FLOOD INQUIRY SUBMISSION

QUEENSLAND DESIGN COUNCIL

8 April, 2011

Table of Contents

Executive Summary 1
- The terms of reference addressed in this submission 1
- Towards a design-led recovery 1

Summary of Recommendations 3

About the Queensland Design Council 4
- The benefits of good design 4
- 'Betterment' through recovery, by design 4
- Addressing disadvantage and community development through betterment 6

Background: 2011 Events 8
- Communications 8
- The condition of communities 8
- Looking forward 9
- Preparing for and mitigating climate change impacts while managing population growth 10

Recommendations 11
1. Ensure community education and consultation underpins local recovery priorities 11
2. Build ongoing resilience through social media engagement 11
3. Embed information resources to empower consumer choice 13
4. Boost 'innovation drivers' in the Queensland Reconstruction Authority's governance framework 16
5. Retrofit impacted schools to incorporate resilience and sustainability measures and integrate emergency facilities in the design and construction of new schools 17
6. Invest in targeted exemplar 'eco-resilient' works to showcase advanced adaption models 18
7. Integrate Queensland initiatives funded under the National Disaster Resilience Program into creative whole-of-Government climate adaptation and population growth responses 21

Attachment 1: Volunteering Queensland's Step Up program under the National Disaster Resilience Program 23

Attachment 2: Green Cross Australia's Harden Up partnership under the National Disaster Resilience Program 24

Bibliography 25

Appendix 1: Mainstream Media Coverage – Katrina Recovery 27

Executive Summary

The Queensland floods have revealed the vulnerability of the state's built environment as well as highlighting community strength. The extent of rebuilding required offers an opportunity to take stock of exposure to ongoing severe weather risk, and to deliver a recovery with leveraged benefits for community, property resilience and sustainable development. In future, Queensland's built environment needs to adapt to climate change impacts and the challenges of a growing population with increasing and evolving infrastructure needs, while entrenching the high level of community engagement evident in the community's flood response, and supporting efforts that build community resilience and mitigate environmental stresses.

Social media is a powerful tool, and is an important theme of this submission. Design is a social process, and the use of social media can help facilitate social inclusion. Linking social media and design will help build resilient communities. Social media can underpin intergenerational democracy: 'an approach to community engagement and participation that requires the inclusion of citizens representing all age groups, recognising there are many quieter but equally legitimate voices which are rarely heard in government policy and planning forums.'[1]

The terms of reference addressed in this submission

In this submission we specifically address:

c) all aspects of the response to the 2010/2011 flood events, particularly measures taken to inform the community and measures to protect life and private and public property, including

- *immediate management, response and recovery*
- *resourcing, overall coordination and deployment of personnel and equipment*
- *adequacy of equipment and communications systems; and*
- *the adequacy of the community's response.*

g) all aspects of land use planning through local and regional planning systems to minimise infrastructure and property impacts from floods.

The Queensland Design Strategy 2020[2] recognises that:
'Design adds value to our community on many levels. It can shelter, inspire and humanise society. We use design to improve products, processes and environments. It impacts on what we experience and how we experience it. Design can also improve everyday life for all sectors of society and give the world a sense of our cultural identity — how our history and place have shaped who we are and how we live.'

Towards a design-led recovery

'Design thinking' can improve the return on recovery investments if applied early and deliberately through policy and practice. Good design is a quantifiable benefit, not a cost. Its value can be measured economically, socially and environmentally.[3] In this submission, the Queensland Design Council makes recommendations encouraging policy design options that leverage the unique opportunity for innovation that the recovery presents. We support targeted initiatives that that boost resilience and sustainability supported by layered forms of community engagement that focus on the subtleties of place.

The Queensland Design Council was established to provide advice to the Queensland Government in achieving the vision and goals of the *Queensland Design Strategy 2020*. This nation-leading design strategy provides a unique and innovative way of responding to the natural disasters that have impacted the state in recent months. By integrating disaster mitigation and sustainability with good adaptive practices, Queensland can address multiple Q2 policy objectives and deliver a world-class Smart State response to the tragic events with positive longer-term returns, as well as responding to immediate local needs.

[1] (Urban Sustainability Support Alliance 2011)
[2] (Arts Queensland, Department of Education, Training and the Arts 2009)
[3] Ibid.

Queensland's response to events of 2010 - 2011 demonstrated notable community participation, innovative use of digital communication, and deep social resilience. It is the Queensland Design Council's observation that much of the response was catalysed by spontaneous initiative rather than by design. The recommendations of the Council therefore aim to integrate design led-thinking into policy and practice to embed and advance stronger:

- community engagement and connectedness, by social media and traditional means
- greater resilience in schools and exemplar residential, commercial and infrastructure projects
- innovation drivers that deliver valuable new Queensland intellectual property
- whole of Government buy in to the National Disaster Resilience Program.

Summary of Recommendations	Summary of Action Required
1. Ensure community education and consultation underpins local recovery priorities	*Invest in community dialogue and deliberation to support local government prioritisation of recovery needs:* Meaningful dialogue must include consideration of alternative models for replacing 'like with like' rebuilding projects as well as opportunities for 'betterment'[4] through exemplar initiatives that advance resilience, sustainability and community development outcomes.
2. Build ongoing resilience through social media engagement	*Policy and practice reform to support Web 2.0 through government agencies and community led initiatives:* Queensland adopted world-class use of social media in the flood response. There is now potential to improve resilience through ongoing cultivation of Queensland digital community engagement in preparation for the inevitable future severe weather events. For example see: http://www.brisbanetimes.com.au/queensland/social-media-to-the-rescue-20110404-1cx1o.html
3. Embed information resources to empower consumer choice	*One-stop-shop information resources (online and through regional recovery centres) that offer practical sustainable design and rebuilding tools and incentives:* Practical information about survival, sustainable design and fit out and property resilience measures can help residential, business and government audiences to reduce their environmental and greenhouse emissions and energy bills as they rebuild. For example see Victorian government funded consumer information tool for Black Saturday: http://www.builditbackgreen.org/bushfires/interactive-green-building-guide.aspx
4. Boost 'innovation drivers' of Queensland Reconstruction Authority	*Use of market-based innovation clearing houses to stimulate Smart State responses:* The creative edge of Queensland's recovery can be catalysed if Queensland Reconstruction Authority embraces community led initiatives such as the 'Flood of Ideas' as a recognised element of its deliberation framework. Similar mechanisms can be adopted for specific tenders that showcase targeted exemplar projects.[5] See: http://floodofideas.org.au/
5. Retrofit impacted schools to incorporate resilience and sustainability measures and integrate emergency facilities in the design and construction of new schools.	*Investing in retrofitting of schools and building of new schools to advance resilience and sustainability*: The Queensland Government can readily build on the social capital of schools by drawing on the substantial infrastructure footprint and green school leadership of Education Queensland. Schools are the focus for many Queensland communities, as public infrastructure and vital community hubs. Site selection and disaster mitigation are already key considerations in the design of Queensland school facilities. The Council recommends that where new schools are proposed or where schools are retrofitted post-disaster, the integration of emergency facilities should be designed into construction. Modest investments can deliver significant betterment to the Queensland school system to enable schools to become community hubs that support disaster preparedness and sustainability engagement locally, including co-locating of emergency response facilities where appropriate. See: http://www.ineesite.org/index.php/post/safer_school_construction_initiative/
6. Invest in targeted exemplar sustainable and resilient rebuilding works to showcase advanced adaption models	*A multi-billion dollar recovery can and should identify focused projects which push the envelope of 'business and usual' to showcase Queensland intellectual property that advances eco-resilient community outcomes*: The Queensland Reconstruction Authority can support community and business responses that advance resilience and sustainability outcomes in light of ongoing 21st century climate change adaptation challenges. The Queensland Design Council supports implementation of focused 'eco-resilient' pilot projects, including schools, affordable housing, commercial building and infrastructure projects. Queensland Design Council members have participated in the framing of the 'Build it Back Green Queensland' initiative and recommend consideration of stakeholder engagement outcomes to the Inquiry. See: http://www.greencrossaustralia.org/media/9742561/gca_bibgqld_stakeholder%20workshop_report.pdf
7. Integrate Queensland initiatives funded under the National Disaster Resilience Program into Whole-of-Government climate adaptation and population growth responses	The Queensland Department of Community Safety is making considerable and innovative investments in community resilience matched by Emergency Management Australia through the National Disaster Resilience Program.[6] A number of these initiatives bring together community, business, research and local government agencies to ensure widespread engagement with natural disaster preparedness and response. The visibility of these imaginative partnerships is limited from a whole-of-government perspective. We recommend a focused whole of government dialogue addressing creative responses to building resilience while addressing growth. For example see: http://www.emergencyvolunteering.com.au/documents/NDRP%202010-11%20Application%20Form_Volunteering%20Qld_Step%20Up%20Program.pdf and also see: http://www.greencrossaustralia.org/media/9730745/hardenup.org.pdf

[4] 'Betterment' is a provision within the NDRRA (Attorney-General's Department 2011)which is discussed on Page 4 of this submission.
[5] http://floodofideas.org.au/
[6] See: http://www.communitysafety.qld.gov.au/ndrp/

About the Queensland Design Council

A Ministerial Advisory Council, the Queensland Design Council was appointed by the Premier and then Minister for the Arts in 2010 to provide strategic, independent advice on design-related issues and design-led responses to the diverse social, environmental and economic challenges faced by Queenslanders. The Council is an enabling body with members whose expertise covers a wide range of fields from business, arts, design and education, offering a holistic approach to the integration and promotion of design within Queensland. It is chaired by Professor Julianne Schultz AM.

The role of the Council is to:

- advise the Queensland Government on national and international opportunities, trends and challenges to achieve the vision and goals of the *Queensland Design Strategy 2020* and position Queensland in the global economic context
- examine the contribution of design and design-led thinking to the economic and social development of Queensland and protecting Queensland's environment
- advise on design-led solutions that meet the Q2 strong, green, smart, healthy and fair ambitions and targets
- identify opportunities for design and design-led thinking to enhance the delivery of public services, and encourage collaboration between the design, public, business and education sectors
- champion good design and promote its benefits to the broader Queensland community.[7]

The benefits of good design

Design encompasses a range of disciplines, from industrial design at the component level to urban design. Held in common between all design professions is a careful analysis of needs and current conditions, combined with the possibilities of *what if*.

Brought into the development process early, designers can offer an array of benefits including:

- design of physical and social infrastructure of communities as an essential precursor of resilience
- identifying applications for emerging technologies and demonstrate the credibility of new technology for investors
- anticipating future market opportunities and trends
- allying a product or service to the needs of users
- injecting new thought processes into often exclusively technical teams[8]

'Betterment' through recovery, by design

In Australia, State and Territory Governments have the primary responsibility for dealing with natural disasters. The Commonwealth does however assist with disaster relief and rehabilitation through the Natural Disaster Relief and Recovery Arrangements (NDRRA).[9] The NDRRA is designed to help share the financial burden of disaster recovery with the Commonwealth, providing a cost sharing formula as well as a package of pre-agreed relief measures that may be activated following an eligible disaster.

[7] (Arts Queensland 2010)
[8] (UK Design Council 2003)
[9] For background on NDRRA see: http://www.ema.gov.au/www/emaweb/emaweb.nsf/Page/EmergencyManagement_RecoveringfromEmergencies_NaturalDisasterReliefandRecoveryArrangements_NaturalDisasterReliefandRecoveryArrangements

Under the NDRRA, claims are made to Emergency Management Australia (EMA) for partial reimbursement of expenditure on eligible disaster relief measures for eligible natural disasters. Following every disaster there is an urgent need to restore services and infrastructure however, as the 2011 Determination within the NDRAA noted, these events also provide opportunities for betterment to enhance future resilience. Betterment is defined as:

> ***Essential public asset betterment***
>
> 3.6.5 In this Determination ***betterment***, in relation to an asset, means the restoration or replacement of the asset to a more disaster resilient standard than its predisaster standard.
>
> 3.6.6 *Betterment* of an asset will be considered an eligible measure if:
> a) the asset is an *essential public asset*; and
> b) the *state* informs the *Secretary* of its decision to restore the asset to a more disaster resilient standard, and of its reasons for doing so; and
> c) the *Secretary* is satisfied with the cost effectiveness of the proposal; and
> **d)** the *Secretary* is satisfied that the increased disaster resilience of the asset will mitigate the impact of future *natural disasters*. [9]

The betterment policy goes to the heart of how disaster recovery can ensure that recovery goes beyond previous business as usual. Comments from The Hon Simon Crean, Minister for Regional Australia, Regional Development and Local Government, in Federal Parliament on 9 February 2011, highlighted the importance of this policy. He described the building of the Einasleigh Bridge as an example of how betterment could draw on a wide range of sources, and build connections to ensure future resilience in flood prone areas. An excerpt of Minister Crean's speech follows:

> *The issue that I mentioned before has struck me most in my discussions - the importance of flood mitigation and flood-proofing. Again, I pose the question: what is the point of replacing vital infrastructure if it remains vulnerable? This is where the principle of betterment under the NDRRA needs to be carefully considered. A great example of a creative response to a previous flood is the opening of a new bridge at Einasleigh in the savannah country of Far North Queensland, a bridge that I opened on 20 January in the wet season. I think they said I am the only minister that has ever visited the Gulf and savannah country in the wet season. I was there with the mayor, Warren Devlin, and many of the mayors from surrounding areas because it connected six shires. I was there with the Member for Kennedy.*
>
> *It was an example of a flood-proofing response to a flood that occurred in 2009. They went beyond the NDRRA payments and looked to the Regional and Local Community Infrastructure Program, RLCIP. We found a creative way to build a flood-proof bridge. Interestingly, when we were there to open it, the floodwaters were over the previous bridge. In other words, in another circumstance, the crossing would have been cut.*
>
> *We have found a creative way towards betterment through existing programs, and that is the challenge that I have been putting out to local government and the RDAs: 'Be creative in the ways in which you address this problem. Don't just make the claim under the NDRRA and look to Commonwealth programs; look to state programs, look to forward programs in local government. Let's see if we can't get a better approach.*
>
> *That lesson of the Einasleigh Bridge, in my view, needs to be applied to the rebuild. There are other Commonwealth programs, there are other state programs and there are local government opportunities in terms of their forward commitments. That is an issue that creative thinking needs to be going into.*
>
> *In relation to betterment, we should be looking at this concept from the point of view of not only replacing government infrastructure but also how to encourage the private sector, small business and primary producers to embrace better flood mitigation practices. That is how we build more resilient, self-reliant communities in the future. That is the legacy we should be aiming for out of this tragedy.* [10]

[10] (The Hon Simon Crean MP 2011)

'Betterment' is a hot topic in Queensland at the moment. Impacted communities and their local representatives are understandably focused on immediate responses, and the urgency of rapid response naturally leads to pressure for fast, low-cost and conventional solutions. A business as usual response, however, misses the opportunity to recover in a resilient manner which will help mitigate against future disasters; at worst it may fail to leverage other critical government policy objectives, including protection of natural resources and reduction in greenhouse emissions.

Addressing disadvantage and community development through betterment

It is generally recognised that natural disasters have a disproportionately large impact on more vulnerable communities. [11] This is because high hazard locations tend to be more affordable, because low-income families have less capacity to absorb recovery shocks, and because disadvantage at a community level is exacerbated by recovery stress.

One tragic consequence of replacing like with like can be that low income families miss out on the opportunity to reduce their energy bills in the aftermath of major events because they are not aware of, or unable to afford and access, the longer term benefits of insulation or replacing lost goods with more energy efficient models.

As noted from the definition of betterment within NDRRA, the scope is currently limited to essential public assets. The Council understands that betterment has never been applied at scale through disaster response, despite Minister Crean's mention of its potential. The Queensland Design Council would like to broaden the discussion of betterment beyond physical infrastructure to address the opportunity to support disadvantaged communities in preparation for likely future ongoing severe weather exposure.

An essay recently published ABC Unleashed online points to the potential for betterment in relation to business and community development through recovery. *A Disaster Resilient Future: how to spend $5 Billion* by Douglas Megendanz[12], an adjunct lecturer from the University of Queensland's School of Political Science and International Studies offers useful background context in relation to the approach taken by the Queensland Design Council in framing recommendations to this Inquiry:

> Prudent investors always invest their money with an eye to getting back a decent rate of return. The same idea should be applied to rebuilding Queensland. The difference between the ordinary investor and the Government is that the Commonwealth has $5.6 billion to invest.
>
> There are at least two types of returns on that investment, one well known, the other less so. The first type is well-known: by investing a significant funding, the governments hope to stimulate short-to-mid-term economic recovery. The benefits are obvious. The second type of return on investment is less well known, but nonetheless should guide where the Commonwealth's $5.6 billion is invested as much as economic recovery will.
>
> Found in the Commonwealth's 2007 Ministerial Determination for Natural Disaster Relief and Recovery Arrangements (NDRRA) is the 'betterment' provision. This piece of enlightened planning allows governments to share the costs of rebuilding infrastructure damaged by disasters to better than a pre-disaster standard. That's why it's called betterment.
>
> The idea is simple: don't replace like with like; rather, repair and rebuild damaged infrastructure so it can withstand future disasters. Of course the up-front cost will increase because you are disaster-proofing your infrastructure. But the potential return on investment is good: less community suffering and reduction in the cost of recovery to the governments in the future.

[11] Braine 2006
[12] Magendanz 2011

Research puts the return on such investments at 15 per cent. It could be much higher.

However, while the betterment provision has been available for use by governments since 2007, it has not been used by the Commonwealth, States or Territories. Betterment is the sleeping giant of disaster resilience in Australia.

Betterment is similar to disaster mitigation. The difference being that betterment is delivered through a relief and recovery funding mechanism. The disaster recovery period reveals where infrastructure is fragile or vulnerable to damage. Investing in betterment means that you direct funding to strengthening those vulnerabilities.

In fact, betterment is such a good idea that its application should not be limited to public infrastructure. Versions of betterment, such as soft-betterment and micro-betterment, could be applied to rebuilding the social and economic fabric of disaster affected communities.

The key to betterment, and to its socio-economic versions, lies in the suite of measures that comprise the NDRRA. Those 20 or so measures allow governments to make carefully targeted interventions to help individuals, families, NGOs, small businesses, and primary producers. Taken together, these measures make the NDRRA an impressively sensitive policy instrument.

Although betterment is one NDRRA measure among others, the *principle* of betterment can be applied to other NDRRA measures. For example, when government funds the recovery of small businesses, it could ear mark 'betterment' grants for those businesses that are particularly important to the continuity of a community in the recovery period: local grocery stores, hardware stores, stores with ATMs and so on.

Or when individuals receive personal and financial counselling, counsellors are able to provide advice on how to better cope with disasters in the future. Here, the idea of betterment is applied to build the resilience of individuals and families.

In these ways, governments can use NDRRA to help communities to do more than recover: they can help them become more self-reliant and therefore more resilient to future disasters.

The question is: if such a provision exists, why hasn't the betterment provision been used? There have been two obstacles; two things that governments need to take advantage of the betterment provision.

First, they need comprehensive regional and state-wide natural hazard risk assessments. Governments need to understand the natural hazard risk profiles of different communities, including the potential impact of climate change. This provides a sound basis for prioritising the funding of betterment projects.

The second thing governments need to take advantage of the betterment provision is a method by which to determine relative value of comparative betterment projects. Given limited funding, should we upgrade a road for $120 million or a bridge for $40 million? Policy decision-makers need a cost-benefit methodology suitable for betterment projects to help answer such questions.

The good news is that these obstacles will soon be removed and that Australia could see its first ever betterment project begun this year.

There's one last thing a prudent investor knows: you should invest where you get the biggest bang for your buck. The challenge faced by policy decision-makers is not whether or not to use betterment — they should — but what betterment investments are best for the community?

Background: 2011 Events

The impacts from the 2010-11 floods and cyclone Yasi have been felt across all Queensland communities. Reduction in revenue from the floods alone, has been estimated by the National Australia Bank to be -9.8% nationally and -5.1% in Queensland.[13]

In the aftermath of the floods, there was unprecedented community engagement. Thousands of public volunteers performed a range of tasks to return much of the state to near-normal patterns of occupation. Without this large volunteer workforce, responsibility for cleanup and financial burden of the floods and cyclone would have been significantly higher for government and business, with greater flow on affects to households. In the context of increasingly extreme weather patterns, the damage has highlighted both the strength of community spirit in a state that has experienced unprecedented population growth in the past decade, as well as the susceptibility of the built environment to the vagaries of weather.

Extreme weather events internationally have drawn attention to building resilience as a means of mitigating the effects of natural disasters. Resilience incorporates the ability of communities to rebound after a disaster, socially, physically and economically. Internal support and cohesion of a community can ameliorate damages created by natural disasters. In a state with projected high rates of growth, ensuring future community resilience cannot be left to chance.

Communications

The combination of Australian Broadcasting Corporation (ABC) Local Radio's coverage, as the emergency broadcaster, and innovative use of social media by Queensland Police and other branches of Government, engaged and informed communities. ABC Local Radio Queensland's broadcast extended beyond the Memorandum of Understanding with State Government[14] to a broad coverage including personal narratives and questions. As The Australian newspaper noted, this coverage almost certainly saved lives.

Queensland Police Media, diversified its message during the disasters, using social media in addition to traditional media, notably to respond to and debunk unsubstantiated rumours as it was made aware of them. The use of Facebook and Twitter were successful in application during the disasters in four ways:

- Providing access to information via a new platform (smart phones)
- The ability to transmit information almost instantaneously
- As an accelerant for the dispersal of messages from traditional media sources
- As a means of coordinating and informing through their network capabilities.

The condition of communities

Discussions within the Queensland community on the response post-disaster are particularly important because of the predicted increase in severity and frequency of significant weather events. This has occurred through a variety of means. One initiative which the Council particularly commends is the Flood of Ideas,[15] a digital forum which encourages the general public and designers with 'big ideas' to propose future initiatives. Flood of Ideas generates open communication between professionals and public, to discuss the floods and possible adaptive measures. Through the suggestions and subsequent dialogue,

[13] (National Australia Bank 2011)
[14] (Department of Community Safety 2005)
[15] http://floodofideas.org.au/

Flood of Ideas has documented the knowledge and experience garnered from the disaster in our community.

Despite an understandable desire from some communities for technical solutions to prevent flood, such as levees and higher revetment walls, the rebuilding of the built environment needs to be balanced with consideration about how the most effective way to rebuild communities to increase resilience and responsiveness to future disasters.

Looking forward

This is particularly important in a high growth state, where many residents have had little previous experience with the weather events characteristic of Queensland's tropical and sub tropical climate. This is likely to continue in future - the ease of movement and efficiency of communication remove barriers to mobility.[16] Fluid populations have less local knowledge of the impact of past weather events and the scale of likely impact. For instance, residents were urged to evacuate low-lying areas ahead of a predicted 4 metre storm surge from cyclone Yasi. Locals in those regions, with knowledge derived from experience and anecdotes would have understood in a tangible way what such a surge would mean. Newcomers lacked this context and background, exposing them to greater risk. Providing newcomers with reliable and meaningful information about ways to respond to possible extreme weather events should be an important priority in all local government areas.

The shape of communities varies, for instance Innisfail has a high long-term resident population, whereas Townsville has a larger transient population based as a result of the dominance of defence and mining sectors. In times of disaster, the areas with more long-term residents generally have a higher level of community engagement, which translates to a smaller call on public resources. Such engagement is desirable as it reflects a community that is resilient and able to respond quickly in times of emergency, with shorter recovery times from disasters.

Many Queensland cities have a transient, high growth population and are based on the coast where extreme weather events are likely – for instance, Mackay and Gladstone are expected to have growth exceeding 3%.[17] These coastal growth areas require corresponding high levels of infrastructure investment to satisfy the expanding population. The proximity of the population to the coast increases the risk and frequency of weather events. In context of climate change, and the anticipated increase of extreme weather events[18], the importance of building community resilience is multiplied.

Drawing lessons from the events this year, the new cities and growth regions of Queensland have an opportunity to ensure that the principles of resilience are included from the planning stage and also, that the community participation post disaster is recognised as an asset that needs to be entrenched through good design.

[16] (Zandvliet 2008)
[17] (Taylor 2010)
[18] (Preston 2009)

Preparing for and mitigating climate change impacts while managing population growth

The 2010 Climate Q Report offers important context for this Inquiry in relation to the impact of predicted warming trends on future weather and severe weather trends in Queensland. [19] 'Importantly,' the report states, 'ClimateQ strengthens the focus on adapting to the impacts and we will continue to invest heavily in long term adaptation measures to help Queenslanders deal with risks and challenges affecting climate-dependent industries and communities. Building resilience to future changes occurring in the natural environment over time is central to our policy response.'[20]

The Queensland Climate Change Centre for Excellence's (QCCCE) regional forecasts[21] signal that, 'south-east Queensland could face major challenges as a result of drier and warmer conditions. Coastal regions could face challenges due to a rise in sea-level combined with increased coastal development and rapid population growth. In far north Queensland there is likely to be more intense rainfall events, particularly in summer, with possibly fewer but more intense tropical cyclones.'[22]

Key messages from 'Climate Change in Queensland - What the Science is Telling Us'

The regional projections released in ClimateQ, Queensland's climate change strategy, indicate the key climatic changes expected in each of the 13 regions. Regional changes in temperature, rainfall and evaporation are expected to impact on Queensland's biodiversity, infrastructure, water supplies, primary industries, human health and emergency management. To reflect projected changes in temperature and rainfall across Queensland, policy and planning should be based on:

- *increased temperature, more hot days and warm nights*
- *increased frequency of heatwave events*
- *reduced rainfall across most of Queensland, with Cape York, the Gulf Region and Far North Queensland projected to be less affected than the rest of the state*
- *longer dry periods interrupted by more intense rainfall events, especially in the Gulf and Cape York*
- *rising sea levels of at least 0.8 metres by 2100*
- *increased number of severe tropical cyclones*
- *cyclones occurring further south*
- *increased hail days in south-east Queensland*
- *increased intensity of extreme rainfall events in some locations.*

The QCCCE regional impacts report shows that for all the regions, annual temperature increases are expected. The 'best estimate' rainfall projections show a decrease in annual rainfall in all regions noting that in actual terms, the best estimate of projected total annual rainfall shows a decrease of around 15 mm in Cape York and the Gulf.
The largest decrease of total annual rainfall is projected for south-east Queensland at 91 mm.'[23]

As we have seen from recent flooding, heavy rain after extended periods of drought can mean larger areas of inundation, so Queensland must prepare for future significant flooding events in a strategic context underpinned by climate modelling, especially in the context of designing clean energy based urban growth strategies.

Projections show a rise in annual temperatures across Queensland

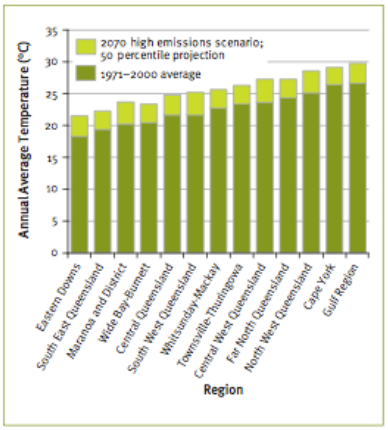


Figure 5.2: Annual average temperature (1971–2000), with the 'best estimate' projected changes by 2070 for a high emissions scenario
Source: QCCCE (using CSIRO and BoM 2008b data)

Projections show a decrease in annual rainfall in all regions (best estimate)

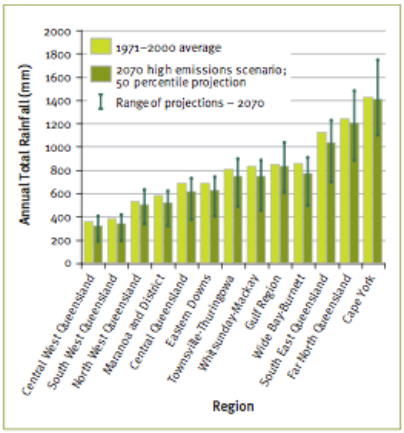


Figure 5.3: Annual total rainfall (1971–2000) with the 'best estimate' projected changes and range of changes by 2070 for a high emissions scenario
Source: QCCCE (using CSIRO and BoM 2008b data)

[19] (Office of Climate Change 2009)
[20] Ibid, see page ii.
[21] See Regional Impacts Fact Sheets here:
http://www.climatechange.qld.gov.au/whatsbeingdone/climatechangestrategy/impactsonqueenslandsregions.html
[22] Ibid.
[23] (Office of Climate Change 2009)

Recommendations

1. Ensure community education and consultation underpins local recovery priorities

Action required: Invest in community dialogue and deliberation to support local government prioritisation of recovery needs: Meaningful dialogue must include consideration of alternative models for replacing 'like with like' rebuilding projects as well as opportunities for 'betterment'[24] through exemplar initiatives that advance resilience, sustainability and community development outcomes.

In the aftermath of traumatic events, when immediate relief needs are pressing and media pressure towards fast-tracked recovery efforts builds, it is easy to understand the challenges of community engagement in framing recovery priorities. Local government authorities are tasked across Queensland to prioritise recovery needs, while households seek rapid return to normal lives given the tremendous stresses of dislocation. Because of these pressures, unless deliberate and supported efforts are made to support community engagement and deliberation about possible futures, the temptation at both household and community scales is to replace like with like, as cheaply and quickly as possible.

While short-term benefits are evident from this approach, longer term potential gains in resilient infrastructure, lower energy bills and more resilient natural assets remain a lost opportunity. To ensure that a full understanding of recovery options is reached at a community level, informed engagement and deliberation are vital.

Community deliberation can prioritise rebuild schedules, acknowledging the ability of communities to take ownership of the rebuild process as a step towards resilience.

2. Build ongoing resilience through social media engagement

Action required: Policy and practice reform to support Web 2.0 through government agencies and community led initiatives: Queensland adopted world-class usage of social media throughout the flood response. We now have the potential to improve resilience through ongoing cultivation of Queensland digital community engagement as we prepare for future severe weather events. For example see: http://www.brisbanetimes.com.au/queensland/social-media-to-the-rescue-20110404-1cx1o.html

Use of social media during 2011 Queensland severe weather events has redefined the global benchmark in this area. Examples of rich media applications developed and implemented by government and community organisations are highlighted on the following pages.

Following the floods, Queensland Information Commissioner Julia Kinross encouraged the development of a two way conversation between government and the community, stressing that government intends to better harness these tools to reach out during natural disasters.[25] The Commissioner stressed that as the Police learn from their flood experience with Twitter, they will explore other ways of using social media in areas like supporting Neighbourhood Watches to enable problem reporting. The Commissioner supports experimentation of using social media with aim of giving community information to better protect themselves.

While this trend is encouraging, the Council's recommendation is for proactive fostering of government social media engagement in the preparedness and response phases of emergency response. The Council notes that the Queensland Police Service (QPS) started its Facebook and Twitter accounts in May 2010.

[24] 'Betterment' is a provision within the NDRRA which is discussed on Page 4 of this submission.
[25] Gunders 2011

QPS Director of Media and Public Affairs Kym Charlton has stated that the lauded use of Twitter mythbuster by the police during the floods was not part of an articulated strategy. Rather, she says, 'We did it in the absence of policy. There is no policy around social media at the moment but on the balance we thought it was more risky for us not to be involved in social media than to be involved, for the reasons shown in the last couple of weeks'[26].

On the following pages we highlight just some of the applications which captured the imagination of the public and supported high levels of self-reliance, volunteering and emergency messaging across Queensland and Australia.

Our recommendation is for the Queensland government to build a strategic focus on deployment of social media strategies across the full range of agencies involved in disaster response. Inclusive and proactive engagement right across the formal Queensland Disaster Management System[27] is needed including with support for local government involvement.

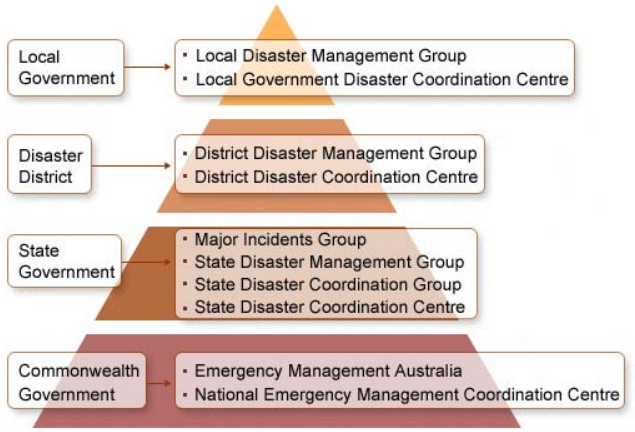


Figure 1 - The Queensland Disaster Management System

In particular it is vital that the strategic envelope for this engagement include businesses who play a vital part in recovery (transport, finance, communications, energy), key media players including the ABC, regional press and The Weather Channel and crucially, the community sector whose role is equally vital, including emergency volunteering agencies.

We provide three examples to stress the importance of proactive policy and funding support for these types of initiatives which save lives, support 72 hour survival, and build a culture of awareness to hazards that will be increasingly vital over coming years and decades given the predicted severe weather recurrence across Queensland.

Example 1: ABC use of Ushahidi crowdsourcing platform[28]:
This platform is ABC Innovation's exploration into how crowdsourcing and social media can contribute to emergency management, major event reportage and information gathering. Crowdsourcing is making an open call to an undefined, large group of people or community (a crowd), to provide information about a topic or to complete a task. According the recent Government 2.0 taskforce *Social Media Helping Emergency Management*[29], 'Citizens are willing to trade off reliability and accuracy for timeliness and will resort to other information sources such as Social Media if authorities cannot provide timely information.'

Ushahidi is part of a new generation of mapping tools that crowdsource information on events and crises and then map this information in near to real time. These tools have been used successfully to track emergency and crisis situations internationally. The ABC will put out an open call to our audience for people to either SMS, email, tweet or go to our site and submit an online form. ABC moderators will check reports and publish them as either verified ('trusted') or unverified reports in the map.'[30]

[26] (Riordan 2011)
[27] (Emergency Management Queensland 2006)
[28] Images of examples cited are taken from (van der Vlug 2011)
[29] (NGIS 2009)
[30] For background on how ABC Innovation supported this platform see: http://www.abc.net.au/corp/pubs/documents/3113079.pdf

Example 2: Queensland Police use of Twitter[31]:

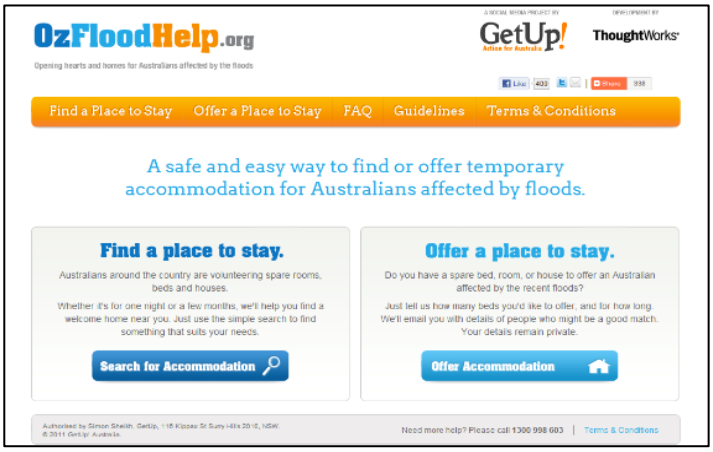
This initiative is widely acknowledged as a ground-breaking use of Twitter to dispel rumours and quickly disseminate vital real-time information by the Queensland Police Service. As an ABC article reported on 20 January 2011,[32]:

'The Queensland Police Service (QPS) is a traditional and conservative organisation, not known for its savvy. But as the Queensland floods crisis worsened, the Queensland Police Service used social media tools Facebook, Twitter and YouTube to get its message to the public directly.

The QPS started its Facebook and Twitter accounts in May last year, making it a relative latecomer to social media. But a push by Ms Charlton, the QPS director of police media and public affairs, has paid off enormously in the past month.

"We did it in the absence of policy. There is no policy around social media at the moment but on the balance we thought it was more risky for us to not be involved in social media than to be involved, for the reasons as shown in the last couple of weeks," she said.

Example 3: OzFloodHelp.org with support from GetUp!



This website was rapidly developed and scaled up to address the urgent accommodation needs of Queensland residents in an innovative way which connected people offering a place to stay with people that needed one.

Support from GetUp! including television advertising helped to build traffic across this site and is a useful example of how mainstream media can interface with social media to support resilience.

Without the social entrepreneurship of the team behind www.ozfloodhelp.org and the community distribution offered by GetUp! there would have been greater suffering this year.

3. Embed information resources to empower consumer choice

Action required: One-stop-shop information resources (online and through regional recovery centres) that offer practical sustainable design and rebuilding tools and incentives: Practical information about sustainable design and fit out and property resilience measures can help residential, business and government audiences to reduce their environmental and greenhouse emissions and energy bills as they rebuild. For example see Victorian government funded consumer information tool for Black Saturday: http://www.builditbackgreen.org/bushfires/interactive-green-building-guide.aspx

In the aftermath of Hurricane Katrina, community, business and government leaders came together to explore opportunities to build back better, with sustainability and innovative design underpinning exemplar projects that could become the basis for informed choices particularly in the 9th ward where much of the residential devastation occurred.

[31] Image taken from (van der Vlug 2011)
[32] (Riordan 2011)

From this came a number of initiatives which together have become a focal point of national discussion about sustainable and resilient community development models out of disaster recovery. A sample of the media coverage is included at Appendix 1. President Obama visited new green New Orleans schools[33] that showcase energy saving, healthy and sustainable learning centres of the future.

The Council argues that three elements are required to deepen and layer community information engagement to support sustainable and resilience post-disaster rebuilding. Online resources, on the ground community rebuilding centres, and a community talks program are all still being used in the New Orleans recovery, five years after Hurricane Katrina. In light of anticipated future events of growing magnitude, the Council believes it is in the interest of Queenslanders for the Government, philanthropic community and private sector to develop similar resources across the state.

New Orleans information resources:

1. A 'Build it Back Green'[34] website that includes practical building tips, trades videos about green products and services, and a green product guide that offers links to suppliers across Louisiana and nationally.

2. Green Building Centres that offer personal advice and sample products.[35]

3. Community green talks program to bring together sustainability experts, community leaders and local residents to discuss opportunities to save money on energy bills, improve water and waste management and involve the philanthropic and volunteering communities in green building support. Five years into the recovery this community engagement program remains a vital driver for disseminating information about sustainable consumer choices:

Saturday, March 26th: Green-It-Yourself Workshop

Global Green USA 's **Build It Back Green Program** is proud to present a series of **monthly educational workshops** that teach residents the **whys and hows of green building and energy efficiency**.

Green-It-Yourself Workshop: Landscaping for the Rainy Season

Did you know that **New Orleans is the third rainiest city** in the US, averaging **64" of rain** per year, more than Seattle? Stop worrying about **Spring street flooding** and soggy spots in your yard, and **come learn how** to live with our rain. **Demetria Christo** of EcoUrban LLC will be on hand to talk about **managing water** in your yard through easy measures like **rain barrels, rain gardens,** and **permeable landscaping.** The workshop will include a tour of Global Green's **LEED Platinum Holy Cross Project,** where you can see these techniques in action.

Green-It-Yourself Workshop
Saturday, March 26th
11:00am to 1:00pm
Holy Cross Project
409 Andry Street
New Orleans, LA 70117

Global Green events are FREE and open to the public.

For more information on this and all GBRC events, please contact Heidi Jensen at our **Green Building Resource Center**: hjensen@globalgreen.org

In the aftermath of Black Saturday, Sustainability Victoria funded Green Cross Australia to develop a similar online resource to support 2,000 families rebuilding from tragic bushfires. www.builditbackgreen.org went live in mid 2010 and features an interactive tour through a bushfire resilient green home, offering information about 75 product and service categories with links to more than 400 providers and additional sources of information. Currently 5,000 people are using www.builditbackgreen.org including residents affected by the Perth bushfires in 2011.

[33] See: http://www.globalgreen.org/press/124
[34] See: http://www.globalgreen.org/bibg/
[35] See: http://www.globalgreen.org/bibg/resource_center/

The recommendation for provision of information resources underscores the obvious fact that unless Queensland communities impacted by floods and the cyclone have access to rebuilding choices, they will not be empowered to consider options that have the potential to substantially reduce future energy bills and contribution to environmental and resilience gains.

4. Boost 'innovation drivers' in the Queensland Reconstruction Authority's governance framework

Action required: Use of market-based innovation clearing houses to stimulate Smart State responses: The creative edge of Queensland's recovery can be catalysed if Queensland Reconstruction Authority embraces community led initiatives such as the 'Flood of Ideas' as a recognised element of its deliberation framework. Similar mechanisms can be adopted for specific tenders that showcase targeted exemplar projects. See: http://floodofideas.org.au/

The pressures for swift responses can become a barrier to innovation, despite the longer term benefits that thinking outside the box can bring. Sometimes simple solutions can offer surprising returns – yet unless there is a mechanism for building innovative thinking into decision-making such ideas remain untested. 'Flood of Ideas' is a remarkable and genuinely Queensland based bottom up Smart State response to recovery challenges.

The Council's recommendation is for a forum of ideas such as the Flood of Ideas to be formally incorporated into decision-making processes through a tailored competitive process led by Queensland Reconstruction Authority. The article below conveys the catalytic potential of some ideas coming through:

> **Flood of ideas for inundation innovation**
> Dan Nancarrow, Brisbane Times, March 8, 2011 - 3:00AM
>
> Their lightweight house constructed on a floatable pontoon will rise with the waters, a solar panel on the roof providing electricity to the property.
>
> That's if one of the amazing ideas put forth by Brisbane residents on the **Flood of Ideas** website comes to fruition.
>
> The initiative of Healthy Waterways and the State Library of Queensland aims to better prepare the city for the next rise of the Brisbane River by encouraging residents to provide ideas for how flooding can be better managed, retreated from, attacked or defended against in the wake of the recent summer floods.
>
> So far the website has received designs from throughout the urban design community and will also receive ideas from architecture students from the University of Queensland, Queensland University of Technology and Queensland high schools.
>
> But one of the brains behind the initiative, Alan Hoban of Water by Design, said the general public should not feel intimidated by the aesthetic quality of the designs already submitted, and urged everyone to upload an idea for how to tackle the disaster.
>
> "One of the things we want to do is make this as democratic as possible," he said.
>
> "We want to make sure that there are a mix of 'back of the serviette' sketches as well as the high end designs.
>
> "Just about everyone who saw the floods this year had an idea about how we could at least do one thing differently, so that things wouldn't be so bad if we had flooding again.
>
> "We want to capitalise on those ideas and then be able to put them into a format where they are accessible and of use to government so they can consider them in future policy making.
>
> Mr Hoban said organisers were looking for ideas ranging from how to deal with an individual catchment area or how to protect a specific community to how an individual house might survive a flood.
>
> The designs on the website range from a bumper sticker reading "Floods Happen" to maintain awareness of flooding to sophisticated housing designs.
>
> Mr Hoban said one of his favourites was a design called "Every Park Should Have a Knoll".
>
> "It is just a very elegant, simple, concept about raising a mound in every park where you put your critical infrastructure so it's not damaged when there's a flood," he said.
>
> "I'm also really taken by the detail of the New Farm image, which is a black and white hand-drawn sketch looking at how the suburb might be reworked.
>
> "There is a really fine level of detail there, it's almost like a Where's Wally drawing and you can even make out in the corner the little flood sculpture down at the Powerhouse.
>
> "There's some really complex ideas and really simple ones and I like that spectrum."
>
> Organisers plan to hold an exhibition in mid-April to showcase the submissions.

"We also want to workshop the ideas and from that tease out some key themes and recommendations that can be of use to government as they consider how they better respond to the floods," Mr Hoban said.

"At the moment the government has got a very difficult task responding to the floods, it is very difficult for them to engage in out-of-the-box thinking.

"So what we hope to do is broaden the scope of the public debate.

"There's been a big focus on whether or not someone operated the dam properly but we want to look at the floods as an opportunity to rethink what it means to be flood resilient as a society."

Although Mr Hoban said the ideas gathering activity itself was a community-building activity the organisers also planned to document the ideas so future generations could see how the 2010/11 floods were managed.

"When you look back to 1974 or even 1893 it's hard to find records of some of the ideas that came out of those events, but when you can get hold of them they're fantastic," he said.

"Along with the website the State Library will be going back through its archives and uncovering ideas that came out of the 1974 floods.

"What we want to do is make that exercise an easier one for future generations, they can go to the flood of ideas website and see what the thinking was in that point in time."

The website allows users to upload their own design along with 200 words describing the idea.

Users can also comment on the submitted ideas and flag the designs they like.

Organisers hope to continue uploading submissions to the **floodofideas.org.au website** for up to 12 months.

Ideas can be submitted **here**.

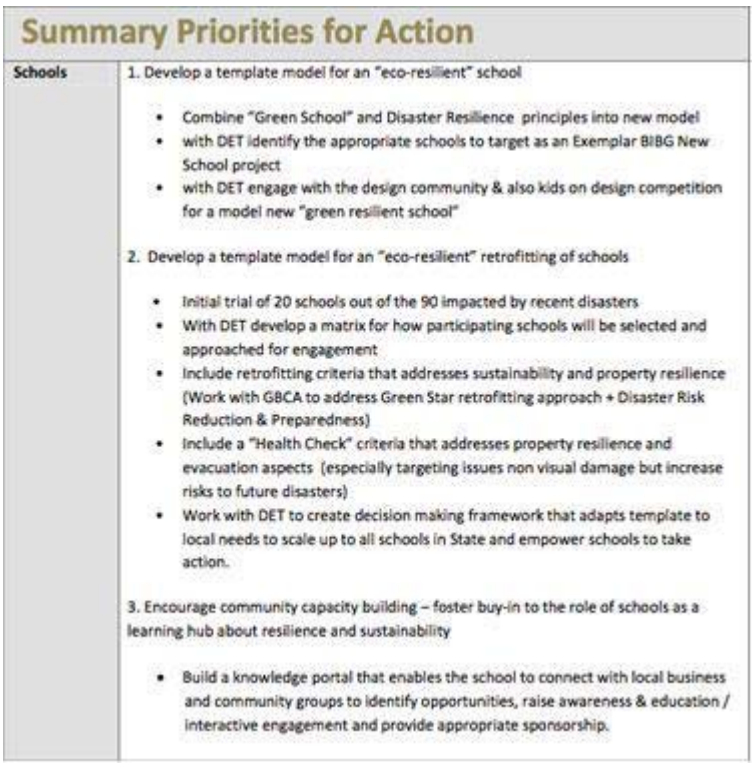
This story was found at: ***http://www.brisbanetimes.com.au/domain/renovation-and-decoration/flood-of-ideas-for-inundation-innovation-20110308-1bm2c.html***

5. Retrofit impacted schools to incorporate resilience and sustainability measures and integrate emergency facilities in the design and construction of new schools

Action required: Invest in retrofitting of schools and building of new schools to advance resilience and sustainability: The Queensland Government can immediately build on the social capital of our schools and the substantial infrastructure footprint and green school leadership of Education Queensland. Schools are the focus for many Queensland communities, as public infrastructure and vital community hubs. Site selection and disaster mitigation are already key considerations in the design of Queensland school facilities. The Council recommends that where new schools are proposed or where schools are retrofitted post-disaster, the integration of emergency facilities should be designed into construction. Modest investments can deliver significant betterment to the Queensland school system to enable the framing of schools as community hubs that support disaster preparedness and sustainability engagement at a local level including co-locating of emergency response facilities where appropriate. See: ***http://www.ineesite.org/index.php/post/safer_school_construction_initiative/***

On March 17 a 'Build it Back Green' Stakeholder Workshop was held in Parliament House (see attached Report) which included a stream of discussion addressing the opportunity to rebuild and retrofit disaster affected schools in a manner which integrates practical property resilience measures, sustainability features, and disaster preparedness/environmental education and community engagement programs.

The Workshop was organised by Green Cross Australia with support from the Department of Environment and Resource Management in recognition that Green Cross's 'Build it Back



Summary Priorities for Action

Schools	1. Develop a template model for an "eco-resilient" school • Combine "Green School" and Disaster Resilience principles into new model • with DET identify the appropriate schools to target as an Exemplar BIBG New School project • with DET engage with the design community & also kids on design competition for a model new "green resilient school" 2. Develop a template model for an "eco-resilient" retrofitting of schools • Initial trial of 20 schools out of the 90 impacted by recent disasters • With DET develop a matrix for how participating schools will be selected and approached for engagement • Include retrofitting criteria that addresses sustainability and property resilience (Work with GBCA to address Green Star retrofitting approach + Disaster Risk Reduction & Preparedness) • Include a "Health Check" criteria that addresses property resilience and evacuation aspects (especially targeting issues non visual damage but increase risks to future disasters) • Work with DET to create decision making framework that adapts template to local needs to scale up to all schools in State and empower schools to take action. 3. Encourage community capacity building – foster buy-in to the role of schools as a learning hub about resilience and sustainability • Build a knowledge portal that enables the school to connect with local business and community groups to identify opportunities, raise awareness & education / interactive engagement and provide appropriate sponsorship.

Green' post-disaster rebuilding initiative was selected as a Q2 program to advance the goal of reducing household greenhouse emissions by 30% by 2020. Green Cross Australia CEO Mara Bun is a member of the Queensland Design Council, and five members of the Council including the chair, Julianne Schultz attended the Stakeholder workshop to help frame priorities for possible recovery action. Senior Queensland Reconstruction Authority members also participated in the Workshop.

The Workshop 'Schools Stream' was led by the Head of Sustainability for Lend Lease in Queensland/ the Northern Territory – Lend Lease are a leading provider of the Building the Education Revolution program nationally – as well as representatives from the Infrastructure team within the Queensland Department of Education and Training.

Discussions referred to the high impact green schools program (new and retrofit) underway in New Orleans and Louisiana[36]. Summary recommendations from the workshop are provided in the box on the right. For a broader discussion of the opportunities and challenges associated with delivering this vision, please see full workshop discussion in attached 'Build it Back Green Stakeholder Workshop Report'.

Where possible we recommend incorporating evacuation facilities into school design. Site selection and disaster mitigation are already key considerations in the design of Queensland school facilities. The Council recommends that where new schools are proposed, the integration of emergency facilities should be included as part of design and construction. For flood impacted schools consideration of resilience retrofitting measures should include the potential for some schools to be transformed into evacuation premises.

Emergency facilities integrated within schools which are located in cyclone or flood risk areas, or which are identified as potential safe havens for evacuation or community centres would increase the benefit, use and value of existing and planned public infrastructure.

Emergency facilities would need to comply with Queensland Government design guidelines for education facilities, planning policies and evacuation processes. In addition, design guidelines should be reviewed to ensure:

- critical plant and equipment is located and designed to function effectively during disasters
- adequate and appropriate accommodation, amenity and catering facilities and supply of clean drinking water are available for use during disaster
- availability of uninterrupted power supply to ensure access to communications.

6. Invest in targeted exemplar 'eco-resilient' works to showcase advanced adaption models

Action required: A multi billion dollar recovery can and should identify focused projects which push the envelope of 'business and usual' to showcase Queensland intellectual property that advances eco- resilient community outcomes: The Queensland Reconstruction Authority can support community and business responses that advance resilience and sustainability outcomes in light of ongoing 21st century climate change adaptation challenges. The Queensland Design Council supports implementation of focused 'eco-resilient' pilot projects, including schools, affordable housing, commercial building and infrastructure projects. Queensland Design Council members have participated in the framing of the 'Build it Back Green Queensland' initiative and recommend consideration of stakeholder engagement outcomes to the Inquiry.See: http://www.greencrossaustralia.org/media/9742561/gca_bibgqld_stakeholder%20workshop_report.pdf

[36] (Global Green USA 2011)

Under this recommendation, prototyped buildings become a model to explore new building and landscape typologies and relationships. This could be achieved in two ways: by direct investment by Government in pilot projects and by encouraging private investment through the Green Door Policy[37]. Public/Private partnerships would ideally support the creative models required to advance Betterment through exemplar projects.

Instigating a test and adopt philosophy reduces the inherit risk in investment in new building and landscape typologies. The designs themselves can anchor the ideas of resilience and sustainability that they encapsulate, presenting them to the market in a practical and attractive way.

The process of urban growth and renewal can feed off successful projects, accumulating a stock of more resilient buildings over time in parallel with the natural growth of our cities and regions. The increase of robust and sustainable buildings addresses the *Queensland Government's Towards Q2: Tomorrow's Queensland* goals of *strong* and *green.*

Opportunities for involvement of the education sector are increased through analysis and evaluation of innovative sustainable designs. The potential for growing our sustainable design knowledge base would be accelerated in combination with an ideas forum and local pilot projects.

Eminent Brisbane based architect and Queensland Design Council member, Michael Rayner made a scene-setting presentation at the opening of the Build it Back Green Stakeholder Seminar where he stated that there are three possible approaches to addressing flood responsive environments:

1. Retreat - but this won't occur unless a much more catastrophic event occurs
2. Defend – but to what degree?
3. Re-design – both vital and a rare opportunity.

In his presentation, Mr Rayner acknowledged the pressure for immediate rebuilding, both residential and public infrastructure. He also noted that despite this pressure, solutions could be expeditious and could tackle three of Queensland's biggest development issues: population growth and density, environmental performance, and housing affordability.

On 22 January 2011, Mr Rayner was featured on the front page of The Australian in a moving story that discussed his personal circumstances through the flood and his ideas for how resilient and sustainable design could mitigate future flood risks.[38]


River City architect Michael Rayner washed away, now looking for new ways to stay dry

Andrew Fraser | The Australian | January 22, 2011 12:00AM

Recommend 26 people recommend this. Be the first of your friends. Share

THE POST-FLOOD QUEENSLANDER

New-look Queenslander designed to minimise the effect of flooding

Three bedrooms, two bathrooms | Enclosed covered area 150sqm | Unenclosed covered area 80sqm | Cost $550,000

TOP FLOOR
• Bedrooms
• 'Dry-store' belongings during floods

VERTICAL DESIGN
• Three-level house on a smaller footprint
• Displaces less water during flooding

MATERIALS
Roof: Insulated steel
Underside roof: Treated ply
Walls external (insulated): Compressed fibre cement sheeting, painted and timber boarding stained
Bottom level: Concrete block and tile
Structure: Hardwood timber including recycled wharf timber

MIDDLE FLOOR
• Living areas
• Walls open out for easier cleaning after flooding (and provide cross-ventilation)

GROUND LEVEL
• For utility spaces, cars, water tanks and family use
• Easy to hose out after flooding

< Prev 2 of 2 Next >

Source: The Australian

NO one has done more to promote Brisbane as the "River City" than award-winning architect Michael Rayner, so it was improbably cruel that his own home flooded when the river erupted.

He designed an example of a post-flood Queenslander which combines high insulation values, use of recycled materials, utility and amenity in a flood resilient, elevated design which enables easier after flood cleaning and good ventilation.

[37] (Department of Premier and Cabinet 2010)
[38] (Fraser 2011)

This provides an example of how flood resilient sustainable design can underpin a recovery that both mitigates future disaster risks and reduces environmental impact and ongoing energy bills.

During the recent Build it Back Green workshop, an audience of over 100 Queensland business, community and government stakeholders were able to discuss two sustainable rebuilding projects in the United States via live Skype connections. Workshop attendees connected to New Orleans, Louisiana and to Greensburg Kansas. Both dialogues advanced thinking among this broad stakeholder group in relation to community scale response opportunities in Australia and exemplar projects capable of catalysing betterment through advanced design.

Beth Galante, the Head of the New Orleans office of Green Cross's United States affiliate, stressed the benefits of affordable sustainable design as evidenced by the 'Holy Cross Project' that her office has developed in partnership with a number of government, community and philanthropic organisations. The image below is of a home from the Holy Cross development in the Ninth Ward of New Orleans where much of Katrina's greatest damage occurred.

This home was developed after a major design competition that called for innovative cyclone and storm surge resilient design combined with low energy and environmental impact. Crucially the objective was to build five low cost homes and eighteen affordable apartment units.

The home is owned by a family of four who have agreed to enable real time metering of the home to be displayed in an interactive website which shows the live energy, water and waste produced and consumed in the home, 24/7.

For example, the amount of water consumed so far this year by this family is portrayed here – and can be visualized on the online dashboard over the hours of a single day or week.[39]

Greensburg is a medium sized town in the agricultural belt of Kansas. It is a conservative rural community that was devastated by a tornado in 2007. Led by an imaginative local planner and a local government with vision, Greensburg has become the single most awarded and observed green community in the US.

[39] See online dashboard here: http://buildingdashboard.com/clients/holycross/

Steve Hardy is the Director of Planning for BNIM, the 2011 AIA National Architecture Award winning architecture firm behind the Greensburg Kansas recovery. Steve shared the story of how Greensburg moved from complete devastation towards a master plan with cutting-edge sustainability and tornado resilient features with Workshop stakeholders.

His presentation included examples of numerous Platinum Leed (Green Star) accredited public buildings, residential developments and schools that have been developed in Greensburg, and it also shows the planning framework that BNIM hope to bring to Nashville, Tennessee, where a major US flood recovery is underway. Below we show just a few examples of exemplar Greensburg school, business and government buildings. Each example has pushed the boundary of Betterment in sustainability and hazard resilience terms.

The Queensland Design Council supports the development of exemplar projects not just in residential and school recovery, but also in the areas of commercial or government buildings, and in relation to infrastructure projects that can deliver Betterment outcomes and sustainability gains.

As Minister Crean noted in this example of the new bridge designed for resilience – designing to a better standard will save money in the long term. By addressing environmental externalities that are likely to be priced in future as energy, water and waste prices rise – exemplar infrastructure can also reduce environmental impact and costs over asset lifetimes.

7. Integrate Queensland initiatives funded under the National Disaster Resilience Program into creative Whole-of-Government climate adaptation and population growth responses

***Action required:** The Queensland Department of Community Safety is making considerable and innovative investments in community resilience matched by Emergency Management Australia through the National Disaster Resilience Program.[40] A number of these initiatives bring together community, business, research and local government agencies to reframe community and business engagement with natural disaster preparedness and response. The visibility of these imaginative partnerships is limited from a whole of Government perspective. The Council recommends a focused whole of Government dialogue addressing creative responses to building resilience while addressing growth. For example see: http://www.emergencyvolunteering.com.au/documents/NDRP%202010-11%20Application%20Form_Volunteering%20Qld_Step%20Up%20Program.pdf and also see: http://www.greencrossaustralia.org/media/9730745/hardenup.org.pdf*

The Queensland Design Council would like to draw the Commission's attention to the Queensland component of the $110 million National Disaster Resilience Program. This program addresses challenges which are directly aligned with the Flood Inquiry's terms of reference. Whereas innovative programs are underway under NDRP, there would be great advantage of this program where embraced from a Queensland whole of Government perspective in mind given implications for the flood recovery.

[40] (Attorney-General's Department 2011)

The NDRP vision is 'to reduce Queensland communities' vulnerability to natural hazards by supporting regional councils and other stakeholders to build community resilience.' This vision is supported by the following broad objectives:

1. reduce community vulnerability to natural hazards
2. support local governments and others to build community resilience and increase self-reliance
3. promote innovation through a focus on building partnerships between sectors, support volunteering, encourage a regional or catchment area approach to mitigation, and potential impacts due to climate change
4. ensure that NDRP funding is utilised in an efficient way.

A number of innovative partnership initiatives are underway through the NDRP program with support from the Queensland Department of Community Safety, and these programs directly address the terms of reference of the Commission.

Attachment 1: Volunteering Queensland's Step Up program under the National Disaster Resilience Program

For example, the three year multi-million dollar NDRP funded 'Step Up' program led by Volunteering Queensland will develop a system that not only maps the key core elements of a resilient community, but provides a framework to allow communities to develop tailored solutions to address identified weaknesses. The Step Up program will include a web-based facility that provides reference material to assist community resilience planning based on international and national best practice; planning strategies and templates that harness community resilience and ensure it is embedded in community practices; and a tool to allow self assessment on the path of community resilience.

Volunteering Queensland's Step Up program has strategically focused on a select group of projects which build on existing capabilities and have been trialed successfully, thus providing evidence and data that supports the further development of the program. The Step Up program will consist of the following six projects in order of priority:

1. Business Roundtable EXTEND (focus on private sector involvement)
2. Aboriginal Communities Resilience Building Project (focus on Aboriginal communities)
3. Youth Communication and Resilience Project (focus on young people)
4. Emergency Volunteering Portal (focus on general population)
5. Emergency Volunteering Community Workshop Project (focus on emergency volunteering community)
6. Natural Disaster Resilience Leadership Project (focus on select group of future leaders)

Attachment 2: Green Cross Australia's Harden Up partnership under the National Disaster Resilience Program

Another large scale NDRP funded partnership also addresses natural disaster hazard resilience – the 'Harden Up' project. Harden Up is a Green Cross Australia led multi-stakeholder partnership to deploy cutting edge social networking tools and Australia's best climate research to encourage Queenslanders to assess their vulnerability to key natural disaster hazards and to take practical action to become more self-reliant.

Supported by Harden Up research partners (Bureau of Meteorology (BoM), Queensland Climate Change Centre of Excellence, CSIRO, James Cook University, Federal Department of Climate Change), the Harden Up portal will enable all Queenslanders to visualise 100 years of severe weather history in their local area, and will offer rich media visualisation of the history of severe weather across the state, including sea level rise maps, storm surge videos, and case studies of major events stored in BoM's Queensland weather archives.

From the Harden Up proposal to the 2010 Queensland NDRP Funding Round:

'*In our current paradigm, many view extreme events as such rare exceptions to the normal that preparing for them is a waste of time and money and that if an event should occur the government, the Red Cross, and others should be able to meet their needs. U.S. response doctrines imply that disasters produce victims that must depend upon the assistance provided by those trained and equipped to do so.*

Reacting to past events, we have created larger and more capable government-centric response systems.

This system has worked well for large events such as the 9/11 attacks and the 1984 Florida hurricanes, but has failed during catastrophic events such as Hurricane Andrew and Hurricane Katrina with devastating social and economic impacts.

John Harrald
Professor Emeritus, US Institute for Crisis, Disaster, and Risk Management at George Washington University at a March 2010 US Senate hearing.

The Harden Up portal will then enable Queenslanders to visualise 100 years of climate change projections in their regions, including through video interviews of scientists who developed regional models addressing temperature, rainfall, sea level rise and severe weather trend projections.

After moving through the self-assessment portion of Harden Up, the platform will enable Queenslanders to develop a personal resilience plan that helps them to take practical action to protect their homes, families and local communities with the aim of encouraging a culture of self-reliance that maximises 72 hour survival across Queensland. Corporate and government partners supporting the resilience modules of Harden Up include Suncorp Insurance, Lend Lease, the Property Council of Australia, the Insurance Council of Australia, RPS Group, Emergency Management Queensland and crucial – Local Government Association of Queensland mindful of the vital role of local government in our emergency response system.

Harden Up will distribute engagement across Facebook and Twitter, and through an Ushahidi engagement platform similar to the kind the ABC deployed during recent floods. Media Partner Network 10 will broadcast community service announcements launching www.hardenup.org in October 2011.

From the Harden Up proposal to the 2010 Queensland NDRP Funding Round:

'We are rapidly evolving from centralized, rigid, closed government systems to decentralized, agile, open, private sector owned and operated systems.
The challenges of the future are three fold and will include:
(1) recognising the new capabilities technology is providing rather than being constrained by narrowly designed systems,
(2) creating ways to capture and integrate the flood of information from unanticipated sources rather than relying on pre-existing formal lines of communication, and
(3) creating the relationships and networks needed for each event rather than living with artificial organizational and physical constraints.'

Professor John Harrald
March 2010 US Senate hearing

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Appendix 1: Mainstream Media Coverage – Katrina Recovery

The New York Times

July 14, 2009

A Sustainable New Orleans Slowly Rises in Katrina's Wake

By KATIE HOWELL of Greenwire

NEW ORLEANS -- People here are finally seeing a bright side to the catastrophic damage done four years ago by hurricanes Katrina and Rita.

The city is being rebuilt slowly as what many hope will be a clean, green model for the nation.

"After the storm events happened, now everybody is interested in the environment," said Wyneeta Fisher, director of the city's Office of Environmental Affairs. "I hate to say that it came at a good time, but because of the storm, we've been able to build on that momentum."

There is a big push in the Big Easy for dramatically improving energy efficiency in homes and public buildings. The city has purchased a fleet of hybrid buses and has plans to install solar-powered LED streetlights. And the renewable energy sector is drawing up grandiose plans for using hydrokinetic turbines to tap powerful currents in the Mississippi River to generate electricity.

Among the foot soldiers in the sustainability movement is fourth-generation New Orleanian John Moore, who left for college in Atlanta several years ago, with no plans of returning. But as floodwaters receded and his family struggled to patch up their lives, Moore returned as part of the "green" recovery effort. "I'd seen the chaos," he said, "and I knew something needed to change."

Working first for the nonprofit, Global Green USA, Moore helped start redevelopment certified by the U.S. Green Building Council's Leadership in Energy and Environmental Design (LEED) program in the Lower 9th Ward, a thriving working-class neighborhood that Katrina turned into a ghost town. Then Moore, a certified energy rater with a background in architecture, moved to city government to work on "GreeNOLA," a plan drafted by Massachusetts Institute of Technology students.

The step-by-step GreeNOLA guide is aimed at boosting the city's existing sustainability policies and environmental leadership. It also sets longer-term goals and milestones, such as boosting the use of renewable energy produced in the region, re-establishing a citywide recycling program, conducting a greenhouse gas emissions study and revamping city transit.

"The MIT-New Orleans connection is working out for us," Moore said. "It ... added a layer of sophistication to GreeNOLA."

Moore's team and Fisher in the environmental office have been slowly implementing the improvements and changes outlined by GreeNOLA after winding their way through the city's bureaucratic maze and around funding shortfalls.

GreeNOLA is expected to get a jolt from the federal stimulus law, with $2.4 million heading to Moore's team. "The stimulus package literally ... stimulated the GreeNOLA plan," Moore said. "We're sort of buried under so much stuff around here -- and all of a sudden, this package came down and it's like a gift."

The stimulus cash will be split between transportation and building projects. There will be $1.1 million to help five libraries that the city is building achieve LEED certification with green roofs, solar panels or other

energy-efficiency features.

The rest will pay for installing solar-powered LED streetlights in areas slammed by the storms.

"Some areas up along Lake Pontchartrain -- which was hit pretty hard, pretty much wiped off the face of the Earth -- there are no street lights up there, because it's incredibly expensive to run all the conduit and all the wires and all that," said Zack Embry, the city's renewable-energy permitting specialist who works with Moore on GreeNOLA.

"It would be a perfect situation to implement solar street lights, because you can pretty much stand them right there and turn them on."

Nonprofit spurred action

Solar came to New Orleans by way of a Solar America City designation from the Energy Department, which comes with a two-year grant. That cash paid for streamlining solar permitting for residential installations, writing a comprehensive plan to expand solar technologies, and training developers and craftspeople about solar power.

The DOE grant was made possible by Global Green, a California-based nonprofit, which provided matching funds.

Overall, Global Green has brought in about $15 million in grants and funding for recovery efforts in the city, the group says. And it has helped other groups seeking sustainable and renewable energy change.

The group launched the Lower 9th Ward's showcase Holy Cross project, where the organization is building five single-family energy-efficient homes, an 18-unit apartment building and a community center.

The houses will be sold roughly at cost to residents who lost their homes during the storms, and the apartments will be rented at a discounted rate. Energy efficiency will dramatically reduce energy bills, promoters say. The buildings feature 3- to 5.3-kilowatt solar arrays on rooftops, energy-efficient appliances and a sustainable design that uses 75 percent less energy than a typical building.

Global Green says the project is also an educational tool, as its model home gets dozens of visits a week from people looking for ways to improve energy efficiency in their own homes. The organization is distributing lists of contractors who specialize in energy efficiency work and places to buy the building materials.

"We want to create a different future for this city," said Matt Petersen, Global Green's president and CEO. "One could debate that it doesn't make sense to rebuild New Orleans, given the fact that much of the city lies under sea level, but the fact is, it was going to be rebuilt, so why not make it a model? Why not create a center of expertise in a city that had no green building or energy efficiency experience?"

Global Green has also helped the city rebuild several schools with a $2 million grant from a fund organized by former Presidents George H.W. Bush and Bill Clinton. The group used the money to build two LEED-certified schools that are "PV ready," able to add photovoltaic panels later.

"Our role as a catalyst has been tremendous," Petersen said. "There's been a good ripple effect."

One of the LEED-certified schools, Wilson Elementary School in the low-lying Broadmoor neighborhood, will be the first to receive panels as part of the DOE Solar America Cities grant.

Moore -- who worked for Global Green before moving to city government -- hopes to replicate the success of

the school project with the libraries. "We're breaking lots of new ground here," he said. "A lot of people want to touch and feel this stuff, and what better way than through a building they can use that's a teaching tool?"

Outreach, Moore said, is the key to bringing about sweeping change in New Orleans.

"That's one of the biggest things for us, boosting the appeal of 'green,'" he said. "We don't want it to stay sort of a crunchy, granola effort. We want it to line up with national efforts and where the rest of the nation is going with this."

Turbines in Big Muddy?

Many New Orleanians involved in sustainability work say they have seen a sea change in attitudes about renewable energy since Hurricane Katrina.

New Orleans native Jon Guidroz, the director of project development for Massachusetts-based hydrokinetic developer Free Flow Power, said he returned to his hometown after the storm to "do something that would be good."

"What I've encountered is unreal," Guidroz said. "There is an open-minded approach to energy and new businesses that I don't think was here before Katrina."

Guidroz returned in January to open Free Flow Power's New Orleans office with a mind toward tapping the mighty Mississippi River for energy.

Free Flow Power, which develops hydrokinetic turbines, has a grand scheme for installing thousands of hydrokinetic turbines in Louisiana's part of the Mississippi River. It has received preliminary permits for 32 sites from the Federal Energy Regulatory Commission and says it will file for licensing in 2012 and begin generating electricity in 2013.

The turbine developer says it will build 900 megawatts of hydrokinetic capacity in the state -- assuming 600 turbines per mile over 180 miles of river. Those huge numbers are aimed at helping the company overcome the pitfalls of other river hydrokinetic projects, Guidroz said.

"Sometimes folks say, 'Wow, you're going to put a lot of turbines in the river,' but we have to do that to make it economic," he said.

The global financial meltdown has slowed the company's work on what it says will be the $3 billion project -- including sites all the way to St. Louis -- but Guidroz said the company is not going to turn back on a plan that would make New Orleans become a showcase for hydrokinetic power generation.

That is exactly the type of activity Global Green's Petersen hopes to see in the Big Easy.

"We want to help it change its course for the future," he said. "We want to make it a place that's not just about jazz and great food, but a place that's known for ... creating a path for the future."

For more news on energy and the environment, visit www.greenwire.com.

TIME IN PARTNERSHIP WITH CNN
Saturday, Aug. 29, 2009

Four Years Later, New Orleans' Green Makeover

By Bryan Walsh

After Hurricane Katrina flattened New Orleans exactly four years ago, on Aug. 29, 2005, the city emerged as an inadvertent symbol of global warming, the first American victim of climate change. More than 200,000 homes were destroyed during the Category 5 hurricane. But in the years since, the Crescent City has quietly embraced a new and unexpected role as a laboratory for green building. Sustainable-development groups like the international nonprofit Global Green as well as earth-friendly celebrities like Brad Pitt descended on New Orleans, determined not just to build the city back but to build it back green. "It's going to come back," says Matt Petersen, the president of Global Green USA. "But we want to build it better than it was before." (See a TIME special report on the environment.)

No organization is doing more to green New Orleans than Global Green USA, the American arm of the international environmental organization that was founded by former Soviet leader Mikhail Gorbachev. That begins with the Holy Cross project, an entire sustainable village being built in the city's flood-damaged Lower Ninth Ward with the help of Home Depot's corporate foundation. Eventually the village will include five sustainable homes along with an 18-unit green apartment building and a community center. Three homes have been completed so far, including one that is serving as a de facto visitors center. The point of the project is not just to create greener homes for New Orleans' returning residents but also to provide training for the local building community in green standards. "That's one of the ways to make this kind of building more common and more affordable," says Petersen.

That's the motivation behind Global Green's sustainable-schools program, which will both retrofit existing schools to make them more energy-efficient and build entirely new classrooms from the ground up. The new schools will have solar panels, wetland habitats (which can act as a buffer for future storms) and rainwater cisterns. At Gentilly Terrace Elementary School, which is getting an energy overhaul, power bills should fall some $22,000 a year. In a city that is struggling to get back on its feet, those energy savings make a difference — as does the fact that some research has shown that students actually learn better in greener schools. (It's not exactly clear why that's the case — one possibility is that absenteeism and sick days both decrease when the indoor environment is healthier.) (See pictures of the effects of global warming.)

Beyond model projects like the ones Global Green is implementing, there are broader policy-based actions that seek to green New Orleans from the top down. The city is receiving millions

in federal stimulus funds, some of which will be going toward initiatives that will re-establish a citywide recycling program and improve mass transit. About $1.1 million is being slated to help green five of the city's libraries, and more will pay for the installation of solar-powered, ultra-efficient LED streetlights. The Department of Energy — with funds matched by Global Green — is underwriting new solar-power projects in New Orleans as well, hoping to expand the tiny slice of the city's electricity that comes from renewable sources. "The hope is that you can help create green jobs for the city in this way as well," says Petersen. "There can be a silver lining to all of this — the creation of a more robust and vibrant community and economy."

Of course, the work of greening New Orleans has been as complex and intermittent as other parts of the reconstruction process, with delays and bureaucratic obstacles. And there's a legitimate question here: Given the increased risk of hurricanes and rising oceans in a warmer future, should a city that exists under sea level be built back at all? Green or not, will New Orleans ever be safe from global warming?

The truth is, none of us will be safe from global warming unless we can change the way we build and the way we use energy — and New Orleans just happens to provide an excellent opportunity to try that in an urban environment that needs to be rebuilt from the ground up. Nor will it be the last major city to be menaced by rising seas — from New York to London to Shanghai, most of our major metropolises are built next to an ocean, and it's only a matter of time before the next superstorm hits. If we can build back New Orleans in a way that is both sustainable and resilient, capable of surviving another Katrina, we all might be better prepared for the hot and unstable days to come.

Find this article at: http://www.time.com/time/health/article/0,8599,1919450,00.html

Nonprofits help Katrina victims rebuild their homes, lives

- Story Highlights
- Robert Green lost his mother and a granddaughter in Hurricane Katrina
- Since then he has lived in a FEMA trailer in New Orleans' Lower 9th Ward
- This year he moved into his new home thanks to Brad Pitt's Make It Right nonprofit
- HUD secretary: If it weren't for nonprofits, there would have been little or no progress

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By Sean Callebs and Jason Morris
CNN

NEW ORLEANS, Louisiana (CNN) -- As floodwaters washed away homes in the Lower 9th Ward, Robert Green watched with horror as his mother got swept away in the storm.

Four months later, Green and other family members found Joyce Green's remains in the splintered wreckage of the house where they left her. Robert Green's granddaughter Shanay also drowned the night Hurricane Katrina hit.

Green spent almost the entire last four years living in a small FEMA trailer on his land, sharing his story with anyone who came through the Lower 9th.

One of the people he met was Tom Darden, executive director of the Make It Right Foundation, Brad Pitt's nonprofit vision for building green, sustainable houses in the Lower 9th Ward of New Orleans.

Only a handful of homes have returned to the Lower 9th, one of the areas hardest hit by the killer storm.

"We have 14 neighbors and feel crowded," Green said "But we have 3,000 houses that are gone, and we would love to see those houses come back."

Darden and Pitt felt compelled to help provide Green and his family a second chance, and on July 9 Green officially became a proud homeowner once again.

Getting a fresh start has helped Green and his family deal with the tragedy that turned their lives upside down and took away their loved ones.

"That's what gave me the strength to endure all that we've been through," Green said. "People constantly coming by, volunteers constantly coming by. People that really care about us and let us know that we weren't in this alone. It gave us the hope that one day we would come back and be a community again." Watch as Green talks about his family's tragedies and life in New Orleans after Katrina »

The Make It Right Foundation has built 15 homes in the Lower 9th so far; the group's goal is to have 150 built by the end of next year.

Darden said the program is designed as a hand up, not a handout.

"We ask the families to contribute as much as they can afford," he said. "On average that's been about $75,000, but we work with the families very closely to make sure that a family is not spending more than 30 percent of their income towards housing costs, and that's how we ensure they are affordable."

Safety and energy efficiency are among the group's primary concerns.

"[The houses] are all elevated at least above Katrina-level flooding. A family has the option to build even higher than that if they want. We've got hurricane-resistant features like impact-resistant glass, or a certain type of fabric that protects the windows," Darden said.
See photos detailing the features of the Make It Right homes »

Another of the driving forces instrumental in rebuilding the Lower 9th Ward in a sustainable fashion is Global Green, the American arm of former Soviet President Mikhail Gorbachev's Green Cross International.

"Immediately after the storm, we saw a failure in government in every level: local, state and federal," said Matt Petersen, president of Global Green. "There's still so much work to be done that we can't wait, we can't rely on the federal government.

"This is an era where I think the citizens of this great country need to take responsibility for our nation, and it starts right here. How we respond affects the future of our country."

Shaun Donovan, secretary of the U.S. Department of Housing and Urban Development, knows mistakes were made in the efforts to get people back into their homes, both in the Lower 9th Ward and other devastated parts of New Orleans.

"We have to be more flexible, we have to be more responsive, and make sure the programs don't just work in theory, but they will work for families," Donovan said.

"We've been very focused in the first seven months [of the Obama administration] on cutting red tape, making sure that recovery moves ahead. And that we can get as fast as possible to the completion of the recovery phase."

Donovan said HUD's plans will help hundreds of millions of federal dollars be directed to areas across New Orleans, helping rebuild communities and get families into permanent houses.

But Donovan also said this could still take another 18-24 months, and that if it weren't for nonprofits there would be little to no progress, even four years after the storm.

"We have to say, 'Look, there are groups on the ground that have solutions, they are able to make it work, we've put barriers in the way for them to be able to get their work done as quickly and effectively as possible. We've got to get those barriers out of the way.' "

For Robert Green, seeing any progress at all gives him hope that one day the place he calls home will no longer be dominated by concrete slabs, abandoned homes and overgrown weeds.

"We have children back in this community, we have families back," Green said. "So basically when those families come back, it gives the other relatives and friends and other people a jump off point."

All About New Orleans · Hurricane Katrina · Brad Pitt

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