

Thank you for the opportunity to make a submission to the Productivity Commission inquiry into Natural Disaster Funding.

1. Background to the submission

The National Climate Change Adaptation Research Facility (NCCARF) was established at Griffith University (Gold Coast campus) in 2008 with funding of \$50 million from the Australian government. Its mission is to provide and communicate the knowledge needed by decision-makers to effectively adapt Australia to climate change, and to build capacity in the practitioner and research community. In its first phase, NCCARF pursued this role through three main programs:

- (a) research to develop new knowledge;
- (b) networks that coordinate Australia's research community, build capacity and support effective interaction between research and decision-making communities; and,
- (c) outreach activities.

All of NCCARF's activities focus on delivering information to decision-makers to support climate change adaptation investments and initiatives. The involvement of relevant and interested end users is a key component of all NCCARF activities. In this way NCCARF seeks to enable and support the Australian community to adapt effectively to climate change impacts.

The first phase of NCCARF concluded in June 2013. In the 2014 budget, the Australian government allocated \$9 million for a second phase of NCCARF. In this second phase, NCCARF will focus on providing knowledge and support for local governments and other organizations seeking to manage the coastal zone under climate change and, especially, sea-level rise and storm surge. Negotiations are currently underway to put this second phase in place.

NCCARF has developed considerable knowledge and expertise around climate change adaptation, and in particular the identification of knowledge gaps, the management of research programs, capacity building and communication with and between stakeholders including decision makers, practitioners and researchers. In terms of outputs from the first phase, we may point to:

- nine thematic research plans setting out critical end-user knowledge needs for effective adaptation in Australia;
- over 150 research reports on every aspect of adaptation;
- eight Networks bringing together over 5000 practitioners and researchers in adaptation to build capacity;
- three major conferences: the Gold Coast international conference in 2010 with over 1000 participants from 52 countries; a national conference in 2012 in Melbourne with almost 700 participants; and the very recent Sydney conference with more than 550 people attending
- twelve Policy Guidance Briefs addressing critical topics in adaptation for Australia, based on practitioner workshops held in every state and territory;
- identification of 14 Adaptation Champions in business, government and the community taking concrete steps to change behaviour, techniques, practices and policies to adapt to climate variability and change;
- numerous communication products including seminars, workshops, early career events, master classes, webinars and symposia, newsletters, factsheets, guidance notes and discussion papers.

This considerable experience around climate change adaptation forms the basis of the points made in this submission.

2. Betterment, preparedness and the need to take account of climate change

There are a number of factors that mean there is uncertainty around the climatology of extreme weather events in Australia. This uncertainty needs to be included in any discussion of the funding of natural disasters.

First, modelling the occurrence of extreme events requires a very long instrumental record, precisely because of the rarity of these events. The instrumental record of rainfall and runoff in Australia is short in relation to the occurrence of extremes, meaning that we have an incomplete understanding of their occurrence probabilities and likely maximum severities.

Second, even if we knew what the likely occurrence of extremes would be in a naturally varying climate, it is clear from observation and from the scientific literature that the occurrence of some extremes in Australia is already changing in response to anthropogenic climate change. Most notable and most identifiable is the changing incidence of very hot days and heatwaves. High temperature records are being broken every summer. Heatwaves are becoming longer and more severe, they occur earlier and later in the season. The recent 'State of the Climate 2014' report by CSIRO and the Bureau of Meteorology highlights these trends, and points also to the observed increase in extreme fire weather.

Third, the science tells us that these trends in extremes will persist into the future. Heatwaves will continue to intensify. We will begin to see a climate change signal appearing in the rainfall data. The State of the Climate 2014 report states that 'heavy rainfall is projected to increase over most parts of Australia', so that we may expect the occurrence of flooding to increase concurrently. Sea-level rise is likely to lead to an increased occurrence of damaging storm surge. Tropical storms may become fewer in number, but are projected to become more intense and possibly to track further south.

These three factors, taken together, mean that we have an incomplete understanding of the climatology of extremes in Australia, and that there is good reason to suppose that, for heatwave and bushfire at a minimum, there is an upward trend in occurrence. Although heatwaves are, in the public perception at least, regarded as relatively benign, they are in fact a greater killer in Australia than all other weather extremes. Cyclone Tracy, which hit Darwin on Christmas Day 1974, killed 75 people. The Black Saturday bushfires of 2009 killed 173 people. But the heatwave of 2009 is estimated by the Chief Medical Officer to have killed 374 people in Victoria alone. NCCARF has funded a number of reports on adaptation to heatwaves, see for example QUT (2010), Loughnan et al. (2013) and Saman et al. (2013). These reports emphasise the vulnerability of certain groups within the community, such as the elderly (Black et al. 2013), the sick, groups from culturally and linguistically diverse backgrounds (Hansen et al. 2013), and people from Australia's regional and remote Indigenous communities (Horne et al. 2013).

Adding to the reality of climate change, the exposure of the Australian people to extreme weather events is increasing. The Australian Bureau of Statistics estimates that the Australian population will reach 36.8 – 48.3 million by 2061¹. We choose to live on the sea front, in floodplains and close to, or even within, the bush. We acquire expensive consumer goods that are vulnerable to flood damage. We design and live in cities that take no account of the need to create cool and shaded environments.

¹ Australian Bureau of Statistics (2012) Year Book Australia 2012. Australian Bureau of Statistics, Canberra.

Taken together, these factors make betterment and improved preparedness essential. Betterment in the rebuilding of damaged structures proceeds on the very reasonable assumption that an event at least as severe could occur within the lifetime of that structure. A great success story for Australia in terms of betterment is the review of the building codes for cyclone-prone areas which took place after Cyclone Tracy (documented in the NCCARF report by Mason and Haynes (2010)). Deciding on the extent of the betterment needs careful evaluation of the trade offs between cost of betterment and cost of likely damage, taking into account discount factors (given the long lifetimes involved). Betterment may also deliver synergies – improvements in town planning to deliver more cool shaded outdoor spaces will make our cities much more liveable.

In fact, the engineering challenges of coping with natural disasters are small in comparison to the human challenges posed by preparedness, and for a number of reasons. First, memories are short in relation to the occurrence intervals of extremes. As NCCARF has shown in a number of its research reports (see, for example, Helman et al. 2010), people forget how to manage extremes during calm-weather periods, and institutional expertise is lost through redeployment or retirement. Second, people are mobile, and move into at-risk areas with no knowledge of how to cope with the events that pose a risk.

Third, attempts by institutions such as local councils and SESs to communicate risk to communities, whether in terms of long-term preparedness or during emergency situations, are not always successful. A number of reports by NCCARF have identified the ABC as an effective and trusted communicator during disasters (Apan et al. 2010; Mason and Haynes, 2010). One study, of the 2008 floods in Queensland, looked at awareness of the risk in the run-up to the floods (Apan et al., 2010). It found that, in the slow-onset flood in Charleville, one quarter of the businesses surveyed claimed to have received no warning of the flood. Three-quarters of respondents in Mackay and 42% in Charleville did not know whether their business premises were located in a flood-prone area, and 69% of respondents in Mackay and 42% in Charleville did not know whether their houses were in a flood-prone location.

Insurance is often cited as a mechanism for adaptation and disaster management at the level of the individual. It is of interest to note that, in the 2008 floods only 43% of businesses in Charleville had flood insurance, either because of high cost or lack of availability (Apan et al. 2010). Subsequently, flood defences have been installed in Charleville and premiums have been substantially reduced.

3. Community involvement, engagement and communication

It is clear from the above discussion that much remains to be done to ensure that communities are well prepared for extreme weather events. This includes long-term preparedness – ensuring that houses are built to withstand floods, for example, by raising floor levels, using waterproof building materials on lower floors and maintaining dykes and drains etc. (Mason et al. 2012) – as well as short-term – having an emergency kit, knowing where evacuation routes and disaster shelters are located.

Communicating effectively with the community to ensure preparedness requires long-term investment in trained staff dedicated to the communication effort. Unfortunately the gains from this type of investment are not highly visible in the same way that infrastructure betterment projects can be. Furthermore, we are all prone to the calm-weather mentality that means that, after several years with no extreme events, funding for community engagement evaporates.

4. The need for research

The arguments presented above are ably supported by the references made to reports produced by projects funded under the first phase of NCCARF. Around 30 of the projects funded under the first phase dealt directly with preparedness for, the impacts of, and responses to extreme events. In Appendix 1, we include details of those NCCARF-funded projects we consider to be particularly relevant to this inquiry. Short descriptions of each project are included.

Together, these projects represent an unparalleled body of work for the adaptation community to draw upon in planning for the management of extreme events under climate change. They illustrate very clearly the extent to which research is necessary to provide the evidence to underpin robust decision making. Nevertheless, they do not provide all the answers. Many research questions still need to be answered to support the adaptation effort. They include:

What communication methods most effectively engage with the community? In thinking about this, what is the role of social media? To what extent does effort need to be tailored to address the needs of vulnerable (to extreme events) groups such as the elderly, non-fluent English speakers, travellers and holidaymakers etc. How vulnerable are the support networks themselves to disruption in a disaster (see Mallon et al. 2013)?

How can the private sector be mobilized to support recovery efforts during disasters? This includes food supply chain provision.

To what extent is the viability of small inland towns threatened by extreme events? A number of NCCARF studies have suggested that people and, more concerningly, businesses may choose to relocate following a flood (Apan et al. 2010; Bird et al 2013). How can the viability of these communities be maintained?

What is the effect of changing incidence of extremes on the emergency services? What are their equipment and staffing requirements? Is the changing seasonality of extremes affecting the ability of the emergency services to perform their role? Will equipment sharing continue to be a cost-effective strategy under climate change? Where do the weaknesses lie? In addressing these questions, case studies of past extreme events can be insightful and revealing.

Climate change is highly likely to result in challenges that have not been faced before, and at scales that will test our knowledge and resources significantly. There is a need to continue to undertake applied research, and especially to work with practitioners to translate the results from research into policy and management tools. Only if we continue to develop and operationalise new knowledge will we have the capacity to deal with climate change. To achieve this goal, a boundary organisation such as NCCARF, which is independent and skilled in determining the research needs of stakeholders and in building programs to deliver and communicate research results, is required. In its absence, research will continue to be done in a disparate manner, lacking a focus on synthesis and integration and without appropriate and effective engagement with stakeholders.

Relevant NCCARF reports

Apan, A, Keogh, DU, King, D, Thomas, M, Mushtaq, S & Baddiley, P 2010, The 2008 floods in Queensland: A case study of vulnerability, resilience and adaptive capacity, National Climate Change Adaptation Research Facility, Gold Coast, 171 pp.

Black, DA, Veitch, C, Wilson, LA & Hansen, A 2013, Heat-Ready: Heatwave awareness, preparedness and adaptive capacity in aged care facilities in three Australian states: New South Wales, Queensland and South Australia, National Climate Change Adaptation Research Facility, Gold Coast, 41 pp.

Bird, D, King, D, Haynes, K, Box, P, Okada, T & Nairn, K 2013, Impact of the 2010–11 floods and the factors that inhibit and enable household adaptation strategies, National Climate Change Adaptation Research Facility, Gold Coast, 153 pp.

Hansen, A, Bi, P, Saniotis, A et al. 2013 Extreme heat and climate change: Adaptation in culturally and linguistically diverse (CALD) communities, National Climate Change Adaptation Research Facility, Gold Coast, 101 pp.

Helman, P, Thomalla, F, Metusela, C & Tomlinson, R 2010, Storm tides, coastal erosion and inundation, National Climate Change Adaptation Research Facility, Gold Coast, 37 pp.

Horne, R, Martel, A, Arcari, P, Foster, D & McCormack, A 2013, [Living change: Adaptive housing responses to climate change in the town camps of Alice Springs](#), National Climate Change Adaptation Research Facility, Gold Coast, 54 pp.

Loughnan, ME, Tapper, NJ, Phan, T, Lynch, K, McInnes, JA 2013, A spatial vulnerability analysis of urban populations during extreme heat events in Australian capital cities, National Climate Change Adaptation Research Facility, Gold Coast, 128 pp.

Mallon, K, Hamilton, E, Black, M, Beem, B & Abs, J 2013, Adapting the community sector for climate extremes: Extreme weather, climate change & the community sector – Risks and adaptations, National Climate Change Adaptation Research Facility, Gold Coast, 286 pp.

Mason, M & Haynes, K 2010, Adaptation lessons from Cyclone Tracy, National Climate Change Adaptation Research Facility, Gold Coast, 82 pp.

Mason, MS, Phillips, E, Okada, T et al. 2012, *Analysis of damage to buildings following the 2010–11 Eastern Australia floods*, National Climate Change Adaptation Research Facility, Gold Coast, 95 pp.

QUT (Queensland University of Technology) 2010, Impacts and adaptation response of infrastructure and communities to heatwaves: The southern Australian experience of 2009, National Climate Change Adaptation Research Facility, Gold Coast, 152 pp.

Saman, W, Boland, J, Pullen, S et al. 2013 A framework for adaptation of Australian households to heat waves. National Climate Change Adaptation Research Facility, Gold Coast, 242 pp.

Appendix 1: NCCARF funded research relevant to the Inquiry

Between 2008-2013, NCCARF funded a number of research projects that provide results relevant to this inquiry. Below we provide the reference for the publication that ensued from the project and a brief description of the findings from each project.

Dobes, L, Jotzo, F & Doupé, P 2013, Adaptor of last resort? An economic perspective on the Government's role in adaptation to climate change, National Climate Change Adaptation Research Facility, Gold Coast, 70 pp.

Uncertainties about the future impacts of climate change obviate definitive conclusions about future adaptation actions and insights for specific situations cannot be generalised. Economic precepts suggest that governments should limit intervention to cases of genuine market failure, such as the provision of information on likely impacts of climate change including at the local level, or to support people affected by uninsurable events. But any role as 'insurer of last resort' needs to be circumscribed by rigorous social cost-benefit analysis to ensure that government intervention is beneficial, in the context of the need to adapt to climatic changes. Although the phenomenon of 'government failure' is generally ignored in the adaptation literature (and often by policy makers), it too can stymie efficient adaptation.

A standard justification for government intervention is market failure, including misperception of risk by individuals and businesses. We use Brisbane property prices before and after the January 2011 flood, as well as property-level flood risk information to test the hypothesis that buyers do not accurately perceive the risk of riverine flooding. The results indicate that buyers do take risk into account, and even discriminate between zones of differing flood risk.

The concepts of 'government as insurer of last resort' and 'government as insurer of first resort' as alternative forms of intervention in markets are examined with a view to disambiguation. In contrast to much current thinking in academic and government circles, we conclude that the government should not act as an 'adaptor of first or last resort'. Rather, government can best contribute to efficient adaptation by reducing the economic costs and institutional barriers to adaptation faced by individuals and organisations. Comprehensive micro-economic reform, and the promotion of institutional flexibility are potential 'no regrets' strategies because they will also promote economic growth and welfare.

McAnaney, J, Crompton, R, McAnaney, D, Musulin, R, Walker, G & Pielke Jr, R 2013, Market-based mechanisms for climate change adaptation: Assessing the potential for and limits to insurance and market based mechanisms for encouraging climate change adaptation, National Climate Change Adaptation Research Facility, Gold Coast, 99 pp.

Given the rising cost of natural disasters, we reviewed the provision of insurance by the public sector in a number of countries and the role they might play in encouraging risk reduction and resilience building. Examples of these residual market mechanisms (RMM) were drawn mainly from the US, Spain, France and New Zealand.

RMM structures vary between countries as does the hazard profile: government involvement in catastrophe insurance in the US, for example, has usually arisen in the face of perceived failures of the private insurance market, often following a significant natural disaster. In the wake of such events, RRM have assumed the legacy of inappropriate land use, unrealistic risk assessment and lack of consideration to mitigation.

In undertaking this review of residual market mechanisms, we expected to identify preferred approaches or elements of the various schemes that might profitably be employed to incentivise behavioural change, at least in respect of extant risks. However none of the schemes examined could truly be said to be successful in this regard and many have led to perverse outcomes. Other key observations include the following:

- (a) transferring risk to the public purse does not reduce risk
- (b) governments can spread the cost of losses across time rather than space
- (c) governments can force home-owners in low risk areas to cross-subsidize the insurance premiums of those in high risk areas
- (d) cross-subsidy is increasingly difficult for private sector insurers operating in a competitive market, and
- (e) governments can tax people to pay for tomorrow's disaster.

Shearer, H, Taygfeld, P, Coiacetto, E, Dodson, J, Banhalimi-Zakar, Z 2013, The capacities of private developers in urban climate change adaptation, National Climate Change Adaptation Research Facility, Gold Coast, 161 pp.

This study investigated the institutional capacity of the private urban development sector in South East Queensland (SEQ), Australia, to respond to the task of climate change adaptation and in turn, investigated the role of private financial institutions in funding climate adaptive urban development.

A relevant finding from the study was that the insurance industry has the potential to drive adaptive capacity. In North Queensland, extreme weather events, such as Cyclone Yasi (2011) had resulted in large premium rises, particularly for strata titled units. Developers reported great difficulty in selling these properties, as the Body Corporate fees were extremely high due to the insurance costs. However, unless insurers link premiums to the introduction of adaptive measures, price rises are likely to be maladaptive, resulting in properties with inadequate or no insurance.

Guiding, C, Warnken, J, Andreone, F & Lamminmaki, D 2013, Adapting strata and community title buildings for climate change, National Climate Change Adaptation Research Facility, Gold Coast, 136 pp

This study sought to inform policy making concerned with preparing strata titled communities to deal with challenges that are expected to result from climate change.

They recommend that insurers should base insurance risk assessment on strata and community title buildings' specific characteristics, not just their geographical location. Basing insurance premiums on strata and community title buildings' specific characteristics, which incorporate climate change resilience, will provide owners with an incentive to invest in adaptation to improve a building's climate change resilience.

Insurance companies should provide strata and community title buildings with a policy option to insure for infrastructure upgrades, in the event of a claim, not simply for replacement costs. Such upgrades could be conducted in a manner consistent with engineering greater building climate change resilience.

King, D, Ginger, J, Williams, S, et al. 2013, Planning, building and insuring: Adaptation of built environment to climate change induced increased intensity of natural hazards, National Climate Change Adaptation Research Facility, Gold Coast, 361 pp.

This project examined the likely impacts on the built environment of increased intensities in weather-related natural hazard events, in order to identify the possibilities of using the regulatory mechanisms of building construction, housing and planning in climate change adaptation.

Findings include that having insurance is not always a priority, or even an option, for all. In addition to significant rates of non-insurance and underinsurance, there is expectation of declining insurance availability and affordability in a changing climate. This will especially impact low-income earners. Insurance has little role at present in encouraging climate change adaptation measures, including risk mitigation. The role for insurance here is currently understood in terms of recovery not preparedness, and there is limited interest in using insurance to initiate innovation in climate change adaptation despite some engagement by insurers with the issues. The capacity of insurance to have a key role in climate change adaptation and associated risk mitigation is constrained by limitations in governance. Tensions over the roles and responsibilities for managing risks exist between the community and individuals, and between the public and private sectors, with inconsistencies amongst agencies and different levels of government exacerbated by a lack of leadership.

Kuruppu, N, Murta, J, Mukheibir, P, Chong, J & Brennan, T 2013, Understanding the adaptive capacity of Australian small-to-medium enterprises to climate change and variability, National Climate Change Adaptation Research Facility, Gold Coast, 129 pp.

SMEs' past experiences with climate extremes act as motivators for introducing measures to adapt to future climate change. SMEs who had experienced the impacts of extreme climatic events were more aware of climate risks than those who had not. Key factors that contributed to their vulnerability included:

- the short-term nature of government-led business recovery programmes
- the limited support available to SMEs who were indirectly impacted by extreme events
- the limited support and recognition given to the psychological impacts on SMEs of extreme events
- the eligibility criteria for government recovery funds are rigid and inflexible
- recovery processes are reactive and overlook the underlying business vulnerability associated with prevention and preparedness.

The adaptive capacity of SMEs is to a large extent shaped by the adaptive capacity of the organisations that support them. This limits the agency of SMEs in securing business continuity. Many constraints on the agency of SMEs were found to exist within the formal boundaries of the organisations providing support to them. These constraints can limit the capacity of SMEs to exercise their agency and transform their adaptive choices into outcomes that will support business continuity under a changing climate. It is these support organisations and their institutions (i.e. their norms, values and policies) that are likely to influence the types of opportunities that are available for SMEs in making adaptive choices. For example, many NGOs are dependent on government grants to offer support programmes such as business advice for SMEs and to employ staff to keep their organisations in operation. The tightening of government funding often limits the services NGOs can offer to SMEs.

Government agencies funding climate risk reduction programmes for SMEs have limited formal mechanisms for monitoring and evaluating those initiatives. Thus, no information is available about the uptake of these initiatives or the extent to which they have assisted business recovery over the long term. This reduces the opportunity to improve future programmes for SMEs.

The abovementioned constraining processes also limit the abilities of SMEs to direct their resources towards implementing adaptive strategies. For example, the lack of a sense of urgency amongst

support organisations about the need to implement programmes to assist SMEs deal with climate change is likely to hinder the opportunities available for SMEs to use their agency and implement proactive adaptation measures, particularly when the external context is not conducive or supportive of making such choices. Similarly, the poor coordination between stakeholders and the limited opportunities to share information may limit the agency aspect of the adaptive capacity of SMEs. For example, government departments delivering disaster recovery funding do not always obtain feedback from non-profits working on the ground on the significance of indirect impacts of extreme climate events on SME business recovery. Thus no future programmes are likely to be initiated by government agencies that will open up opportunities for SMEs to use their agency and adopt strategic planning initiatives (e.g. diversification of their customer bases).

Mallon, K, Hamilton, E, Black M et al., 2013, Adapting the community sector for climate extremes: Extreme weather, climate change & the community sector – Risks and adaptations, National Climate Change Adaptation Research Facility, Gold Coast, 286 pp.

People experiencing poverty and inequality in developed countries are more susceptible than the general community to climate change impacts and particularly extreme weather events. While the evidence discovered, in the form of academic literature in peer-reviewed journals, was strong, the review also found more literature focused on the needs of particular groups, such as elderly and frail people, than on others, such people experiencing homelessness.

- Community Service Organisations increase the resilience of people experiencing poverty and social disadvantage. This finding was based on evidence in the forms of analysis conducted by the community services sector and grey literature. There is a gap in the academic literature.
- Evidence from sector analysis and grey literature suggests the potential roles and importance of Community Service Organisations in climate change adaptation. However, the evidence base is more limited and there is a significant gap in the academic literature.
- Community Service Organisations are at risk of failure or strain from climate change. There is a significant gap in the academic literature addressing this issue and this finding was reached using proxy-based evidence from the disaster management, health and small and medium-sized enterprise (SME) sectors.

Wenger, C 2013, Climate change adaptation and floods: Australia’s institutional arrangements, National Climate Change Adaptation Research Facility, Gold Coast, 65 pp.

This study explored flooding from the perspective of government function to determine:

- current policies and institutional arrangements in place to address flooding
- the types of reforms that would be required to reduce Australia’s vulnerability to flooding in the future.

The table below provides key recommendations relating to the function of government.

Problem	Barriers	Reform needed	Responsibility
Rebuilding to preexisting standards does not increase resilience to future flooding	Costs vs. lower long term damage costs Need for immediate restoration of infrastructure precludes lengthy cost-benefit analysis	Flood recovery strategies that merge with prevention Need for agreed processes with local governments to preapprove infrastructure suitable for betterment.	Federal
Insufficient funds for flood prevention / mitigation versus generous funding of relief and recovery	Lack of understanding about the long term cost effectiveness of Preventative approaches, coupled with short parliamentary terms of office: responsible spending is unlikely to receive due credit Political gains in the short term from a well-coordinated emergency response; negative media coverage if efforts are insufficient.	Increased funding of prevention, particularly for: <ul style="list-style-type: none"> • flood information • risk assessment • improved development planning • relocation of those most at risk and reassignment of land to flood compatible uses • ecosystem approaches Strong promotion to the public about the benefits of prevention and actions governments are undertaking. Establish relevance to all Australians, not just those in flood prone areas (i.e. higher tax and insurance premiums for all)	All levels of government, particularly the federal level through the NSDR
Non-mandatory consideration of flood risk in development legislation and processes	Conflicting policy objectives Short term versus long term gains Lack of flood mapping Length of time before key instruments are due for revision and complex processes for regular update and inclusion of flood information	Consistent policy, legislation and planning processes to ensure that future flood risks are assessed and addressed Mandatory inclusion of flood controls in local planning schemes Nationwide investment in cost-effective, basic flood mapping, such as QRA maps Processes to facilitate prompt inclusion of new flood information into local planning schemes	State government is responsible for policy, legislation, processes. Investment in large scale mapping exercises may need federal funding support. Local government responsible for inclusion of flood risk in planning schemes. Federal government needs to ensure its own development projects consider flood risk.