Victorian Coastal Forum 2009: Summary

Session 1: Climate Change

Speaker 1: Dr John Church, Principal Research Scientist, CSIRO

The current problem

The threat of sea level rise is threatening our coastal townships. The current rate of sea level rise is over 3mm/year with this rate expected to increase to 15mm/year by the end of this century if temperatures continue to increase. Thermal expansion caused by increased temperatures is the second largest contributor to sea level rise.
There are three main contributors to sea level rise, melting glaziers and ice caps, thermal expansion and the melt of the Greenland and Antarctic icesheets.

- Total Sea Level Rise = Mass (water exchange) + volume change (thermal expansion)

The future

IPCC assessments indicate the highest rate of sea level rise is 0.88m by 2100, however, due to the uncertainty surrounding the icesheets melting, this amount may increase. This estimate is based on satellite and in situ observations. Sea level rise of 18-59cm is often miss-quoted in the press. This is to 2095, and not an accurate figure. This rate only included data that is well-represented in current models (ocean warming and melting glaciers). Sea level rise in the 20th century is double that from the previous century, and we are approaching the upper limits of projections.

The solution

We need to adapt for inundation, coastal erosion, wetland loss, aquifer contamination and more frequent and severe storm events. Mitigation is also an important factor. We need to mitigate to avoid the most extreme scenarios. Short and long-term emission goals are essential. We need to reduce uncertainty by increasing data and modelling the oceans and icesheets. We also need to implement/improve early warning systems.

For further information go to www.cawcr.gov.au

Speaker 2: The Honourable Tom Roper

Climate Change – Coastal implications

Coastal change impacts – a 1m rise in sea level is more likely than a 50cm rise, but it has been suggested that sea level rise may reach 2m by the end of this century. We cannot avoid the effects of anthropological interference in climate change. It is our coastal population that is most vulnerable to climate change due to rising sea levels, with this number increasing worldwide. The population exposed to coastal flooding will increase 3-fold by 2070 as the area of risk increases to 150m from the shoreline.
It is not just our coastal population at risk, but also our infrastructure. A US transportation study looked at the impact of sea level rise on the tunnels, roads and bridges on the Gulf Coast. Results indicate that a sea level rise of 4ft (1.219m) would cause flooding to 27% of major roads, 9 major railway lines and many ports and harbours. The threats to wetlands/environment are also an important issue to consider, but are not given much attention.

What is needed?

We need to stress the importance of mitigation and adaptation. We also need to look closely at the policy frameworks in place and update as necessary. A key element to determining risk is accurate data and adequate flood mapping to identify the areas at risk. We need to identify the problems and objectives for each individual area, and implement a plan specific to that area. Included in the plan should be a requirement to monitor and reassess the plan at regular intervals. We also need to plan for uncertainty, even if the possibility of occurrence is slight.

The challenge

There are many possible solutions to protecting our coastal townships from the impacts of climate change. These include, defending with infrastructure such as sea walls, setting back the existing developments, land acquisition by the Government and incorporating climate change into our planning tools to ensure new projects take into account sea level rise at the planning stage.

Our cities and towns are not currently built for climate change. Australia's planners have a large challenge to prepare them for the future. We need to develop strategies to build resilience to the current vulnerability and future uncertainties.

Speaker 3: Clive Attwater, Associate Director SGS Economics and Planning Pty Ltd.

Coastal adaptation to climate change

We are facing long-term systematic change, but we don't know how severe this change will be, or how quickly it will come about. We do know that there will be increasing coastal hazards through inundation, erosion and rising water tables. Mechanisms must recognise the long time frame of the problem as we don't know when/if it will end. We need a framework for responding adaptively in the long term.

Victoria has 96% of the coast within public ownership. This implies a higher rate of public responsibility. Our three options for adaptation are retreat, accommodate or protect and we need to choose our option carefully.

Due to the uncertainty regarding the areas at risk of climate change, it is not realistic to not develop in any area with the possibility of being at risk in the future. We need to focus on the existing built assets. If we develop a framework for dealing with existing developments, then all new developments can be designed within that framework.

The VCS (Policy 2.1.7) states that "New development that may be at risk from future sea level rise and storm surge events will not be protected by the expenditure of public funds." This is a step in the right direction, but should be extended to include:

- Risks from the sea need to be actively managed to keep them at an acceptable level; and
- Property owners and others benefiting from the management should bear the cost.

Risk management in relation to sea level rise should be obligatory, a collective/community response (possibly using CAP's as the framework) and the level of risk should be acceptable.

Bearing the cost

Property owners and others benefiting from risk management should bear the costs. New developments should be paying now (VCS Policy 2.1.7). Existing developments should pay in the future, possibly by using a 25yr transition period. If nothing is done, then the Govt/public is subsidising people to live in a risky area!

The natural environment

The natural coastal environment is also under threat (eg dunes, wetlands and salt marshes). These will need to be moved inland if they are to remain. This is only possible in undeveloped areas due to barriers created by roads and infrastructure.

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Questions

Q1 *(To Tom Roper) What was the feeling in the room at Copenhagen that could not be put into the IPCC report?*

There was a strong sense of urgency for mitigation, with both aggressive short term and long-term goals. There is a quota of emissions before we reach major consequences and we have already used part of this quota. Any further delay will make long-term goals more challenging and difficult.

Discussions in Copenhagen said that further work done since IPCC '07 increased the sense of urgency for mitigation. The sense of urgency has not yet reached those who will be doing the work in the future. There is a gap between what the scientists state needs to be done, and what the different countries are prepared to implement. In the next 12 months, this gap will grow.

Q2*. How do you respond to sceptics on climate change?*

We need to confront sceptics and educate groups where sceptics are. We need to communicate the risk of climate change by utilising extreme events, and their increase in severity and frequency.

The majority of Councillors within Local Government do care. However, there are a number of frameworks that they need to operate within. There are many instances where Councillors have tried to prevent specific developments, but VCAT has overruled their decision. There needs to be an aggressive policy to address the issue across the coast.

Q3*. How do we ensure that the range of options for adaptation include broad policy responses so that when the most appropriate response is a policy one, (that is disallowing properties to be passed on to the next generation), is applied at a local/regional scale?*

We do need to consider these policy options, but there needs to be discussion. We can set up processes so signals are available and people no longer want to invest in these areas. People living by the coast should be paying to protect these areas. We need those signals now, not when events are more frequent.

The problem is a general one and should not be paid for by individual households, especially as some areas are within low socio-economic areas.

Local Govt and State Govt can't afford to pay in the short term. We need a 25 year transition period.

There are negative economic impacts to starting this process. That is, people would begin to sell their properties and house prices would drop. The consequences would be dramatic.

Good preparation is the key. We need to avoid separate silo's b/w government, insurance, banks etc. There must be more communication including pre-discussion b/w Government, insurance and the communities. Usually this only happens after a disaster but there needs to be discussion now.

***Q4**. What key initiatives are required to align agencies and legislation so that effective adaptation can be implemented?*

There are a number of mechanisms in place for coordination b/w government and agencies. They don't always work as well as they should. There are a number of forums for State and Fed Govt. COAG set up working groups after the election of the present Govt, including one on climate change, composed of State and Federal Govt's. Mechanisms are available for others to utilise. There is no easy answer to that question, it's hard work.
The issue is made more difficult as each area has its own approach to the same issue.

***Q5**. (To Clive Attwater) I agree with your view that those who benefit from risk management should bear the cost, but given that many people may not understand the risks, how does this policy stand up against the legal concept of duty of care?*

The framework proposed is a change from the status quo. Many coastal areas do not have a good assessment of risk. It is a major basic task to identify the risks in individual areas. The first stage is to inform people of what the risks are. The second stage is informing people of what the possibilities are in terms of managing risk. There are things that we can do, but they have consequences in terms of monetary cost and cost to the environment. Real education comes from community debates about the options for adaptation. We need lines on maps to show people where they stand.

***Q6**. Many people are looking for the magic box for implementing adaptation to climate change. What is the process, document, model or strategy that we can employ? Are they still emerging or are there good ones that can be recommended?*

Any framework needs to be adapted to the particular place. We should have all the States looking at where the best practice is and attempting to apply that to Aus. Look at Europe, US etc.

***Q7**. One of the issues with planning for climate change of 0.8m by 2100, the increased events of drought, fire and storm events we are seeing today, how can we use this as an evidence base approach rather than prediction?*

Extreme events are impacting us even without climate change. Attributing extreme events to climate change is a difficult process. The frequency of these events can change quite dramatically. It is also a challenge internationally. Weather and climate are different things and we need to make the distinction. There can be a positive outcome of extreme events, in that they allow us to measure how our existing systems cope with these events. They provide a good measure for how we can improve our existing systems.

***Q8**. I was interested in the introduction of the 173 agreement on the titles. Clearly the municipality has done enough work to identify those properties at risk. Two elements you made mention of, acknowledging the risk by the property owner and secondly the climate change response plan which needed to be produced by the applicant. Why is it not appropriate to have the municipality and a collective on a community wide basis prepare the climate change response plan?*

This is a very political issue. We were fortunate that we were doing work into inappropriate subdivisions. There is a need for the Council to do the work, however, in the event that Council

does not agree with the recommendations, Council can put the responsibility of development onto the developer. There also needs to be clear State Govt policy that is conveyed to VCAT.

***Q9**. Two themes coming out of today. One is the level of uncertainty in the data and the modelling. Another is about getting data at the local level in order to enable adaptive efforts, with particular talk around lines on maps. I was recently at Greenhouse 2009 and a lot of the scientists there were cautioning against the deceptive certainty of lines on maps. How are you communicating uncertainty when you're working at a local level on adaptation and how are you engaging the public with the idea of uncertainty?*

We had lines on maps, but we ensured that people knew they were identifications of hazards and communicated that more extreme events do happen. We Identified the lines as indicative. Areas outside the lines are not risk free, they only have a reduced level of risk.
There needs to be extensive community consultation.
We need to be cautious as to how we use the 1 in 100 year event. These events are becoming more frequent, up to 1 in 5. We also need to take into account that many people are affected outside the 'safe line'.

Session 2: Population and Growth

Speaker 1: Barbara Norman, Research Partnerships Manager, Global Cities Research Institute, RMIT University.

The extent of the problem
The State of the worlds cities: Harmonious cities project conducted by the United Nations identified that in the 20th century sea levels rose 17cm, and the low elevation coastal zone (less than 10m above sea level) contains 3,351 cities and 10% of the worlds population. There are currently 100 million people living less than 1m above mean sea level. In Australia, 86% of the population live in the coastal zone. Harmonious urban growth has to go hand in hand with disaster mitigation and vulnerability reduction.

Current research
We are already seeing the potential impacts of climate change on the coastal environment. These impacts are just as evident in Australia as they are overseas. The DSE is currently undertaking the Future Coasts program which utilises digital elevation modelling for the length of the Victorian coastline to identify high risk areas. From the modelling we will see the areas at risk from different levels of sea level rise.

There is also work being done internationally. The European Environment Agency conducted a coastal economic evaluation to identify the cost difference between having adaptation measures in place, and having no adaptation measures in place. The evaluation found that for the European Union it would cost:

- $1.5billion US/annum – with adaptation
- $18billion US/annum – without adaptation

The solution
There are strategies that can be used to implement adaptation into the current environment. These are, metropolitan and regional plans, and state land use plans. There are also processes such as, assessment processes, criteria and triggers, and the environmental impact process. Management of the environment needs to take a multi disciplinary approach

incorporating land use planners, emergency management officers, infrastructure providers and natural resource managers.

Possible planning responses within Australia are environmental impact assessments for coastal projects, both State and National, to educate the community and build community resilience and a stronger connection between urban planners, natural resource managers, emergency services and infrastructure providers.

Speaker 2: Alan Stokes, Executive Director, National Sea Change Taskforce.

Coastal townships

Australia's coastal population is increasing at a much higher rate than that of the countries average. (The population of the Gold Coast in 1976 was 100,000, by 2007 it had reached 525,000). The rate of growth continues at about 3.5% every 5 years. There are currently 85% of Australians living less than 50km from the coast. The turn-over of the population in coastal areas can be as high as 45%.

The beginnings of our coastal communities were due to industries such as fishing, forestry and farming. As these industries grew, the townships grew and began attracting a population outside the original industry. Coastal townships were not designed to be growth areas, but we see a higher rate of growth in coastal areas than other areas. Today, the largest increase in population growth comes from working families.

There is also an increase in the aged population in coastal areas. This will cause challenges in terms of servicing the aged population with aged care facilities and hospitals etc.

Progress of the National Sea Change Taskforce

The National Sea Change Taskforce has conducted 3 stages of research to address the challenges facing coastal Local Government's, due to coastal urbanisation. These are:

- Identifying the major issues
- Determining the best practice measures to address the major issues
- Planning for climate change

For further information go to: www.seachangetaskforce.org.au
Or contact info@seachangetaskforce.org.au

Speaker 3: John Ginivan, Executive Director, Planning Policy, Dept. of Planning & Community Development.

The sea change phenomenon has seen population growth in coastal areas. Although there are increases in the population of coastal communities, there has also been substantial work done to improve the way communities interact with the coast, and greater value is placed on the natural environment. This suggests that although population growth has occurred in coastal areas, the ecological health of these areas has increased.

Population change

At the State level, the majority, (85%), of population growth occurs within the boundaries of Melbourne. By 2036, Victoria will require an extra 600,000 houses. This is 10 years earlier than forecast. The increase in housing demand comes from the Government increasing overseas

migration levels and the long-term shift in demographics. (Such as the increase in the number of single families meaning more houses are needed for the same number of people.)
B/W 2001 and 2006, 86% of growth in Victoria was in Melbourne, and growth in regional areas was in areas identified as regional centres. Many believe that the retirement of the baby boomers will see a massive population increase in coastal locations. It is possible that those retiring to the coast already own property and will not increase the demand for housing.

Adaptation
The contour mapping being undertaken as part of the Future Coasts program is important when thinking about adaptation (in terms of engineering, roads and water supply, pipelines, sewerage etc). In terms of climate change planning, it needs to be specific to an area. We need to develop new tools so they are available when we need them. Clause 15.08 of the State Planning Policy Framework was introduced to incorporate climate change when planning in coastal locations.

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***Q1**. As Melbourne moves towards 5 million, many of our activity centres are Coastal, and the review of the Planning & Environment Act does not address this. There must be a Policy.*

The purpose of the Act is to create a system to manage land use and development in Victoria with property rights as a central pillar. The P&E Act review discussion paper is out for review and anyone can make a submission to the Government.
We are grappling with practical tools that work for both the decision makers and the community. Recommended 3 tools: 1. Environmental impact assessment process should include climate change. 2. Scenario planning. Engage the community and decision makers 3. Evidence based research.

Climate change indicators are included in the planning process. The problem with EES is that they generally occur after the project has been approved. CO2 emissions are a trigger point for EES's. Climate change is in the P&E Act now. There is debate as to whether climate change should be incorporated into the existing Acts, or whether there should be a climate change Act. A climate change research report recommended that climate change be a mainstream element in all planning schemes and strategies. Some States have done this. There is a lack of consistency throughout Australia, there should be National level.

***Q2**. Should catchments and coasts be managed in an integrated way? Should they be through combined authorities or not?*

We need an established forum to bring interests together. There is a continuum between catchments and coast. The current institutional arrangements are at the core of conflicting responsibilities. We need to address inconsistencies, duplications and overlapping. We need to review the institutional arrangements through parliamentary inquiries. All stakeholders should be brought to the table to achieve this. The VCS is best practice for Australia as it integrates conflicting issues. The VCS should be adopted Aus wide.
Local Government's are good examples of place-based management, through integration with stakeholders and experts. There is not necessarily a structural problem. Who is it a problem for? What works well for different Council's may be a problem for Govt due to the different processes used by different Council's, but not a problem for the individual Councils.

***Q3**. Victoria has a huge Biodiversity loss. How do we recover an increased biodiversity while responding to climate change? The quality of human life is not separate from the quality of the natural environment.*

There is work being undertaken by the Government and Victoria's National Parks Association. NGO's for Victoria Naturally Alliance are working to link existing habitats. It is especially important for climate change due to the changing environments. We need to ensure that as the climate changes, native fauna have a suitable habitat to move to when their existing habitat changes.

***Q4**. With regard to Population and Growth, the VCS information sessions emerged a conflict in the VCS. There is a push for ecologically sustainable development, but the vision is for an ever growing population. How does the coast continue to absorb the growing population?*

The majority of the population going to the coast is going to Geelong and Melbourne. If they are removed from the data, the population moving to the coast is minimal. There are some hot spots, but the scale is small. You cannot change peoples desire to move to the coast. Australia does not have a population problem. The problem is in the design of townships. We should combine all design documents into one for Victoria.

The Victorian Coastal Council's response to the forum

The VCC is an advisory body to the Minister for Environment and Climate Change. Our aim is to ensure that the Government is thinking about new approaches, and to push the boundaries. The Victorian Coastal Forum is a great way to examine new ideas. The Victorian Coastal Strategy is the primary document of the VCC, and all those who have a role in coastal management have a responsibility to ensure implementation.

In response to the forum, the VCC will undertake the following actions:
1. Review climate change projections as the science is moving constantly.
2. Facilitate on-going community programs to educate the public.
3. In partnership with the regional coastal boards, the VCC will investigate a climate change Coastal Action Plan (CAP) for the coast of Victoria.