CLIMATE PROOFING THE NOOSA BIOSPHERE

An entry for

THE INSURANCE COUNCIL OF AUSTRALIA'S PRIZE FOR A MORE RESILIENT AUSTRALIA

by

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Executive Summary

Noosa Biosphere Ltd's (NBL) entry to the Insurance Council of Australia's (IC) Prize for a More Resilient Australia, "Climate Proofing the Noosa Biosphere" is a community-driven effort to prepare the Noosa Biosphere for the impacts of extreme weather events resulting from climate change. Our entry has five sections:

The Task

Looking at the assessment criteria, your document "Improving Community Resilience to Extreme Weather" and the consequent six key ingredients of resilience, we concluded that the IC is seeking:

- Ideas which are creative but also practical;
- Actions which can be implemented on a community-wide basis but also have regard to the needs of individuals and businesses;
- Changes to behaviour and policies which improve resilience and thereby reduce risk.

Climate Proofing the Noosa Biosphere meets or even exceeds these objectives and is based on a proven methodology

Planning is well underway to launch the initiative in May 2010.

Why Noosa?

The threats associated with climate change are thrown into stark relief in South East Queensland, which has been identified as a hotspot by Australian and International authorities as the region deals with significant growth pressures.

This region has a long history of successful community engagement and governance that contributed to the awarding of UNESCO Biosphere status. That tradition and the infrastructure already in place will be key factors in successfully dealing with the challenges that lie ahead. We have an opportunity to build on the existing approach and provide a model well beyond the boundaries of the biosphere.

The Team

A single organisation could not tackle successfully the range of community, policy and behavioural issues involved, so we are bringing together a powerful team:

The Team (Cont'd)

- NBL - a UNESCO endorsed organisation involving environmental, economic, educational, social, cultural and tourism expertise which builds on a long history of community governance in the Noosa region;
- The University of the Sunshine Coast (USC) and South East Queensland Catchments (SEQC), who have jointly developed and implemented the grass-roots Climate Proofing Approach;
- The Sunshine Coast Regional Council (SCRC) which is an integral part of the Noosa Biosphere initiative and provides cutting-edge expertise in risk-appropriate land-use planning, emergency management etc;
- Community groups including the Sunshine Coast Environment Council (SCEC), Noosa Residents and Ratepayers Association (NRRA), Noosa Integrated Catchment Association (NICA) and a wide range of other business and community groups.

The Methodology

We are further developing the USC/SEQC's Australia-first approach to climate change adaptation to meet the resilience needs of the Noosa Biosphere community. Thus our approach:

- Is innovative but builds on a sound foundation and is a low cost means of engaging the community to drive change;
- Demonstrates deep understanding of the threats;
- Is based on a powerful combination of science and community response – ensuring that our actions are evidence based;
- Will implement practical, cost-effective actions at the individual, business and community levels which increase resilience and so reduce risk;
- Is robust and flexible, so could be applied to the whole Sunshine Coast, then Australia-wide and even overseas – for example via the existing network of 500 Biospheres;
- Addresses each of the assessment criteria and meets five of the key ingredients of resilience.

Conclusions

We draw together the ways in which we meet the IC's criteria and ingredients of resilience, noting that the prize could speed our progress through engaging a professional project manager to coordinate the voluntary effort and/or supporting selected community-based projects.

NBL has a range of complementary initiatives including the recently announced major international conference, to be held in Noosa in July 2011, "Maximising Community Adaptation and Resilience". This flagship event will provide an opportunity to showcase the results of our Climate Proofing the Biosphere initiative to a wide audience (see media release at Appendix 1)

1. The Task

1.1 Statements from the Insurance Council

The Insurance Council (IC) is:

- Looking for creative ideas which demonstrate measures or concepts that improve an individual's, business' or community's ability to withstand and recover from extreme weather events;
- promoting and raising awareness of the need for community resilience, as highlighted by its Resilience Policy "Increasing Community Resilience to Extreme Weather Events";
- calling upon the Australian community to submit concepts, research, products, actions and/or initiatives on how to build this resilience.

The Resilience Policy defines the issue as follows: "Improving the community's ability to withstand and recover from extreme weather events, particularly those predicted as a result of climate change, requires an elementary shift in approaches to:

- risk management of the built environment: and
- policies and human behaviours that underpin community resilience to extreme weather events".

Against that background, entries will be assessed by the following criteria:

- Demonstrated benefits of improving resilience in the community;
- The costs and ease of implementation;
- The innovative qualities of the proposal and its potential for application for a business, individual or a community as a whole; and
- The potential impacts on the regulatory framework in Australia.

The six key ingredients of resilience, as defined in the Insurance Council of Australia's Resilience Policy are:

1. Community understanding of weather related risks
2. Risk appropriate land use planning and zoning
3. Risk appropriate mitigation measures
4. Risk appropriate property protection standards
5. Financial risk mitigation in the community
6. Community emergency and recovery planning

Submissions must address each of the assessment criteria and meet one or more of the six key ingredients of Resilience defined in the Insurance Council's Resilience Policy.

1.2 Our Approach

The key messages we take from these statements are that the IC seeks:

- Ideas which are creative but also practical
- Actions which can be implemented on a community-wide basis but also have regard to the needs of individuals and businesses
- Changes to behaviour and policies which improve resilience and thereby reduce risk.

In terms of the four selection criteria:

- In order to demonstrate benefits of improving resilience in the community, we must understand:
  - What are the threats to which resilience is sought?
  - How do communities and policy makers counter those threats?
- The lower the cost and ease of implementation the better. There is no point in proposing theoretical concepts which cannot be implemented at reasonable cost
- The proposed approach needs to be new but also practical
- Our approach does not directly address the regulatory effect of state taxes on building and contents insurance but we would work with the SCRC on regulation at the regional and state level. SCRC and the former Noosa Council have repeatedly proposed to the Queensland Government changes to building codes to improve environmental and social outcomes, sometimes with success.

Guided by the above, the following sections set out:

- Why we are passionate about the issue … "Why Noosa?"
- The Team - the combination that we are bringing together for our project "Climate Proofing the Noosa Biosphere". This team includes:
  - The Noosa Biosphere network - an established community-based system involving environmental, economic, educational, social, cultural and tourism expertise built on a long history of community governance in Noosa
  - The University of the Sunshine Coast (USC) and South East Queensland Catchments (SEQC), who have developed an Australia-first approach to climate change adaptation – which uses a grass-roots methodology
  - Policy-makers in the Sunshine Coast Regional Council (SCRC) which is an integral part of the Noosa Biosphere initiative and provides cutting-edge expertise in risk-appropriate land-use planning
  - Community groups such as the Sunshine Coast Environment Council (SCEC), Noosa Residents and Ratepayers Association (NRRA) and the Noosa Integrated Catchment Association (NICA) and a wide range of other business and community groups.

1. Our Approach (Cont'd)

- The Methodology – what we are planning and how it meets the assessment criteria. Broadly, our approach:
  - Is innovative but builds on a sound foundation
  - Demonstrates deep understanding of the threats
  - Proposes practical cost-effective actions that can be implemented at the individual, business and community levels
  - Could be applied across Australia.

We believe that we understand what the IC needs and have the team and methodology to deliver – as set out below.

2. Why Noosa?

South East Queensland faces significant climate change challenges. The region has been identified as a climate change hotspot in IPCC reports. Chapter 11 of its 2007 Fourth Assessment Report states that "ongoing development is likely to be exacerbated by large losses to the built environment from rising sea level, storm surges and flooding."

The CSIRO notes in its report *"Change: Adapt now for the future"* states … "at present, the impacts of an extreme storm surge event (1:100 yr) in south-east Queensland on residential housing alone is estimated at about $1.5bn in damages, affecting 270,000 people and 48,000 houses. By 2030, with population growth, sea level rise and current planning regulations, the impact of an extreme storm surge event would rise to $2.6bn, affecting 477,000 people and 81,000 houses."

The Commonwealth Government's 2010 report "Adapting to Climate Change in Australia (*ACCA)* notes that even if climate change can be contained to around 2°C of global warming, Australia will have to manage serious and pervasive risks from climate change impacts and that coastal communities will face additional risks from sea-level rise and storm surges.

A "multiplier effect" of high sea-level incidents for coastal areas in Australia is based on a mid-range estimate of sea-level rise of 0.5m. For Noosa and the Sunshine Coast, this map shows that events will happen 1000 times more often, so a storm tide that is expected once every 10 centuries in the twentieth century climate would be expected to happen once a year on average with a sea level rise of 0.5m.

2. Why Noosa? (Cont'd)

Last November, the Commonwealth Government released its "first pass national assessment", *Climate Change Risks to Australia's Coast* (CCRAC), which is one of the key actions identified in the National Climate Change Adaptation Framework endorsed by the Council of Australian Governments (COAG) in 2007. The Framework recognised that national assessments are required in key sectors and regions to support informed decisions about adaptation action by policy-makers, business and industry, resource managers and the community.

Shoreline recession of sandy beaches happens at a rate in the order of 100 times the amount of sea-level rise. This equates to around 110m of landward erosion for the sea level rise of 1.1m now forecast for 2100. To put this in a local context, Noosa Main Beach would disappear by 2050 with the forecast 0.3m sea level rise, with major implications for the tourism industry and so the economy – not to mention damage to buildings and infrastructure.

The CCRAC report notes that erosion due to higher sea levels is a key risk for coastal areas. In Queensland there are approximately 15,200 residential buildings located within 110 metres of 'soft', erodible shorelines, of which approximately 5,400 are located within 55 metres of 'soft' coast. The Sunshine Coast is third among Queensland's 13 coastal local government areas in regard to its coastal vulnerability, with over 1,800 residential buildings within 110 metres and over 400 within 55 metres of 'soft' shorelines. Full details of the international and national context are in Appendix 4.

The Noosa Biosphere is not only a coastal community but also includes a significant hinterland, where events like flooding have major significance. For example, the first of the two flash flooding events in the Kin Kin catchment in April 2009 was triggered by a high intensity thunderstorm which brought with it a 1:100 year 24 hour rainfall event. The 400mm received in 24hrs in Kin Kin was however less than half that recorded in the upper Noosa River Catchment in 2007 when 858mm was recorded in one day, leading to major downstream flooding in Boreen Point and Noosaville in what a long standing senior government hydrologist described as one of Australia's top three most intense rainfall events ever recorded.

The issues described above have been explored locally as part of the Sunshine Coast Regional Council's strategic response to climate change and its review of the impacts of climate change on Council assets and infrastructure.

The review concluded that the impacts of climate change have potential to affect Council assets and infrastructure, service delivery, emergency response and long-term planning.

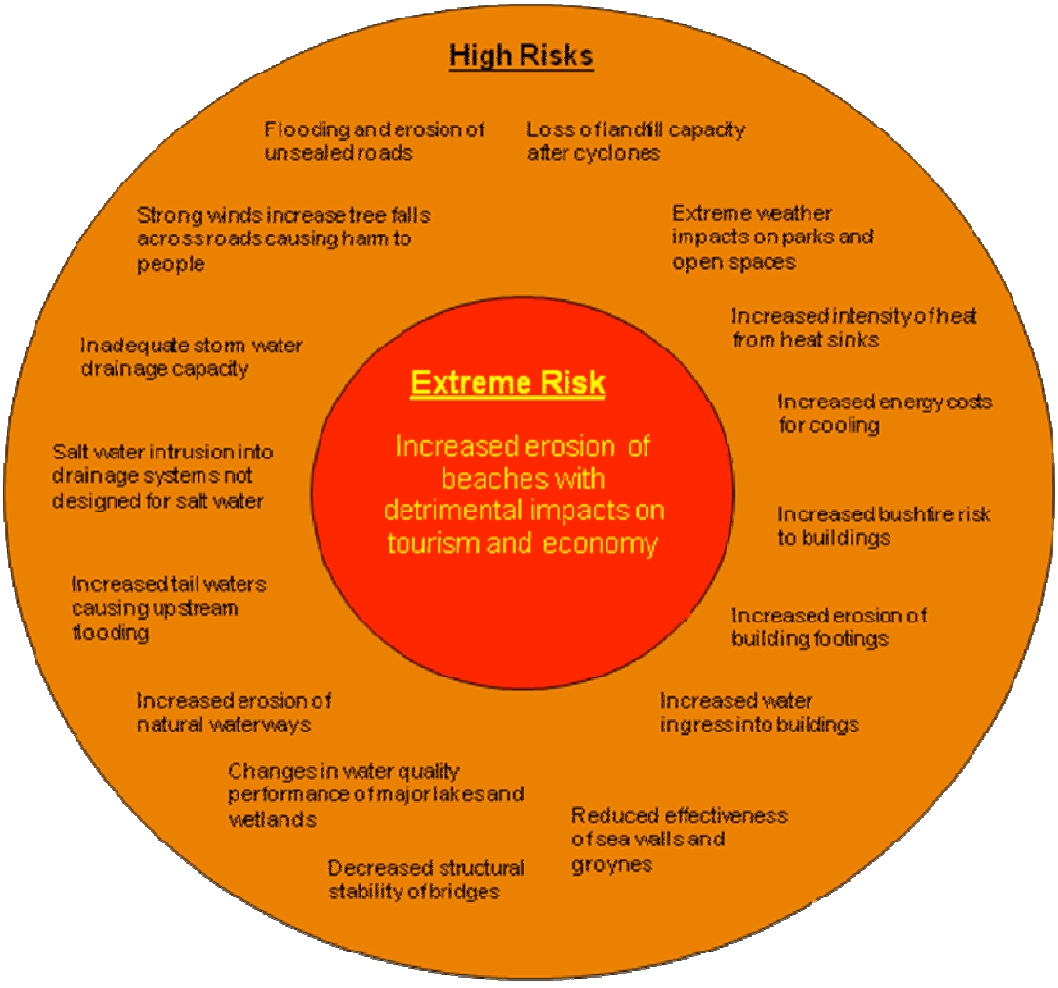
2. Why Noosa? (Cont'd)

This can occur directly through physical exposure to climate change elements or indirectly through costs associated with the management of effects, energy price rises, or increased insurance costs.

Damage to infrastructure, increased maintenance and reduced levels of service delivery are potential outcomes of more volatile climate conditions. Material type, increased maintenance costs and location must be factored into the whole-of-life costs for long-term infrastructure projects. In some instances, relocation of existing infrastructure may be an appropriate risk management strategy.

The Council commissioned a consultancy study to examine the impacts of climate change on Council assets and infrastructure and many risks have been identified as a result of this Climate Change Infrastructure Adaptation Study. Extreme and high risks are identified in Figure 1 below. These actions will require prioritisation by relevant areas of Council, particularly at the time of major upgrading.

Figure 1: Extreme and high risks to Sunshine Coast Council assets and infrastructure.



2. Why Noosa? (Cont'd)

The SCRC Climate Change Infrastructure Adaptation Strategy was funded by a grant provided by the Australian Government Department of Climate Change under the Local Adaptation Pathways Program. This Program is now complete.

This study relates to Council infrastructure, however:

- The Council is the largest single owner of assets on the Sunshine Coast, with more than $5bn in property, plant and equipment;
- Natural infrastructure such as beaches, dunes, creeks and waterways that provide buffers against climate impacts were included in the report;
- Many of its conclusions are also relevant to privately-owned assets.

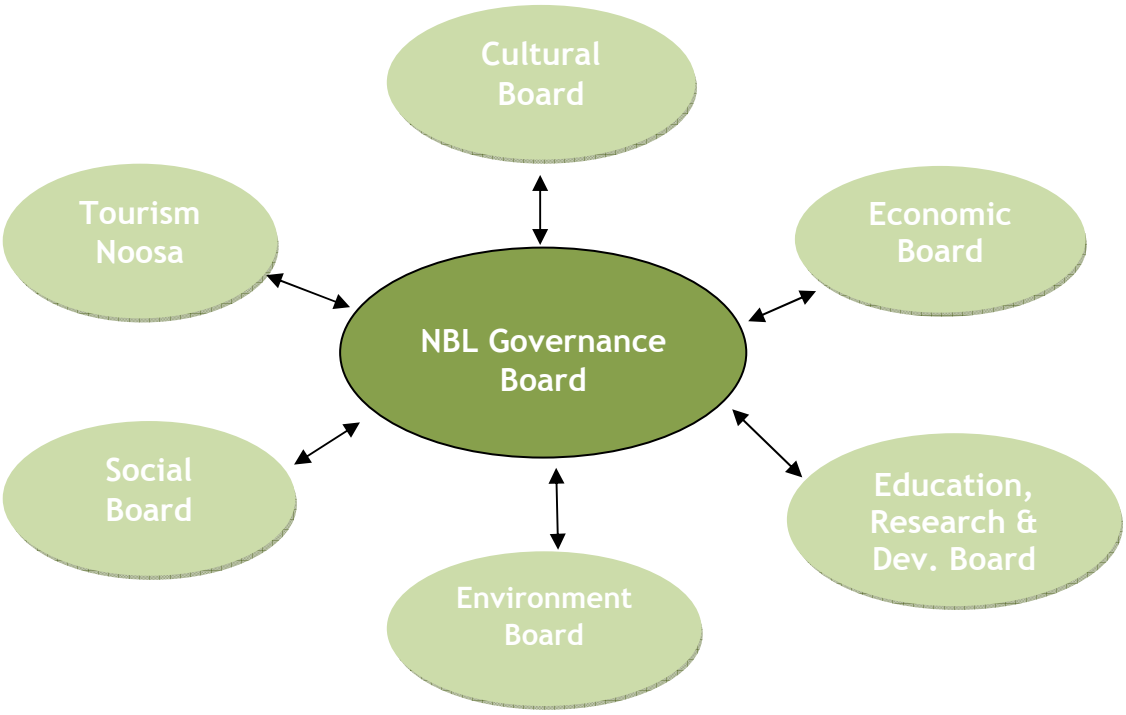
The challenges have never been greater. However, we will be building on the work done at Bribie Island, where experience has shown that work already underway is not always viewed in terms of climate change. So, as described in the following sections, we are not starting from scratch.

3. The Team

This entry is submitted by Noosa Biosphere Limited in association with partner organisations which provide essential complementary skills and experience.

3.1 Noosa Biosphere Limited [NBL]

NBL is a company owned by the SCRC and directed by a voluntary board, with directors drawn from the community and council. Six sector boards, with about 70 Board Members in total, are an important component of the community based structure. http://www.noosabiosphere.org.au/



Noosa was awarded the coveted Biosphere Reserve status under UNESCO's Man and the Biosphere [MAB] program http://www.unesco.org/mabdb/bios1-2.htm in October 2007. It was Queensland's first Biosphere.

All UNESCO Biosphere Reserves have three complementary functions:

- Conservation – to contribute to the conservation of landscapes, and ecosystems;
- Sustainable Development – to foster economic and human development that is environmentally, economically and socially sustainable;
- Learning – to support demonstration projects, environmental education and training, research and monitoring related to local, regional, national and global issues of conservation and sustainable development;

3.1 Noosa Biosphere Limited [NBL] (Cont'd)

In declaring the Noosa Biosphere Reserve, UNESCO particularly noted that Noosa had already:

- a sophisticated level of human settlement and a high level of inter-relationship with the natural environment;
- a strong sense of community involvement and community co-ordination over a broad range of human settlement and natural environment issues.

The award of Biosphere status was effectively an acknowledgement of work done by a wide range of organisations and individuals in the Noosa community over many years and provides a focus for Noosa's aspirations for a sustainable future.

This puts Noosa in an almost unique position to tackle this task. The region has a track record over many decades of delivering a clear and consistent community consensus about protecting the environment. That consensus can now turn to address climate proofing. Added to that is a sophisticated community governance framework that has been in place for many years and that has generated social capital that can deliver real outcomes.

The Noosa Biosphere area is based on the local government boundary of the former Noosa Shire, and the adjacent coastal waters to 3 kilometres offshore. The total permanent population within the Biosphere Reserve is approximately 50,000 people, with a seasonal population of up to 65,000. The area covered by Noosa Biosphere is approximately 150,000 hectares of freshwater/tidal and terrestrial areas - see map at Appendix 2.

The vision of the Noosa Biosphere is:

Your Noosa Biosphere Reserve will be a learning community that cultivates harmony between people and nature, for both conservation and sustainable development.

Within that context, NBL's objectives are:

1. promote conservation of landscapes, ecosystem, species and genetic variations;
2. foster economic and human development that is socially, culturally and ecologically sustainable;
3. provide support for demonstration projects, environmental education and training, research and monitoring related to local, regional, national and global issues of conservation and sustainable development;
4. promote best practice land and water conservation, sustainable living, sustainable business and sustainable tourism practices, supported by nationally and internationally recognised education and research opportunities;

3.1 Noosa Biosphere Limited [NBL] (Cont'd)

5. promote community, industry and government understanding of the interaction between conservation of the environment, ecologically sustainable human development, and how that is supported in a UNESCO Biosphere;
6. facilitate the establishment of partnerships which advance the Noosa Biosphere Reserve as a learning place for sustainable development;
7. promote and assist in the implementation of the Australian Biosphere Reserve Management Principles prescribed pursuant to the Environment Protection and Biodiversity Conservation Regulations 2000 including the implementation of the Management Plan;
8. work towards the expansion of the Noosa Biosphere Reserve to include adjacent areas that share environmental values that meet the criteria of UNESCO's Biosphere Reserve designations;
9. recognise the development potential and capacity of people to bridge global environmental agendas with local human development aspirations;
10. advance the overall goals of the Madrid Action Plan (MAP) program in addressing emerging global sustainable development challenges:
    - accelerated climate change with consequences for societies and ecosystems;
    - accelerated loss of biological and cultural diversity with unexpected consequences that impact the ability of ecosystems to provide services critical for human well-being;
    - rapid urbanisation as a driver of environmental change.

In summary, NBL's objectives are entirely consistent with the Insurance Council's concerns. "Climate Proofing the Biosphere" is a flagship initiative that logically fits front and centre in achieving our vision – and meets all the criteria for the Insurance Council's prize.

NBL team members working on this initiative bring a wide range of skills from across the private, public, community and education sectors. That wealth of talent and diverse views allows us to synthesise a package that has the greatest chance of success.

NBL is not seeking to undertake this role in isolation. This is not the Noosa way and such an approach would be unlikely to succeed. In delivering the "Climate Proofing the Biosphere" initiative we will partner with a wide range of organisations, as set out below.

3.2 The University of the Sunshine Coast

USC is a leader in the field of climate change and sustainability. Regional engagement and sustainability are the two core themes of USC and feature in the Mission Statement. http://www.usc.edu.au/Home.htm.

Regional engagement is a key element of the USC agenda. For USC, engaging communities goes beyond traditional notions of knowledge creation and application to an approach that emphasises using the full resources of the University to catalyse sustainable regional development.

The University aims to be the major catalyst for the innovative and sustainable economic, cultural and educational advancement of the region, through the pursuit of international standards in teaching, research and engagement. Its Regional Engagement Plan supports the realisation of USC's goal identified in the Strategic Plan to: engage in productive partnerships to further the region's interest and the University's strategic priorities.

While Noosa is at the northern tip of the Sunshine Coast, USC has made a commitment to its community by opening its only campus hub in Noosa, focusing on the education and business curriculum. Additionally, it seeks out opportunities to work with Coast businesses and community organizations in projects such as Climate Proofing the Noosa Biosphere.

Sustainability is another important focus for the University, particularly in teaching and research.

Teaching climate change and sustainability is a key focus of the Faculty of Science, Health and Education (FoSHE). USC delivers climate change and sustainability programs at both the undergraduate and post-graduate levels. USC's Master in Climate Change Adaptation, introduced in 2007, is the first in Australia. Master's degrees are offered in Coastal Zone Management and Environmental Change Management as well as a Graduate Certificate in Sustainability.

To deliver these programs, USC draws on a depth of knowledge in climate change science and policy. Those faculty members involved with climate change adaptation work and the Biosphere project include Professor Richard Warrick, who developed the Climate Change Adaptation through Integrated Risk Reduction (CCAIRR) approach outlined in this proposal. Professor Warrick has been a lead author of the Intergovernmental Panel on Climate Change (IPCC) coastal chapters for its four assessment reports. Associate Professor Peter Waterman coordinated the CAAIRR approach for the Climate Proofing Bribie Island and will also be advising on the Biosphere work.

Additionally, climate change and sustainability lecturers dedicate time to community engagement activities. USC staff who will be directly working on the Climate Proofing the Noosa Biosphere project include three NBL Board members: Dr Neil Tindale, Ms. Kate English and Dr. Sonia Marshall.

3.2 The University of the Sunshine Coast

In recent years, USC has won key research grants in the field of climate change from CSIRO and the Australian Research Council, among others. The Sustainability Research Centre, directed by Professor Tim Smith, was formalised as one of the University of the Sunshine Coast's research concentrations in mid-2007.

The Centre is transdisciplinary, with a focus on sustainable communities and sustainable environments, plus the institutions that relate to them. Its research supports the transformation of society towards sustainability by focusing on dominant and emerging theoretical discourses in sustainability and regional engagement. These include sustainability science, resilience, adaptive capacity, adaptive management, social learning, social and human capital, and regional development theory. Examples of our issues of focus include coastal management, climate change, water management, natural and cultural heritage, innovation, adaptive growth, and community wellbeing.

Professor Smith was part of the team that won last year's Australian Museum Eureka Prize for its three-year study to assess Sydney's ability to adapt to climate change. http://eureka.australianmuseum.net.au/421A834D-3654-11DE_8E7E8D299F3A8972?DISPLAYENTRY=true. He has agreed to be an advisor to Climate Proofing the Biosphere.

Professor Smith is leading an extensive three-year funded research project, "South East Queensland Climate Adaptation Research Initiative", to enable South-East Queensland to adapt and prepare for the impacts of climate change. This collaborative study between the Queensland and Australian Governments, the CSIRO Climate Adaptation National Research Flagship, Griffith University, USC and the University of Queensland will investigate the ability of SEQ towns, cities, industry and regional governments to adapt to climate change conditions.

The project will consider vulnerability and adaptive capacity to improve the resilience of infrastructure, urban design, natural ecosystems, emergency services, public health, energy production and supply, and primary industries of the region. As a 'top-down' project in the greater SEQ region, it complements well our bottom-up community based project in the Noosa Biosphere and provides another link to regional government and the corporate world.

3.3 South East Queensland Catchments Ltd

SEQ Catchments Ltd is the regional body for natural resource management in South East Queensland that works in partnership with community, industry, government and research to deliver strategic outcomes for the region's natural resources. http://www.seqcatchments.com.au/about.htm.

3.3 South East Queensland Catchments Ltd (Cont'd)

Since 2005, SEQ Catchments has partnered with the University of the Sunshine Coast on a suite of climate change projects, with studies on appropriate modeling tools for community use, regional data gaps, the impacts of climate change on the region's biodiversity and ecosystems services, and with long-term Climate Proofing processes on Bribie and Coochiemudlo Islands in Moreton Bay. The application of the Climate Proofing process on Bribie Island over the last two years has delivered opportunities for learning for the Biosphere. This combines bottom-up and top-down approaches to ensure that the most practical and meaningful climate adaptation plan is collectively developed and implemented between community and all levels of government.

Susie Chapman, the SEQC Community Partnerships Manager for the Sunshine Coast, co-ordinates the organisation's response to climate change and is a member of the Climate Proofing the Biosphere Working Group, set up specifically to co-ordinate and progress this project.

3.4 The Sunshine Coast Regional Council

The SCRC is Australia's 4th largest local government body, serving a community of 330,000 residents and substantial numbers of visitors. It has the vision of creating ***"Australia's most sustainable region – vibrant, green and diverse"*** http://www.sunshinecoast.qld.gov.au/.

NBL is a company of the SCRC and the Council is very supportive of NBL – via funding for community engagement and provision of secretariat support. In addition, Council staff are available to assist NBL's work. For example, Raul Weychardt, a senior planner, is a technical advisor to the Boards.

Recalling the six IC's key ingredients of resilience, the role of Council is important for all of them but especially for:

- risk appropriate land use planning and zoning
- risk appropriate mitigation measures
- risk appropriate property protection standards
- community emergency and recovery planning.

The SCRC is currently developing its policy framework following amalgamation of the former Noosa, Maroochy and Caloundra Councils in 2008. The 'Our Place Our Future' community engagement webpage demonstrates the broad approach taken by Council. http://www.sunshinecoast.qld.gov.au/sitePage.cfm?code=our-place-future.

3.4 The Sunshine Coast Regional Council (Cont'd)

There are many relevant Council activities, but we draw attention to three draft policy documents that will be developed by Council into formal strategies –

- A Climate Change Strategy
- Flooding and Stormwater Discussion Paper
- Waterways and Coastal Foreshore Discussion Paper

All these documents were released for public comment in late 2009, as part of a comprehensive suite of papers associated with development of a new planning scheme and policy framework for the amalgamated Council.

The Climate Change Strategy, http://www.sunshinecoast.qld.gov.au/sitePage.cfm?code=cc-strategy, is a comprehensive document, which recognises in its foreword that "…we are likely to experience less rainfall, higher temperatures, rising sea levels, increased storm activity, frequent flooding and more droughts. It is imperative that we act with great speed and decisiveness to tackle the cause of these changes"

The Flooding and Stormwater paper "identifies the principles that are proposed to be adopted to address flooding and stormwater management issues across the Sunshine Coast". The paper recognises that being an attractive coastal location brings with it risks to residents of exposure to extreme weather events including flooding and storm tides.

Climate change is recognised in the Waterways and Coastal Foreshores Management Discussion Paper as posing potentially serious consequences for waterways and coastal foreshore areas.

3.4.1 Key Council Responses to Land Use Planning and Climate Change

The draft Climate Change Strategy has been publicly consulted and its final adoption is anticipated during May 2010. The strategy outlines many intents of the Council regarding climate change responses and also suggested approaches in the new planning scheme. Relevant items from the Strategy's Action Plan are highlighted below:

1.1 Endorse 100 year planning horizon.

1.10 Provide appropriate advice to Council customers regarding climate change risks and vulnerability posed to property or assets (new and existing) particularly in relation to property searches, flood certificates and similar requests for information.

1.11 Hold discussions with insurance companies.

3.4.1 Key Council Responses to Land Use Planning and Climate Change (Cont'd)

2.3 Establish network of individuals within Council to focus on climate change implications across disciplines (e.g. Carbon Working Group).

5.1 Undertake vulnerability and hazard mapping to identify major risk areas due to climate change on the Sunshine Coast:

- Council has an adopted development standard of 1:100 ARI for determining what land is suitable for development. Further modeling will be undertaken on anticipated sea level rises – 0.8m by 2100 as nominated by the Queensland Government under its draft State Coastal Management Plan and 1.1m as nominated by the Federal Department of Climate Change.

5.3 Complete risk assessments of climate change impacts on biodiversity, coastal management, waterways, development (new and existing), economic development, operational health and safety, public and private infrastructure including open space.

5.4 Adjust land use planning approaches to:

- Avoid new urban development in major climate change risk areas;
- Develop and implement planning tools to identify the suitable types of development based on climate change risk areas;
- Investigate measures to reduce risk to property and assets in major risk areas;
- Develop planning approaches to manage potential conflicts in relation to competing land use demands for energy production (including biofuels), food production, open space, nature conservation, carbon sequestration and urban development;
- Include measures to ensure public open spaces remain 'fit for purpose' by avoiding locating publicly accessible open space in major climate change risk areas, introducing more shading and shelter, availability of drinking water, lighting for extended use in evenings etc.

5.14 Develop coastal management strategy with shoreline erosion management plans where appropriate.

SCRC will examine what options exist in respect to land use zoning and development entitlements over land adversely affected by climate change. Generally existing land uses are permitted to continue, but should re-development be permitted? Factors to be considered include –

3.4.1 Key Council Responses to Land Use Planning and Climate Change (Cont'd)

- Continued urban zoning over constrained land will perpetuate the use with potential re-development entitlements causing subsequent dilemmas of demands for property protection or liability arising from approvals granted.
- A restrictive zoning (eg open space) will remove re-development entitlements but will blight the land and severely affect property values, causing distress to property owners. Other tempered options may be investigated.
- Under the Sustainable Planning Act Council can be liable for compensation for injurious affection in certain circumstances after applying a restrictive zoning, although a 'use it or lose it system' is in place.

Thus Council will develop its new planning scheme to guide development outcomes for the next 20 years, but with an awareness of the longer life of the buildings constructed under this plan. There will be considerable examination of climate change and its potential effects on areas for development. Council's planning standards adopt a 100 year horizon. There may also be a need to re-visit modeling for impacted areas as the science of climate change evolves further. In addition to Council's planning scheme there can be useful work undertaken in respect to improving the resilience of existing (older) buildings and structures to increased storm events.

3.4.2 Emergency Management

The SCRC has a Local Disaster Management Plan which coordinates Council activities with those of the SES, Fire and Rescue etc and is consistent with the State's approach. http://www.sunshinecoast.qld.gov.au/addfiles/documents/emergency_management/disaster_management_plan.pdf

This Plan is beginning to take account of climate change and the Council is proposing to undertake a "Sunshine Coast Disaster and Emergency Hazard Risk Assessment Study" in 2010. The purpose of this study is to identify the effects of risks to people, infrastructure, the economy etc and to recommend options to mitigate those risks. For example, the Climate Change Strategy Action Plan includes:

5.11 Long term disaster response planning to consider climate change risks with particular attention to vulnerable communities including visitors.

5.12 Provide community safety programs that factor in climate change.

3.4.3 Complementary Activities

Council has also established a number of programs that are aimed at increasing the uptake of ecologically sustainable behavior change within the business sector and the wider community. These programs include:

1. Living Smart – a householder focused program that assists with voluntary take of behavior changes leading to water and energy conservation, waste management and sustainable transportation decisions.
2. Ecobiz – a State Government designed program that is being actively promoted and facilitated by SCRC to promote improved energy water and waste management in the business community.
3. A partnership between the Council and Energex to roll out the first Energy Conservation Community in South East Queensland, which aims to reduce peak electricity demand at a community level http://www.energycc.com.au/

3.5 Community and Business Groups

A number of community and business groups have already expressed their support for Climate Proofing the Noosa Biosphere, such as the Sunshine Coast Environment Council (SCEC) http://www.scec.org.au/ Noosa Residents and Ratepayers Association (NRRA) and the Noosa Integrated Catchment Association (NICA). Tourism Noosa is an integral part of NBL. Through membership of the Biosphere Community Boards, we also link to the Mary River Catchment Committee (MRCC). The Queensland Department of Primary Industries has an existing partnership with MRCC which has active trials and demonstrations for climate change adaption, including in the northern part of the Biosphere.

As an example of the wide range of groups we are bringing together in our team, SCEC is the peak environmental body for the Sunshine Coast, with more than 50 member groups, stretching from Cooloola to Caboolture, and over 3000 individual, family and business members. SCEC is actively working with the Regional Council as well as State and Federal government departments, industry stakeholders, educational institutions such as the University of the Sunshine Coast, other community groups and the general public. SCEC leaders wholeheartedly support the NBL project of Climate Proofing the Noosa Biosphere and have commented that the initiative will provide an excellent pilot programme, the findings of which will be able to be shared across the Sunshine Coast Region and beyond. SCEC is in touch with the fundamentals of adaptive systems via attendance at conferences such as that Resilience Conference, held in February 2010.
http://www.australia21.org.au/pdf/Resilience%20in%20Perspective.pdf

We are confident that many more community and business organisations will join us during the community consultation discussed in the Methodology section below.

The Noosa region has a strong community which has achieved an excellent balance between the natural and built environments. The “Climate Proofing the Biosphere” initiative seeks to build on that commitment and focus our efforts on a major issue facing the region and the planet.

4 Methodology

4.1 Climate Proofing the Biosphere – the Principles

The centerpiece of our strategy is an eight step methodology, outlined below.

Step 1: **Increase the level of understanding** of what adapting to climatic variability and change means for communities in the Noosa Biosphere

Step 2: **Build the strategic partnerships** necessary to mobilise communities and give action to ideas for adaptation

Step 3: **Inventory of the resources at risk** - amenity, biodiversity, catchments, infrastructure, property, tourism, water security

Step 4: **Assess vulnerabilities & risks** to extreme weather events, greater climatic variability and climate change

- Extreme storm events
- Local flooding
- Increasing temperature and heat waves
- Prolonged drought
- Catchment erosion and siltation

Step 5: **Identify and prioritise the 'hot spots'** for on the ground action

- Where are they?
- What are the impacts?
- What are the long and short term risks?
- What can we do to reduce the risks?
- What will be protected and what are the protection strategies?
- How long will it take?
- Who will do it?
- What will it cost?

Step 6: **Prepare and implement a simple 'no regrets'** ***Climate Proofing Action Plan*** based on the assessment of vulnerabilities and risks for the priority hot spots

Step 7: **Evaluate what is being done** and how to improve the ***Climate Proofing Action Plan***

Step 8: **Spread the word** and continue the drive to 'Climate Proofing 'in the whole Sunshine Coast and beyond

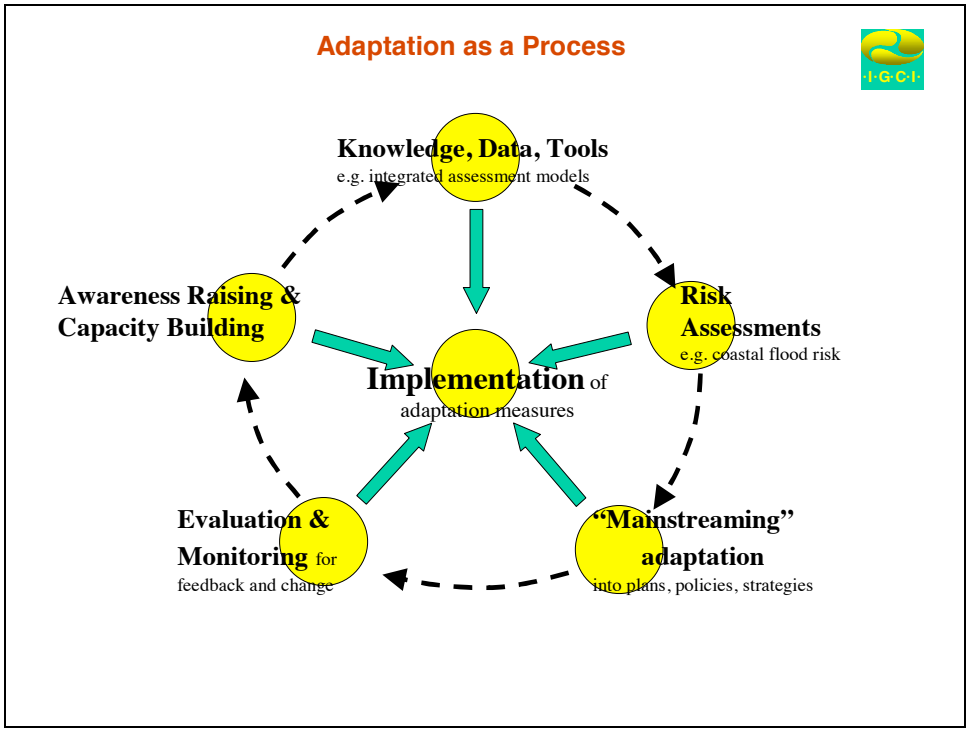
The methodology adopted is informed by and based on the CCAIRR approach developed by USC Professor Richard Warrick, in conjunction with the International Global Change Institute (IGCI) at the University of Waikato, New Zealand (see Fig 2 below).

4.1 Climate Proofing the Biosphere – the Principles (Cont'd)

Professor Warrick has used this model in his climate change adaptation work with the World Bank and the Asian Development Bank in Pacific Island nations. It was first used in Australia, under the auspices of USC and SEQC staff, for the Climate Proofing Bribie Island project which began in 2008.

This process is acknowledged in the IPCC's Fourth Assessment Report (Working Group II) as a regional and sectoral risk assessment approach.

Figure2: The Climate Change Adaptation through Integrated Risk Reduction (CCAIRR) Process



This cycle is applied with the dual aims of:

- Strengthening the essential links between *perspectives and policy* on climate change adaptation and the *tools and techniques* for reducing risks and impacts; and

- Demonstrating how planners, environmental and natural resources managers as well as industry sectors in coastal regions of Australia can be readily equipped to meet the challenges of climatic variability, extreme weather conditions and climate change.

- This climate change risk assessment process is consistent with the Australian/New Zealand risk standard, A/NZ 4360.

4.2 Lessons from Climate Proofing Bribie Island

Bribie Island is a small community, with a smaller set of impact issues than Noosa but the proven methodology is very relevant to the Noosa situation.

While the Bribie Island community didn't have the pre-existing engagement structures that Noosa has, it was successfully engaged through a series of well-attended public meetings. An Action Plan has been drafted and accepted.

After the initial public meeting, Community members met on nine occasions. Issues and concerns were divided into five action groups:

1. Infrastructure & Planning (includes waste and transport)
2. Water (surface and groundwater)
3. Emergency Management (sea level rise, storm surge, fire, flood, extreme heat)
4. Shoreline Management
5. Biodiversity (flora and fauna)

The Bribie Island Action Plan covers:

- Planning and infrastructure, including:
  - Adequate consideration of climate change impacts in planning for development
  - Public infrastructure
  - Sustainable housing design
- Water, eg algal blooms
- Emergency management, including:
  - Storm surge
  - High winds
  - Fire
- Shoreline management, especially erosion
- Biodiversity, including rwind protection.

Actions that were both climate adaptational and mitigational were chosen to maximize the acceptance by a conservative and somewhat sceptical population. The collective vision was well received:

4.2 Lessons from Climate Proofing Bribie Island (Cont'd)

The self-reliant, resourceful and cohesive community of Bribie Island and its governance work closely together to protect the safety and livelihoods of its people and the island's unique natural assets through a changing climate.

The actions were prioritized into seven priority community actions and seven priority local government actions. Many of the recommended actions had been started and were given support in a climate change context, such as removal of curbing and channeling on the sand island. Some have now been initiated, such as the groundwater visualization project and collaborative fore-dune stabilization. Climate change adaptation offered the Bribie Island situation a fresh lens through which to view environmental issues and current initiatives that had been viewed separately and with little public understanding of their importance for climate change resilience.

Three core themes emerging from the Bribie Island experience are also at the forefront of Noosa thinking:

1. The need to **strengthen relationships and communication** within the community and between community and all levels of government, particularly local government.
2. The need to continually **share information and develop understanding** of the objective facts surrounding Bribie Island's vulnerability and its opportunities with climate change.
3. The need to acknowledge and use the **collective community skills and experience** of Bribie Island, many of whom are retired leaders in industry, academia and public service.

4.3 Adapting Those Lessons to Noosa

Although there are significant differences between the Noosa Biosphere and Bribie, there are many issues in common – and the methodology is robust enough to tackle those differences, to build on the region's strengths and to adapt to its own circumstances – as follows:

4.3.1 Applying the Methodology to Noosa – Key Features

As applied to Noosa, our methodology will have the following key features:

- Based on a Climate Proofing approach supported internationally and already established by members of our team at Bribie Island and elsewhere.
- Flexible, so it can evolve to suit other communities – Noosa and beyond.
- Low cost – the initiative relies on the social and intellectual capital of the region. It is volunteer based and builds on existing networks. That can sometimes bring problems of commitment. Noosa, however, has a track record of delivery in that regard.

4.3.1 Applying the Methodology to Noosa – Key Features *(Cont'd)*

- Grass-roots – again, Noosa will utilise well established and committed networks of volunteers to spread the word and activate the community.
- Will use the existing NBL website www.noosabiosphere.org.au and a supportive local media to powerfully reinforce the initiative. The initiative will be a core component of a Noosa community biosphere festival scheduled for September 2010.
- Based on a powerful combination of science and community response – ensuring that our actions are evidence based.
- Uses a "low-hanging fruit" approach so that individuals, businesses and communities can see what *they* can do to reduce the risk of extreme weather events.
- NBL and its partners have a good understanding of the international, national and state context in which Climate Proofing the Biosphere must operate, as described in Appendix 3
- Inventory aspects link to another NBL project, "Benchmarking the Biosphere", where, among other factors, we would seek to measure resilience
- Generally acknowledge and support current initiatives that build resilience in the context of climate adaptation.

Actions can achieve adaptation and mitigation. In this context, we note the IC's definition of resilience as "improving the community's ability to withstand and recover from extreme weather events, particularly those predicted as a result of climate change". Our actions would fully address that definition, plus make a regional contribution to the community's ability to *avoid* adverse events.

The Bribie Island work is volunteer-based – even the professionals are contributing in their own time. This is a strength in terms of essential community engagement but also results in some limitations on the rate of progress. The Noosa Biosphere has the advantage of its pre-existing structures and the partnerships that are already in place to drive the initiative.

4.3.2 Timeframe

The eight step methodology is iterative. We intend to proceed as set out below:

Steps 1 and 2: Increase the Level of Understanding and Build the Strategic Partnerships

As is evident from this entry, we already have very strong strategic partnerships. A Working Group comprising the range of partners has met on numerous occasions. To expand those partnerships, we are about to invite more Noosa community groups to a meeting, to be held in May. Given the strong community networks in Noosa – NBL alone has more than 60 community representatives, we are confident of a positive outcome.

4.3.2 Timeframe *(Cont'd)*

We will then address Step 1 by a major public meeting, planned for June and likely to be held in conjunction with community groups such as Noosa Residents and Ratepayers. This meeting will be publicized before and after, in a strategic way, by the existing NBL communications system, including our website and good relations with the local media.

Step 3: Inventory the Resources that are at Risk

Our partners in the SCRC have already made considerable progress in this area and, as noted above have several further studies planned over the next year – Climate Proofing the Biosphere will be in touch with the results of these studies and is well-equipped to engage business and the community in consequent action to increase resilience.

Step 4: Assess Vulnerabilities and Risks

The SCRC will again play a major role over the coming year, together with our USC partners – building on what has been done, not starting from scratch. For example, looking at steps 3 and 4, we already know that adaptive actions are needed for increases in:

- erosion of beaches and waterways, with detrimental economic and environmental effects
- storm events, causing damage to property and infrastructure
- bushfire risk to life and property
- flooding risk to life buildings and infrastructure such as roads and bridges
- damage to vegetation, including commercial and native forests
- threats to food and water security
- degradation of productive agricultural areas
- infrastructure and essential services (planning, protection and abandonment)
- waste reduction and management
- erodible and surfaces and soils
- habitat and wildlife conservation
- industry such as tourism
- planning and land use
- policies at all levels of government

Step 5: Identify and Prioritise the Hot Spots

A study on this has been done for the Council's assets, so our initial focus would be on privately owned and natural assets.

4.3.2 Timeframe *(Cont'd)*

Step 6: Prepare and Implement a Simple No Regrets Action Plan

Given the "head start" we have, we expect to have the Action Plan completed by the end of 2010 – dovetailing as it does with the SCRC's proposed community engagement on its Climate Change Strategy.

Step 7: Evaluate the Action Plan

We envisage that evaluation would start two years after completion of the Plan.

Step 8 Continue to Spread the Word

Continuing to spread the word is an ongoing action, which would draw upon the strength of our community/university/council linkages, including the established Noosa Biosphere communications platform.

5. Conclusions

5.1 Meeting the Criteria and Ingredients of Resilience

Climate Proofing the Noosa Biosphere is an initiative that seems to immediately excite all those who become involved. When we set out on this journey, we were seeking a way of making a real difference for the region and for like-minded communities further afield.

The initiative builds on the strengths and structures the region has invested its time and energy in over many years. It is a means of taking that community engagement to the next level and to achieving even greater tangible outcomes.

During the planning process, we have come to understand much more about the notion and importance of community resilience. A resilient community will respond better to any challenges it faces – not just those related to climate.

Our process of engaging the community at all levels is designed to kick start community adaptation to climate change. When the community understands the real nature of the challenge and is actively involved in charting the way forward, it will drive the changes we need to make. The process should become self sustaining.

5.1 Meeting the Criteria and Ingredients of Resilience (Cont'd)

The community will:

- have real projects underway
- lobby governments and organisations to do the right thing
- be more accepting of regulatory changes that must be made – hence making the political task of delivery less complex and time consuming.

We will work actively with the SCRC as it addresses the regulatory challenges of climate change.

We are well placed to spread the word beyond Noosa. The active engagement of the SCRC and region wide organisations will see the learnings quickly translated to the rest of the local government area.

Our planned July 2011 conference will provide an excellent vehicle to share the learnings further afield, as will the exposure we provide to the thousands of tourists who visit this region each year.

The IC intends to award a prize, not a grant. Nevertheless, the prize could be used to speed our progress through engaging a professional project manager to coordinate the voluntary effort and/or kick-starting key "low hanging fruit" projects in the community. The prize could also provide critical mass to attract additional funding sources.

Thus, recalling the assessment criteria:

- Demonstrated benefits of improving resilience in the community;
- The costs and ease of implementation;
- The innovative qualities of the proposal and its potential for application for a business, individual or a community as a whole; and
- The potential impacts on the regulatory framework in Australia.

We believe that:

- Our team and methodology have the capacity to provide significantly improved resilience in the Noosa Biosphere community;
- The methodology is grass-roots and draws on established expertise, so the costs are inherently low and implementation greatly facilitated by the direct links to the community;
- Climate Proofing is an Australia-first concept. Application to business, individuals and communities is central to that concept;
- The above would have a positive influence on the ability of Council's planning framework to meet the challenges of more extreme weather events.

5.1 Meeting the Criteria and Ingredients of Resilience (Cont'd)

We are confident that this methodology could then be modified to meet the needs of communities around Australia – and indeed overseas. This could include workshops for local and regional governments and communities.

We also believe that our entry demonstrates that our team and methodology address directly and efficiently the IC's key ingredients of resilience, particularly:

1. Community understanding of weather related risks - Steps 1, 2 and 8 of the methodology.
2. Risk appropriate land use planning and zoning – Steps 3, 4 and 5 identify current vulnerabilities and risks and Steps 6-8 implement actions.
3. Risk appropriate mitigation measures - Steps 3 to 8.
4. Risk appropriate property protection standards – Steps 3 to 8.
5. Community emergency and recovery planning – All Steps.

In summary, NBL's objectives are entirely consistent with the Insurance Council's concerns. "Climate Proofing the Biosphere" is a flagship initiative that logically fits front and centre in achieving our vision – and meets all the criteria for the Insurance Council's prize.

Appendix 1

MEDIA RELEASE -24 March 2010

Noosa Biosphere conference announced

The Noosa Biosphere will hold a major conference in Noosa in mid 2011 Chair, Noosa Biosphere Economic Sector Board, Greg Livingstone announced today.

Mr Livingstone said the conference theme is 'Maximising Community Adaptation and Resilience' and would attract UNESCO members, policy makers, businesses and individuals from across Australia.

"One of the primary roles of a Biosphere is to share information, and it is with this in mind the Noosa Biosphere has championed this project," Mr Livingstone said.
"The other two primary roles of a Biosphere are conservation and sustainable development."

Noosa Biosphere Limited has appointees from each of its Sector Boards. Economic Board appointee to the Governance Board Varina Nissen said community adaptation was an important topic.

"Communities are already developing approaches to Adaptation, as it leads to resilience, and incorporates a community's ability to prepare for and respond to major threats and natural disasters," she said.

"Irrespective of the outcome of the climate change debate, communities are concerned about a range of issues, and Councils and Policy Makers want to know how to develop their plans, and incorporate approaches to adapt and become more resilient.

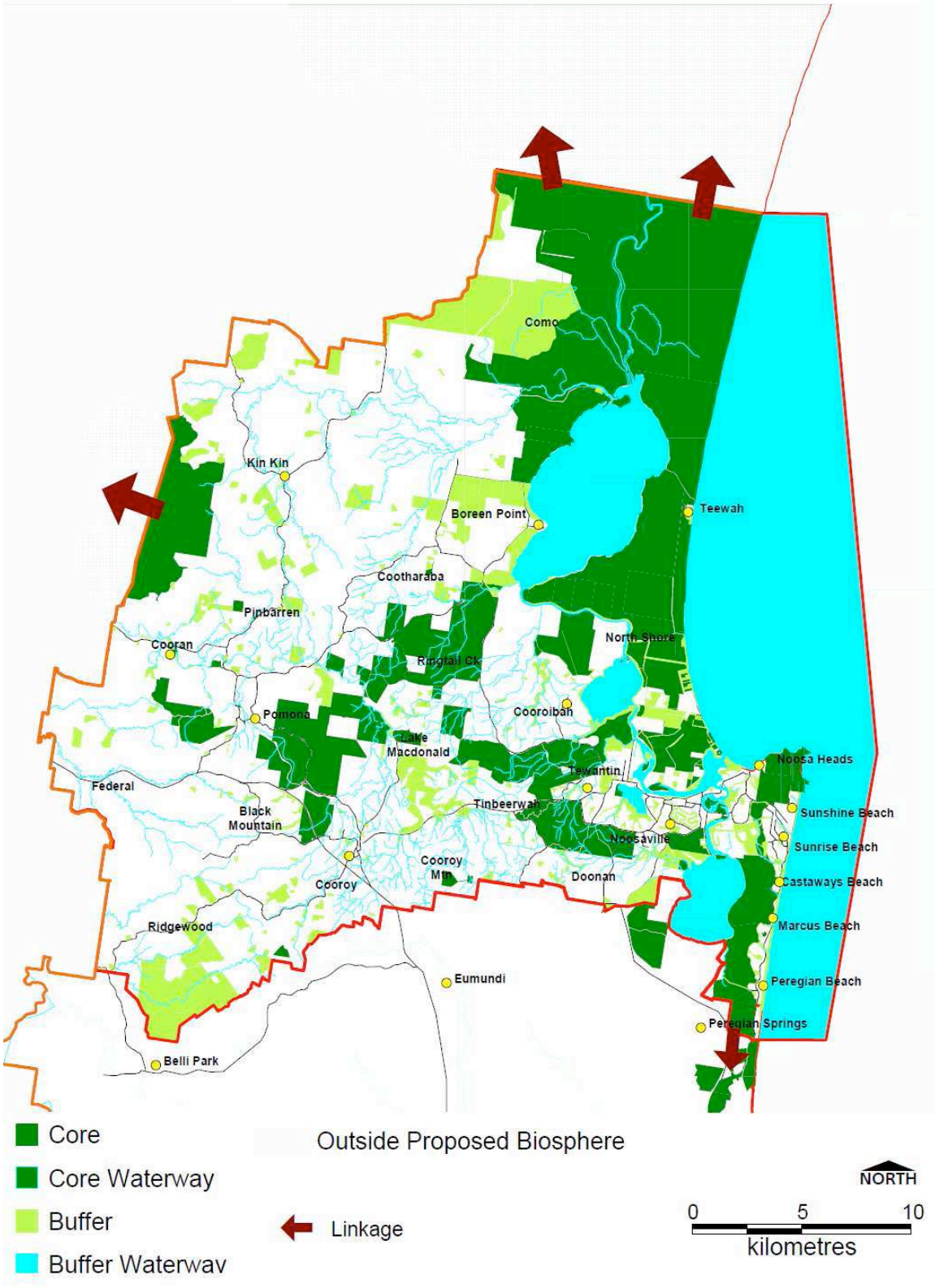
"Equally important is the need to work 'with' communities in the development of plans and in the face of adversity and adapt to changes in the political, economic and natural environments, as opposed to working 'on' communities."

Mr Livingstone said AST Management was chosen as the event organiser after an extensive procurement process.

"AST Management has significant experience in major events including sustainability events," he said.

A sub-committee drawn from all Sector Boards of the NBL is developing the 2.5 day program, and keynote speakers for the conference will be drawn from both international and national sources.
The event is expected to attract up to 250 people to Noosa and include not only plenary sessions with keynote speakers but also hypothetical debates, workshops, an exhibition and various field trips.
The End

Noosa Biosphere Reserve Zones



Appendix 3

The Context for Climate Proofing

The International Context

The Intergovernmental Panel on Climate Change(IPCC) was established in 1988 to provide an authoritative international statement of scientific understanding of climate change. Its stated aims are to assess scientific information relevant to human-induced climate change, the impacts of human-induced climate change, and options for adaptation and mitigation.

In 2007, the IPCC produced its Fourth Assessment Report (AR4), which our Climate Proofing Working Group will use as a guide when considering how to best develop an adaptation strategy for our Biosphere. In particular, we will look to the Working Group II (WGII) Report "Impacts, Adaptation and Vulnerability" which can provide us with information on considered responses through adaptation, the synergies and trade-offs between adaptation and mitigation, and key vulnerabilities to climate change.

Of particular concern to Noosans are two key findings regarding in the IPCC AR4 WGII report. First is that our South East Queensland region is designated as one of just six key “hotspots” in Australia because of ongoing development and population growth projections in a coastal plain.

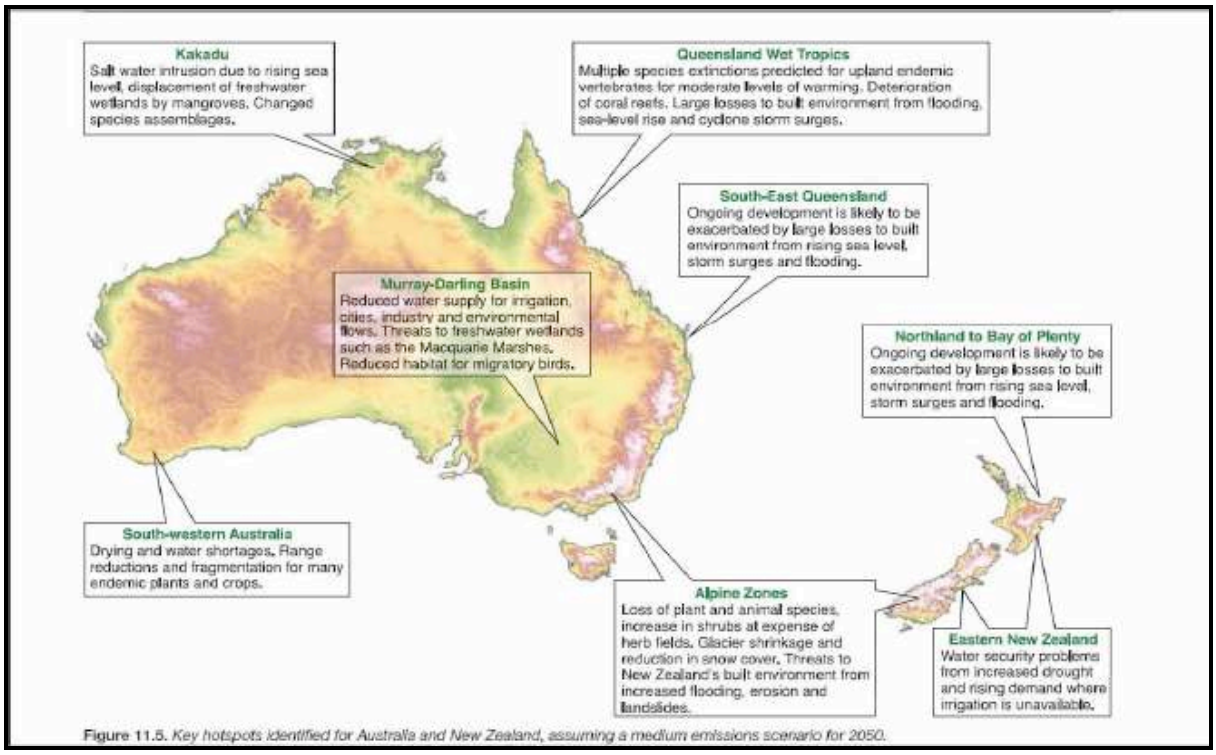
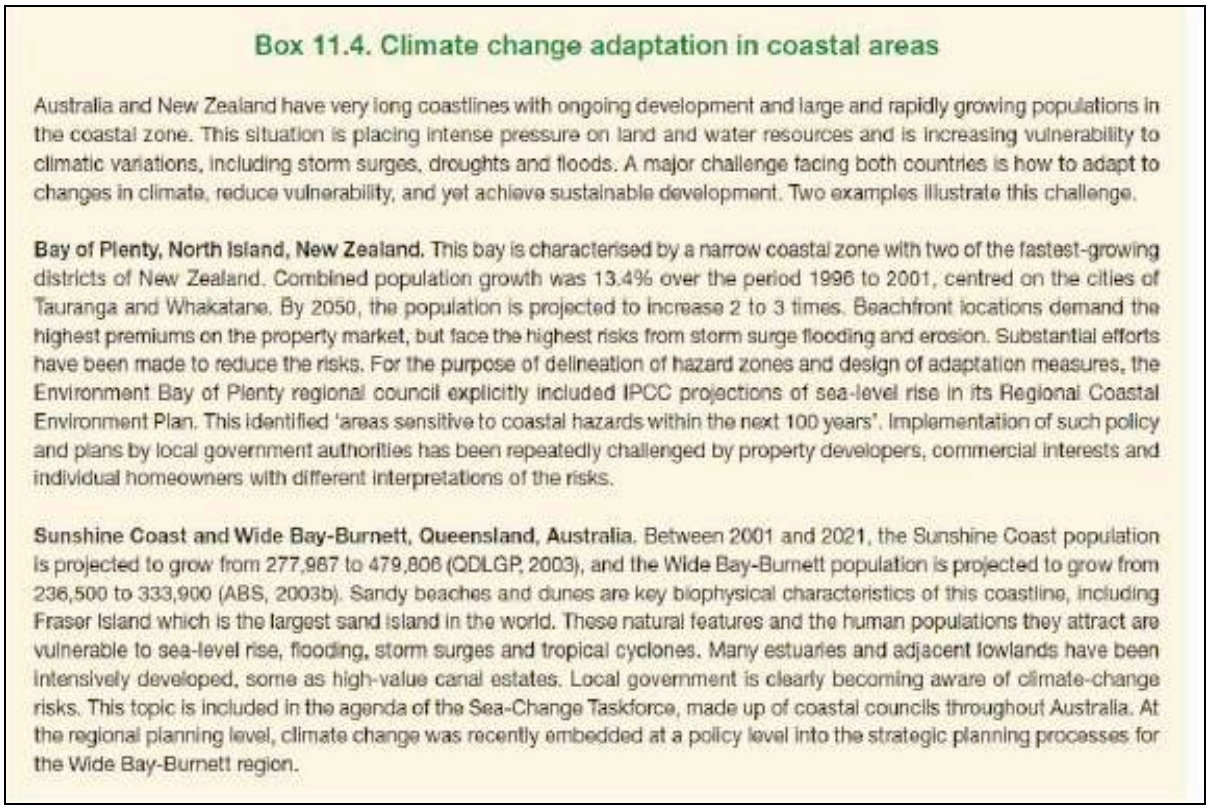


Figure 1. “Key hotspots” for Australia and New Zealand (IPCC, AR4, WGII 2007)

Second, the report focuses specifically on the Sunshine Coast and its neighboring region to the north, the Wide Bay-Burnett, for its ongoing development and large and raipdly grouping populations in the coastal zone. It highlights the intense pressure on natural resources for the region and its climate vulnerability. This indicates to us that we must act now to address adaptation.

The International Context (Cont'd)



Box 11.4. Climate change adaptation in coastal areas

Australia and New Zealand have very long coastlines with ongoing development and large and rapidly growing populations in the coastal zone. This situation is placing intense pressure on land and water resources and is increasing vulnerability to climatic variations, including storm surges, droughts and floods. A major challenge facing both countries is how to adapt to changes in climate, reduce vulnerability, and yet achieve sustainable development. Two examples illustrate this challenge.

Bay of Plenty, North Island, New Zealand. This bay is characterised by a narrow coastal zone with two of the fastest-growing districts of New Zealand. Combined population growth was 13.4% over the period 1996 to 2001, centred on the cities of Tauranga and Whakatane. By 2050, the population is projected to increase 2 to 3 times. Beachfront locations demand the highest premiums on the property market, but face the highest risks from storm surge flooding and erosion. Substantial efforts have been made to reduce the risks. For the purpose of delineation of hazard zones and design of adaptation measures, the Environment Bay of Plenty regional council explicitly included IPCC projections of sea-level rise in its Regional Coastal Environment Plan. This identified 'areas sensitive to coastal hazards within the next 100 years'. Implementation of such policy and plans by local government authorities has been repeatedly challenged by property developers, commercial interests and individual homeowners with different interpretations of the risks.

Sunshine Coast and Wide Bay-Burnett, Queensland, Australia. Between 2001 and 2021, the Sunshine Coast population is projected to grow from 277,967 to 479,806 (QDLGP, 2003), and the Wide Bay-Burnett population is projected to grow from 236,500 to 333,900 (ABS, 2003b). Sandy beaches and dunes are key biophysical characteristics of this coastline, including Fraser Island which is the largest sand island in the world. These natural features and the human populations they attract are vulnerable to sea-level rise, flooding, storm surges and tropical cyclones. Many estuaries and adjacent lowlands have been intensively developed, some as high-value canal estates. Local government is clearly becoming aware of climate-change risks. This topic is included in the agenda of the Sea-Change Taskforce, made up of coastal councils throughout Australia. At the regional planning level, climate change was recently embedded at a policy level into the strategic planning processes for the Wide Bay-Burnett region.

Figure 2. Example of the Sunshine Coast region as a climate change challenge (IPCC, AR4, WGII 2007)

When looking at how best to address the Noosa situation, the IPCC acknowledges the important role of adaptation in addressing climate change. (See Figure 3., IPCC below).

Climatic changes expose communities to a cross section of biophysical, social and economic impacts. Depending on the rate of change, some autonomous adaptation may occur. However, to address the full range of impacts planned adaptation will be required as well.

The International Context (Cont'd)

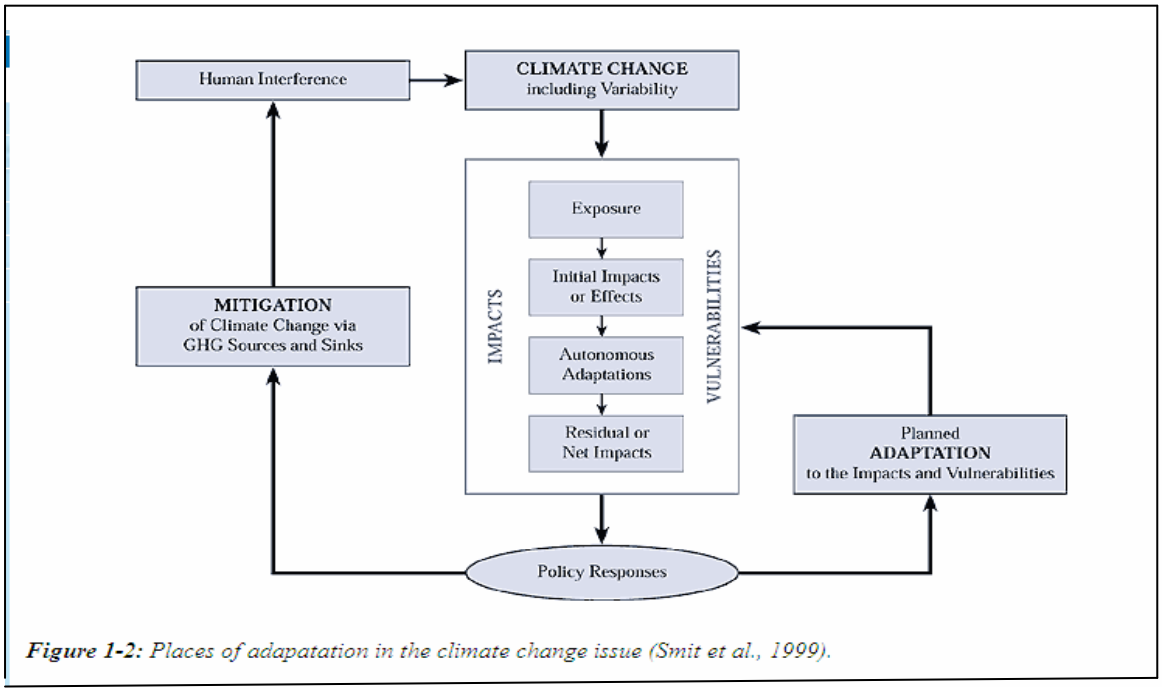


Figure 3: Mitigation/Adaptation Interplay in Climate Change Issue

In the AR4, the IPCC notes that adaptation can reduce vulnerability, especially when it is embedded within broader sectoral initiatives. The report also states that the IPCC has "high confidence" that there are low-cost or high benefit-cost ratio options for adaptation which are viable. Our project will consider the sectoral impacts from climate changes as it seeks to develop adaptation options.

Our Climate Proofing the Noosa Biosphere project will be developed around the consensus science of the IPCC. Our goal is to support the community in developing an adaptation strategy which emphasizes targeted adaptation measures for Biosphere communities from the hinterland to the coast as well as Biosphere-wide actions.

The National Context

The Australian Government has made a commitment to addressing climate change through programs targeted at reducing its greenhouse gas (GHG) emissions and initiatives to assist communities to adapt to the anticipated changes brought about by the increased concentrations of GHGs in the atmosphere.

In February 2010, the Australian Government released its position paper, *Adapting to Climate Change in Australia (ACCA),* which outlines its vision for adapting to the impacts of climate change and proposes practical steps to realise this vision.

The National Context (Cont'd)

It acknowledges that a successful adaptation policy will require contributions from governments at all levels, businesses, communities and individuals but notes that governments have an important role to play in creating the right framework and in providing appropriate information to allow the private sector to make well-informed decisions.

Working through the Council of Australian Governments (COAG), the Government will develop a national adaptation agenda to clarify roles and responsibilities for adapting to the impacts of climate change and identify priorities for collaborative action between governments to position Australia to manage the unavoidable impacts of climate change.

The *ACCA* report notes that even if climate change can be contained to around 2°C of global warming, Australia will have to manage serious and pervasive risks from climate change impacts and that coastal communities will face additional risks from sea-level rise and storm surges. Figure 1 depicts a "multiplier effect" of high sea-level incidents for coastal areas in Australia based on a mid-range estimate of sea-level rise of 0.5m. For Noosa and the Sunshine Coast, this map shows that events will happen 1000 times more often, so a storm tide that is expected once every 10 centuries in the twentieth century climate would be expected to happen once a year on average with a sea level rise of 0.5 m.

Last November, the Commonwealth Government released its "first pass national assessment", *Climate Change Risks to Australia's Coast*, which is one of the key actions identified in the National Climate Change Adaptation Framework endorsed by the Council of Australian Governments (COAG) in 2007. The Framework recognised that national assessments are required in key sectors and regions to support informed decisions about adaptation action by policy-makers, business and industry, resource managers and the community.

The CCRAC report notes that erosion due to higher sea levels is a key risk for coastal areas. In Queensland there are approximately 15,200 residential buildings located within 110 metres of 'soft', erodible shorelines, of which approximately 5,400 are located within 55 metres of 'soft' coast. Figure 4 depicts this breakdown by local government area (LGA) and shows that the Sunshine Coast is third among Queensland's 13 coastal local government areas in regard to its coastal vulnerability, with - with over 1800 residential buildings within 110 metres and over 400 within 55 metres of 'soft' shorelines.

The National Context (Cont'd)

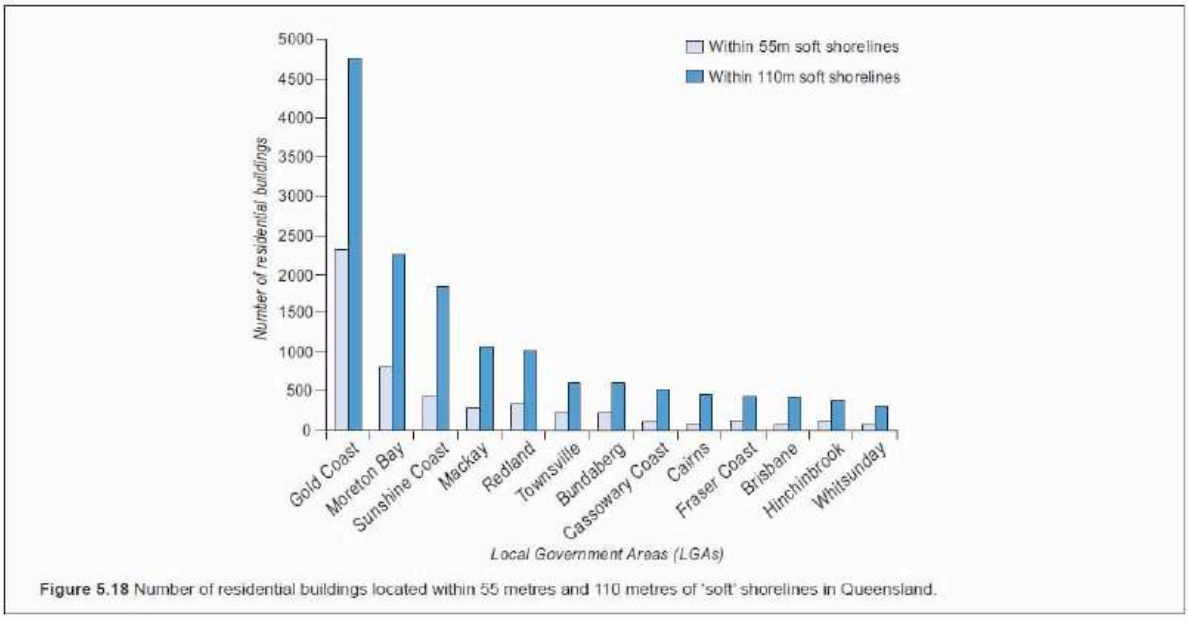


Figure 4: Queensland Coastal Government Areas and number of residential buildings with 55 metres and 110 metres of "soft" shorelines (Climate Change Risks to Australia's Coast, 2009)

In the absence of coastal protection measures or other adaptation strategies, these buildings may be at risk of increased erosion with sea-level rise and storm surge due to their location and the nature of the shoreline. This is a key area that the Climate Proofing the Noosa Biosphere project will focus on.

Equally important to Biosphere residence is the concerns over the Sunshine Coast population growth projections. Growth in coastal areas may increase the number of people and infrastructure exposed to climate change risks.

The *CCRAC* report notes that South East Queensland, within which Noosa falls, has experienced significant population growth over recent decades and that this growth is expected to continue in at least the near future. The *South East Queensland Regional Plan 2009-2031* estimates that 754,000 extra residential homes will be needed between 2006 and 2031 to provide for the growing population.

Figure 5 below highlights that the Sunshine Coast, along with the Gold Coast, Moreton Bay will continue to be key coastal growth areas in Queensland. This is of particular concerns to the Noosa community as it has long-standing community support for its "population cap", created by the former Noosa Shire Council.

The National Context (Cont'd)

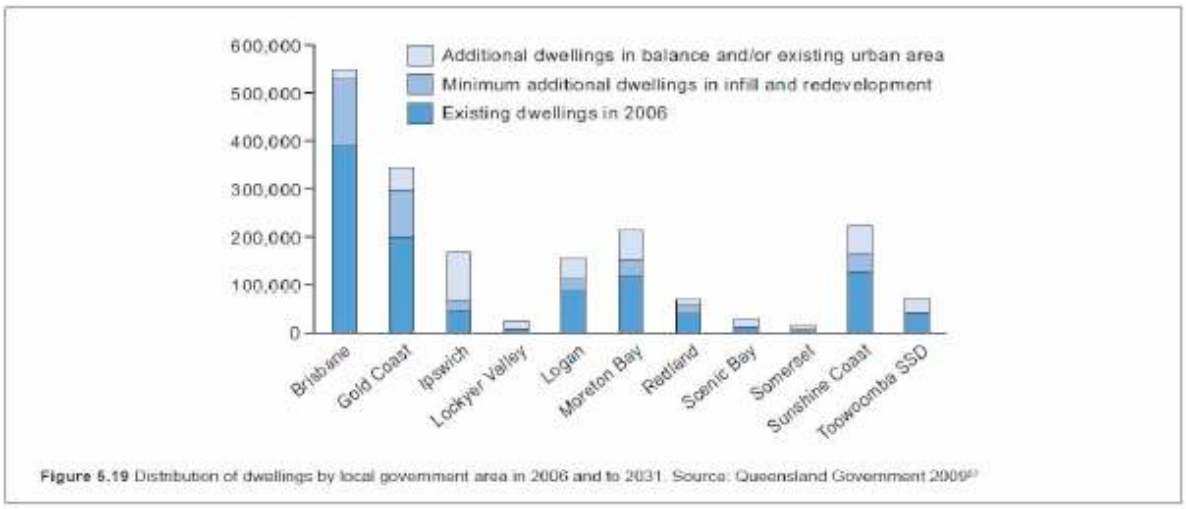


Figure 5.19 Distribution of dwellings by local government area in 2006 and to 2031. Source: Queensland Government 2009[87]

Figure 5: Dwelling distribution for local government areas in 2006 and 2031 (Climate Change Risks to Australia's Coast, 2009)

There are a number of other important adaptation efforts underway at the federal level. From our review of these programs and reports, we have become even more aware of how vulnerable our greater Noosa community is to the impacts of climate change. However, this has only strengthened our resolve to meet this challenge.

The State Context

State responses relevant to adaptation are summarised below.

ClimateSmart Adaptation 2007–12

ClimateSmart Adaptation is the Queensland Government's action plan for managing the impacts of climate change. It will be implemented and coordinated by the Queensland Climate Change Centre of Excellence (QCCCE) by 2012. The QCCCE has a whole-of-government focus and is intended to provide policy advice, information and science on climate change and its impact on the community, economy and environment to help Queensland plan for and adapt to climate change and maintain its lifestyle.

Draft Queensland Coastal Plan 2009

The Queensland Government has released the Draft Queensland Coastal Plan for public consultation.

Draft Queensland Coastal Plan 2009 *(Cont'd)*

The Draft Queensland Coastal plan contains:

- A Draft State Policy Coastal Management;
- A Draft State Planning Policy Coastal Protection that is a statutory instrument under the Integrated planning Act (IPA) The Draft Queensland Coastal Plan and its supporting policies address the risks posed to communities as a result of costal hazards, including the implications of climate change. Specific planning provisions are provided with regard to sea level rise and its implications for coastal erosion, storm tide inundation and permanent inundation.

South East Queensland (SEQ) Regional Plan 2009–2031

The SEQ Regional Plan 2009-2031 provides a framework for managing growth, land use and development in SEQ. Climate change is included in the plan through two key climate change approaches:

- reducing greenhouse gas emissions
- Climate change adaptation.

Development and implementation of an SEQ Climate Change Management Plan (CCMP) is a key initiative identified in the Regional Plan to address mitigation and adaptation. The CCMP identifies a range of existing actions (e.g. reviews of the State Coastal Management Plan) as well as a number of new initiatives (e.g. development of guidelines for new development), which the State Government will use to increase resilience to climate change across SEQ.