sourced from the shutting down of other emissions sources such as coal fired power stations or fugitive emissions due to mining of fossil fuels or the capture and destruction of F-gases. The aim being to reduce the global emissions of GHGs across the whole of the economy in order to achieve the 1.5C goal (see general comments).

FINAL COMMENT ON MITIGATION

The Policy and Plan are supported in principle, but if they do not aim to meet firm targets consistent with the science, then they are useless in the fight to tackle climate change.

The EPA either is given the appropriate tools and ability to enforce limits or it is an exercise in futility. We no longer have the luxury of time to consider how to achieve what is required, we simply have to get on with the job. This next couple of years is our last chance to try to save the world as we have known it. The court has ordered the EPA to regulate greenhouse gases as pollutants. If you do not intend to provide the EPA with the required tools, then don't waste more time on this and place the effort elsewhere. Such wasted effort is simply a distraction, sapping precious resources and time which prevents us from doing what is necessary.

ADAPTATION

Adaptation is far more difficult to deal with than mitigation as it relates to the historical precedent of how we used to do things before (e.g. building cities or locating agriculture in flood plains or on the coast) and includes the difficult to predict changes we may face. For example, there may be sudden or large scale sea level rise or faster than expected increases in extreme events. There may also be sudden major changes to weather patterns where the climate system rapidly flicks to a new paradigm

We note that investment of the Australian community's financial resources on land that we later have to abandon due to climate impacts, would be a serious waste of the communities limited resources. This money would be better spent building on land that is away from threatened areas. We know enough about the coming impacts of climate change to anticipate where impacts are likely to occur and so we must plan for them.

We are likely to be hard put to adapt as it is, and there will be no money for many people who will need it. It is critical that our planning instruments, strategies and policies recognize and anticipate climate change impacts so that our people are not left disadvantaged by risks that we should have seen coming.

Finally, we urge the NSW Government to review the all relevant policies, plans and regulations to incorporate the expected impacts of extreme events in all mapping, objectives, strategies, and suggested growth areas as a matter of urgency in order to help the community through the coming challenges of the climate crisis.

Climate Future thanks you for your attention and looks forward to seeing our recommendations incorporated into the final Policy and Plan.

Further information is provided below on planning in the context of the impacts of the climate crisis.

Climate Change for Planning and Adaptation of the Community, NSW

Background

Climate Change is increasing the intensity and in some cases, the frequency of environmental impacts on the built environment. The recent IPCC AR6 WGI Report: The *Physical Science Basis* has set out clearly that widespread changes have already occurred and that *unless there is immediate, rapid and large-scale reduction of emissions* the climate will become much more dangerous.

[Reference: Intergovernmental Panel on Climate Change, 6th Assessment Report, Working Group I, first part (7 Aug 2021): *The Physical Science Basis* (IPCC AR6 WGI).]

What this means is that if we don't act immediately, we will be heading well above the goals of the Paris Agreement, which is disastrous territory. There currently appears to be little global political will to do what is required. The consequences are there will be very serious changes to heatwaves, bushfire, drought, flooding and storms on top of the changes that we have already seen and those baked in by emissions to date.

People will be relying on the built environment to protect them from the worst of these changes. Whatever action we take on emissions, we must also adapt to the already locked-in changes that we can anticipate. We must prepare the community for rapid and escalating changes to extremes that will impact directly on people, the food supply, water and the biosphere of plants and animals that we rely upon for survival.

Below is information on some of the impacts expected and discussion of the implications for adaptation decisions taken by local and state authorities.

1 Adjustment of Planning and Building Regulations

Increasing occurrence of rarer events will put much of our current infrastructure under stress and render current design rules inadequate. Measures that need to be undertaken to adapt to the impacts of climate change will depend on the speed of the changes and the time horizon being considered when making decisions.

A typical example is that of stormwater drainage systems. As storms are becoming more intense, we are seeing the design event for drainage systems exceeded much more frequently than before. Much of our current infrastructure will be under-designed for the extreme events nature will throw at us. Increasing flood water levels, localized flooding and bushfire attack are the most obvious threats that planning decisions must take into account. We must act immediately to respond to the increased hazard to avoid high costs in the future to rectify poor decisions made today.

Planning and design standards and regulations will be changed to follow the trends. Older existing building stock and other infrastructure will be left exposed to increasing damage. Decisions today are likely to place people in situations that will be increasingly exposed as climate change impacts unfold unless these conditions are taken into account during planning and design.

2 Increasing Risk of Extreme Events

Heatwaves

Extended hot weather and longer extreme heat waves are expected to occur in all locations. As the climate heats up, extreme heat waves will increase in frequency and become hotter. We need to be prepared for more heat than we have seen before.

This means health impacts such as the risk of heat stress will increase for outdoor workers, shoppers, travelers, those without air conditioning, etc. Dehydration and heat stress that progresses to heat stroke when the body starts to shut down from overheating will increase. Worsening of kidney disease, heart attack and

respiratory issues such as asthma are some of the health problems that arise from increased heat. People entering cars parked in the sun will be exposed to dangerous levels of heat.

The urban heat island effect must be considered when making decisions. Street trees and bush areas will significantly reduce the urban heat build-up that occurs over open areas, roads, etc. and relieve electricity demand from building air conditioning.

Cool zones for the public and refuges such as shops, libraries, office buildings, etc. will become focal points for movement of people. It is likely that emergency cool shelters and drinking water supplies will be required in some public areas such as sports fields, beaches, parks and shopping areas.

Climate change also increases heat effects on transport (e.g. bent railway rails, melting road surfaces, damaged bridge decks, etc.) and on the vehicles that use them. Mechanical equipment may also be affected by heat causing breakdowns and increased need for emergency response and ongoing maintenance.

Bushfire

The entire NSW Region is vulnerable to bushfire. The increased scale and ferocity of wildfire seen during the recent Black Summer bushfires was a grim warning of worse to come as temperatures increase further.

The Sydney and Central Coast regions were lucky to avoid the sort of damage that occurred to towns both to our north and to the south of Sydney. The intensity of the fires meant that areas burned again, even though they had been burned off just 6 months before. The largest of the Black Summer fires were all started naturally (e.g. lightning strike).

Fire weather is what drives bushfires. The increased heat of the hotter climate dries out fuel faster and makes it burn more rapidly when the fire hits.

Fire fighting will become a regular occurrence with the fire season extending through September to February. There is likely to be increased focus on provision of access for fire fighters. Roadways and cleared areas around suburbs will be required.

Building design is also likely to change as it becomes clear that our buildings are vulnerable to extreme fire storms. Buried structures may need to be approved including both housing and specifically designed fire shelters.

There will be a call for more clearing of bush, perhaps even removal of street trees and garden plants. This must be balanced against the need for cooler urban landscapes to ameliorate heat wave conditions.

All locations will require a detailed fire plan as part of the planning process, including access for fire trucks, strategies for fighting fires, evacuation routes and guidance for residents and fire refuge locations. Refuges will need to be provided with sufficient protection to allow locals to reach safety quickly when fire is close.

Flooding

The increasing temperatures in our climate system mean that rainfall intensity is increasing. This means that when it does rain the amount of rain that falls is increased over what has occurred in the past. This leads to more flooding. The behavior of weather systems also appears to be changing with some systems lingering for longer periods before moving on. The result is that rain can continue to fall for many days over one area leading to increased risk of flooding of the region.

Current drainage systems are generally designed for 1% AEP storms. These storms are already occurring much more commonly. The likelihood of 1000 year events (0.1% AEP) is becoming a reality in consecutive years. This means that street drainage is likely to be overwhelmed on a regular basis increasing occurrence of street "flash" flooding.

Escape routes and emergency shelters will be required as will increased emergency rescue equipment (e.g. boats). Location of services such as sewer systems, stormwater drainage, roads and bridges will need to be reviewed.

Location of housing and floor levels must be revised as a result of this increasing risk of flooding. Current housing stock will be vulnerable and new housing must be located differently and constructed to withstand the increased threat.

Coastal erosion/ inundation

Coastal property will be most vulnerable when ocean storms occur (see also under East Coast Lows below). Occurrence of extreme high tides together with ocean storm conditions will increase the risk of erosion and inundation across the foreshore areas of the Region.

Storm wave action causes sand on our beach fronts to be moved out into deeper water offshore. Over time sand will return as the non-storm waves and wind move sand back onto shore and up the beach slope. If another storm occurs before this returning sand has had time to build up, even more sand will be removed from the beach front leading to a gradual recession of the beach inland. As storm intensity is increasing there is increasing removal of sand from the beach and the coastal beachfront dune, resulting in recession of the dune system.

For locations where wave action is of less issue such as Brisbane Water and the Lakes, inundation may be the more likely hazard. Foreshore structures such as sea walls and erosion protection will be put under increasing stress and design must take account of this change.

Emergency evacuation routes, provision of shelters and evacuation equipment will need to be considered here similarly as for flooding in general. The added hazard of ocean, lagoon and estuary wave action during the emergency response must be part of adaptation planning.

Allowing construction on the beachfront dune system must be seriously re-considered in the light of the recent IPCC AR6 WGI Report (and many other scientific reports dating back at least 30 years). Such development is destined to be lost in the longer term leading to the loss of the capital value, which is considerable when taken across the whole of the Australian economy. Mortgage insurance may become more and more difficult to obtain, leaving owners of property exposed to significant financial loss.

East Coast Low Pressure Systems

East Coast Low Pressure Systems (ECLs also termed extratropical storms) impact on our Region from the ocean. They can lead to high winds and heavy rain. IPCC AR6 WGI states that storms of this type have already increased in number and moved poleward. They are also becoming more intense with heavier rain and possibly longer periods of high winds or stronger wind gusts.

The most common impacts of ECLs on the coast of NSW are heavy rain, flooding, localized flash floods, coastal erosion and wind damage (with the accompanying falling of trees resulting in blocked roads, damage to buildings and loss of electricity supply). More detail on these events is given under the headings for the specific extremes.

Impacts on ocean front erosion are accompanied by increased estuarine water levels. The storm tide effect combined with the south-westerly wind and wave development towards the shore and in the Hawkesbury, creates increased water levels inside estuaries and coastal lagoons. The water in Brisbane Water finds it harder to escape through The Rip at low tide and instead builds up further as the tide turns and starts to come in again. Flood levels inside Brisbane Water and the coastal lagoons are well understood with Council reports available that give levels at many locations around the foreshore.

The impacts of ECLs occur all at once. So decisions need to take this set of conditions into account when approving developments or anticipating the communities response to emergencies. The location and type of new development and the vulnerability of the current building stock must be considered in the light of these conditions.

Drought

Drought is a longer-term hazard which unfolds over time. Due to the increased heat in the climate system, drought conditions can deepen more quickly than before. For example, dam water levels dropped more quickly during the recent drought up to 2020 than they did during the millennium drought.

Providing our Regional water supply is likely to include raising of dams, desalination plants (to be constructed rapidly during a drought) local stormwater capture, ground water, household tanks and water recycling. Provision of new local medium to small dams and other storage facilities may be part of the strategy.

Wind

There is a general indication in IPCC AR6 WGI that average winds in Eastern Australia will increase on current trends. However, an increase in average winds may not mean increase in extreme winds, although there are signs that thunderstorm activity is increasing. Trends in cyclonic activity are not clear for Eastern Australia except that it is noted that cyclones are travelling further south than they have in the past. As this trend continues, buildings in northern NSW would need to be strengthened to resist the higher wind speed risk.

It is clear that for the design of structures for extreme wind forces, continuing as we are without rapid and large-scale cuts in emissions leaves all possibilities open. In a 3 °C or hotter world, all bets are off.

Sea Level Rise

Sea levels are slowly rising at present with only a few mm per year, which is adding additional pressure to coastal foreshore structures and beach sand dunes all around the globe. At present the effect is small and only changes the storm levels slightly and increases foreshore erosion. The IPCC AR6 WGI report projects up to 1m by 2100 expected under current government policies but does not rule out exceeding 1.7m by 2100. This is higher than the projections of the previous AR5 report from 2014 and may be greater still if the major ice sheets of Greenland and Antarctica reach their tipping points – a very real possibility within the next decade (refer NSW Community Plan (2022)).

The influence of sea level rise (SLR) will be of relatively small importance for the current and next decade, but for adaptation purposes, any decisions that look out to more than 50 years must regard it as a very significant consideration. A 2009 Government study indicated that Australian foreshore housing at risk of inundation from a 1.1m rise in sea level was worth \$63 billion (more than double that in 2021 dollars).

This threat must be part of the consideration of the development of any low-lying or foreshore land. Such locations are likely to become a serious flood problem at some point in the future. Simply designing for a raising of building floor levels or use of fill is dangerously flawed.

For example, a whole suburb designed to a certain level would become vulnerable all at the same time when flooding levels reach the particular design level used for the suburb. Any evacuation routes would become impassable. Rising sea levels would render the whole suburb uninhabitable at some point in time or require expensive public works to protect it.

Note: This is actually a very significant part of the longer term impact of climate change. The IPCC AR6 WGI report, which assesses the sum total of all the climate research currently available, cannot rule out sea level rise of 5m by 2150 reaching 15m over the following 150 years (by 2300). The disruption following the loss of our coastal cities could not be described. What we do to cut emissions over the next couple of years and towards 2030 will decide the outcome for the melting of the Greenland and Antarctic Ice Sheets which are the main cause.

3 Location of new large-scale development

The changes occurring now and those baked in due to historic emissions will require widespread reconsideration of where we build and how we build. The degree of change in environmental constraints such as rainfall and temperature issues is already reasonably well known. This is mostly because these impacts are here today and have been well studied by science. We know that increased flooding, heatwaves, bushfire and drought will occur increasingly over the next few years.

When looking out 50 to 100 years, additional considerations make themselves felt. The discussion has not been had as to what the community expects will be done with existing cities near the coast let alone new large-scale developments such as whole suburbs when sea level rise (SLR) begins to impact on large areas of occupied land.

Take, for example, location of a new suburb on land at say 6m above sea level. Previously, this would be acceptable because there is no problem with applying normal flood modelling to establish where housing should be located or how much land space can be filled to raise levels.

In the light of climate change, we must assume the global community implements one of the emissions reduction scenarios set out in the IPCC AR6 WGI (or previous IPCC Reports). Consider these two alternatives for our proposed suburb:

1. Sufficient action is taken to cut emissions, so SLR is around 0.8m by 2100 and 1.3m by 2150
2. Insufficient action is taken to cut emissions leading to 5m in 130 years from now (1.7m by 2100, 5m by 2150, 15m by 2300).

At present, it seems that pathway 2 is far more likely given the lack of sufficient action by the Australian Government and many others around the world.

For option 1, the suburb could be designed for this 0.8m rise. Following 2100 SLR would continue, reaching faster rates. For example, SLR could approach 20mm per year around 2100. In the longer term, tides or storm impacts might not reach the suburb at all and settle to a long term upper limit over more than 1000 years. This would be preferred from a climate change point of view, but the probability of global society achieving this is rapidly disappearing.

For option 2, inundation is likely to impact on the suburb within the life expectancy of the buildings constructed there. Having a predictable life expectancy is OK only if people accept that their property has a finite life and that they will need to give up their property when the time comes. This is by no means clear in the current understanding of ownership of land and the buildings it supports. Other possibilities for handling such property could be developed, but there are currently no proposals to do so.

This report does not seek to address this issue but notes that planning and adaptation policies at state and federal level will need to consider the likely outcomes for Australian property owners and current planning and adaptation decision makers should be considering this as part of their assessments. Before climate change was an issue, such a proposed suburb could be expected to continue in perpetuity.

Some of our cities have been in place for over 2000 years. Government must answer the question: Is it reasonable to spend hundreds of millions of dollars on establishing a new suburb when it has an expected life of only 130 years? Would not such significant investment capital and human effort be better spent on land where we could reasonably expect the development to last much longer? Climate Change requires us to take this seriously.