



# impact

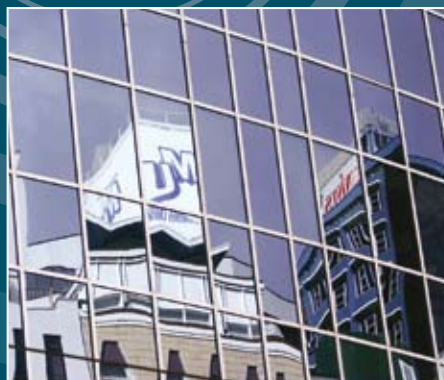
Volume 38 ▲ June 2010

Photo: Noel Evans



## Chile earthquake and tsunami

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## Common acronyms

**MCDEM** Ministry of Civil Defence & Emergency Management

**CDEM** Civil defence emergency management

**EOC** Emergency Operations Centre

**MOU** Memorandum of Understanding

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# Reflecting on Chile

**Senator Robert Kennedy often said that judgement comes from experience and experience comes from bad judgement. Put another way, we can all learn from the experiences of others and in doing so, improve our own capabilities.**

During May I took part in a study tour to Chile with the New Zealand Society for Earthquake Engineering following the recent devastating earthquake. This was my opportunity to learn from the experiences of those in Chile and to consider the implications for New Zealand.

The Society will publish a full report in due course but in the meantime this issue of *Impact* includes a summary of the study team's observations on aspects of engineering, lifelines, preparedness, response and recovery. I will use this space to share a few of my "take homes" that I think have relevance to New Zealand.

The statistics on the Chile earthquake are staggering. It occurred on 27 February at 0334 hours with a magnitude 8.8, making it the fifth largest quake ever recorded. More than 200,000 people were affected and 600 lives lost by the impact of the earthquake and following tsunami.

In New Zealand we are aware that we could face a similar event which begs the question of how well we might cope. To help provide answers, the study team visited Concepcion, a city of more than one million, located on the coast 300km south of the epicentre. We also visited Vina del Mer on the northern outskirts of Valparaíso, and the capital, Santiago.

I was surprised by what I thought at first was the randomness of the impact and what appeared to be less damage than I had expected. However, it was more the unpredictability of the impacts rather than randomness. Some buildings and areas went unscathed while nearby, others were hit badly. I was expecting to see extensive damage and the

population despondent, but conditions in Concepcion nine weeks after the event were not like that. It was not the scorched earth I was prepared for. Life goes on. Services were being restored, shops open with some adaptations made, and the people seemed confident.

**I have returned with a strong view that planning, initiative and leadership are a potent mix to help reduce the impact of a disaster and the speed of recovery.**

If we pause to think about it, the impact of an emergency is not entirely unpredictable. Thorough research and investigation of hazards and local conditions will indicate likely impacts and consequences. This can help inform risk mitigation strategies and response priorities. There can be no let up in understanding our environment and how to manage risks.

I observed that the power of the tsunami following the earthquake was enormous but it was not all-encompassing. Some areas got off lightly while other neighbourhoods were devastated. I learned that as there are so many variables influencing the impact of a tsunami, local plans, while critical, cannot afford to be too specific.

The community of Dichato, 60km north of Concepcion which lost over 70 to the tsunami, reinforced the great value of public awareness, community engagement and community planning. This community tried to do the right thing upon feeling the earthquake, but tragically many were misled by a false report that it was safe to return to the beach and were caught by a wave.

I have returned with a strong view that planning, initiative and leadership are a potent mix to help reduce the impact of a disaster and the speed of recovery. If you have thought about the consequences



John Hamilton, Director

and what your role in the response should be, and you have the initiative and the capacity to organise and lead the response at your level, your community will fare well.

As a corollary, thorough planning, preparation and practice before the emergency suggests CDEM authorities do not have to direct response activities but rather, they should act as co-ordinators and supporters, reporting and providing assurance to the public, council and government leadership that the consequences are understood and being managed appropriately. Let those who know their system best, manage it to the best of their abilities.

Space is not available here to provide fuller descriptions of lessons, observations and implications from Chile. The final report will do that. I am grateful for the opportunity to experience first-hand the impact of a major earthquake and I am impressed by the resilience and fortitude displayed by the people of Chile in the affected area.

There are some differences and many similarities between the circumstances in Chile and what we could experience in New Zealand. But there can be no complacency here.

We have in place a range of effective programmes that include researching our hazardscape, warning systems and alerts, public awareness, community and local authority planning, response capabilities and co-ordination mechanisms, and recovery strategies. None are complete and we intend to keep re-visiting issues and updating our approach.

Importantly, none have been stress tested as we have not experienced an emergency of the scale of the Chile earthquake and tsunami. We think we are quite well prepared, but we do not know for sure. Until we have that experience, we must learn and continue to improve. ▲



A comprehensive flood protection scheme kept the Oreti River contained within its stopbanks. While the river burst out of its channel (visible between the lines of willows in the centre of the image) the stopbanks protected thousands of hectares of farmland and several communities from inundation.

## Planning aids Southland flood response

**The Anzac Day crowds had just gone home to breakfast after dawn services around New Zealand when heavy rain began falling all across Southland.**

By lunchtime, rainfall and rising rivers combined to trigger alarms on the Environment Southland duty flood warning officer's pager. Met Service had issued a heavy rain warning and by 6am on Monday 26 April, the joint Emergency Operating Centre for Environment Southland and Southland CDEM Group was fully operational.

Over the next three days, Southland experienced the most extensive flooding since November 1999. Only Eastern Southland escaped relatively unscathed. Environment Southland worked side by side with Southland CDEM Group to mount a full-scale response.

The flood protection scheme on the Oreti River was fully tested, with river levels and flows equal to the scheme's design standards. The Hamilton Burn, which is a major tributary of the Aparima River, experienced its highest recorded rainfall and a massive – though not record-breaking – 300mm of rain fell in 24 hours near the Homer Tunnel.

Department of Conservation staff evacuated trampers from tracks in Fiordland National Park and all landline and Telecom mobile and internet services into and out of the Te Anau area were disrupted. Waiau River, which is fed by Lakes Te Anau and Manapouri, remained in flood for a week due to high lake levels.

Thanks to early warnings, accurate predictions of peaks and levels, and the high standard of maintenance of the region's flood protection schemes, stock losses and damage to infrastructure appear to have been very low compared with previous major floods – damage assessments were incomplete at time of writing but winter stock feed seems to have been the major loss.

The floods were the CDEM Group's last emergency response in its old form. One organisation, Emergency Management Southland, now provides CDEM services for all three local authorities and the regional council in Southland.

The Manager of Emergency Management Southland, Neil Cruickshank, said the transition didn't cause any confusion. "We assisted and coordinated the input from the other agencies, knowing that the level of the response could have ramped up to a declared emergency very quickly."

Environment Southland staff provided the technical input – flood warning and flood modelling advice, monitoring the performance of the flood protection schemes – while the CDEM Group liaised with emergency services, and Southland District Council, whose roads and infrastructure were most affected.

"In the end it was a classic example of a non-declared emergency that needed coordinating, which is part of the new emergency management philosophy," said Neil. ▲

# Organisations work together to build resilience

**Auckland CDEM Group recently hosted a breakfast seminar to release the results of the 'Benchmarking Organisational Resilience in Auckland' survey.**

In the survey, organisations ranging from small businesses to large international corporations, were questioned about their organisational resilience – their ability to withstand, recover from and thrive after a major disaster.

Representatives from more than fifty organisations attended the seminar which was chaired by well known public speaker and broadcaster, Rod Oram. Rod discussed some of the challenges that businesses face on a daily basis and highlighted the imperatives of planning along with adaptability.

Representatives from the University of Canterbury presented analysis of the survey including the factors that contribute to or deter organisational resilience. It was demonstrated that

organisational resilience is closely linked to overall financial performance. Results indicated that some sectors (government and health, large businesses) are better at planning whilst others (small and medium business) are better at adapting to change.

Both are needed for an organisation to be resilient.

One of the more alarming findings was that only 17% of those surveyed have an emergency plan and only 3% of staff have confidence in the plan. Vector Energy provided sobering facts about the realities of utility outages and the overall lack of preparedness for this.

The seminar was closed by Alasdair Thompson, CEO, Employers and Manufacturers Association (EMA). Alasdair praised the work done so far and committed EMA to supporting activities aimed at building business resilience.

Several organisations volunteered to



Rod Oram, Alasdair Thompson, Jane Lodge (Auckland City Council), Ljubica Mamula-Seadon (MCDEM).

work with the Auckland CDEM Group resilience team to forge closer links and implement resilience-building programmes. As a first step, a small team will be formed to develop simple support tools targeting small and medium businesses in the region.

A copy of the report can be downloaded at [www.resorgs.org.nz](http://www.resorgs.org.nz) ▲

## Wellington blackout tests hotels capability

**On 22 April 2010 at 3.20pm, Wellington experienced a power blackout. Routine maintenance at a suburban electricity substation caused a fault that plunged CBD businesses into darkness for about an hour and a half.**

As there are so many people in the city at this time of day, safety became an issue. Hotels in particular have hundreds of people coming and going and many leaving for flights around this time.

Wellington's Bay Plaza Hotel was prepared because they had a blackout plan. They had also been using an electronic emergency planning and management tool, Readynet. This system involves inputting information about their site, key contacts and details about their particular hotel into web-based electronic templates. This information is used by staff and emergency services to understand the site and also to update people about the situation.

Like all unplanned incidents conditions were not perfect; nor was it a normal day at the hotel. The General Manager was away and the Duty-Manager was in charge. The power cut meant they couldn't access information from the

computer. But because Readynet data had also been produced as hard copy, a blackout plan was able to be deployed and they were able to communicate with the right people easily.

"It was great to see our staff use the paper-based version and it showed they just knew to grab the emergency information and make contact with the key people on the lists," said hotel Managing Director Shane Evans.

"Seeing the value of the system offline in a real situation and knowing the Police had maps and site data online in their

call centres was reassuring. I was confident that the staff on call had the resources to manage the incident effectively and can do so in any future emergency," he said.

There are four Wellington hotels currently trialling this system. Management representatives say that as they have such diverse guests ranging from large groups to high profile individuals, they wanted an electronic contact and mapping system to hand that could also be used as a hard copy during emergencies. ▲

**MARK YOUR DIARY...**



**Get Ready Week**  
10-16 October

**North Island CDEM**  
Conference, 23-24  
November, Whangarei

# Community resilience projects in Canterbury

**The community resilience movement continues to grow with the initiation of a programme of pilot projects starting around the Canterbury region.**

Christchurch City Council CDEM Office, MCDEM, Canterbury Regional Emergency Management Office and Environment Canterbury have started working with communities in Aranui and South Shore/South Brighton on two different projects.

The Aranui project focuses on workshops with existing community groups and discussions with community leaders around aspects of community resilience. The aim of this project is to create a long-term community engagement and resilience-building programme in the area.

The South Shore/South Brighton project takes a different approach, focusing on the tsunami hazard. The aim is to engage with the community to help create a



community coastal evacuation plan and enhance resilience. This work has been extended to include Kaikoura with five meetings in coastal communities having already been held focussing on the tsunami hazard.

Other objectives are to test and inform the further refinement of two MCDEM projects: Community Engagement, and Building Community Resilience.

*Tsunami is an obvious hazard for the Brighton Beach community*

The MCDEM-funded components of the Canterbury projects will end in June 2010, with follow-up projects, lessons learnt reporting and enhanced community engagement and resilience-building outputs planned for the 2010/2011 financial year. ▲

## Capital's civil defence gets a shake-up

**Wellington is getting a major shake-up – not from an earthquake, but from a root-and-branch revamp of how the city is preparing itself for an emergency.**

Changes are underway nearly a year after Mayor Kerry Prendergast challenged Wellington's civil defence network to raise its profile, making it more exciting to potential volunteers.

That followed several weeks of controversy over the restructuring of the City Council's Wellington Emergency Management Office (WEMO) and intense debate over the state of the capital's emergency preparedness and civil defence volunteer network. The team at WEMO are starting a concerted campaign to recruit and train large numbers of new civil defence volunteers.

WEMO has launched a new training programme and the first group of 34 volunteers is now undertaking the seven-week course, developed with help from MCDEM and which includes assessment to NZQA standards.

Course participants learn a range of useful skills including personal preparedness (you need to look after yourself and your family first), two-way radio communications and civil defence



centre procedures. A second course has already begun; the inaugural intake graduate in June.

WEMO staff are also helping to raise the profile of volunteering across the city. Recently, thanks to the hard work of the Hataitai Residents' Association, more than 70 people attended a free public presentation on emergency preparedness, and a third of them expressed interest in becoming volunteers.

WEMO Manager, Fred McCoy, says his aim is to establish a comprehensive network of volunteers who are "motivated, interested and mobile".

Although WEMO is asking new recruits to commit to at least two years' service after the course, the commitment is not an onerous one. Recruits will only be asked to attend four civil defence exercises per

*Members of the WEMO team at work in Wellington's Cuba Mall: Fred McCoy, David (Reg) Perrin, Dan Neely and John Barnhill.*

year – most of which are no more than 90 minutes long.

"A big departure from the previous approach is our commitment to better valuing volunteers' time. So each time you participate in an activity you will go home knowing that you have in some way strengthened the community's emergency preparedness" said Fred.

"By standardising administration and training, volunteers across the city will have consistent skills, can be deployed anywhere and will feel better supported than before. While our new approach allows volunteers to have some fun it certainly doesn't trivialise the topic." ▲



## EMIS PROJECT UPDATE

The launch of the Emergency Management Information System (EMIS) project was reported in the previous edition of *Impact* along with the selection of E-Sponder as the preferred software solution

**E-Sponder is a web-based product that is easy to use and configure and is based upon Microsoft SharePoint. The system allows end-to-end information management, including standardised reporting, a staff alerting function and centralised mapping capability. An integrated welfare registration function is also being scoped.**

Good progress is being made on the project. Following the very successful configuration workshops held in March, much work has been undertaken to further elaborate the agreed requirements to ensure they meet the needs of MCDEM, CDEM Groups and local authorities. It was clear that additional information was required to be incorporated into the EMIS portals, confirmed by user feedback.

In addition, Microsoft has just released a new version of SharePoint (SharePoint 2010) and MCDEM has decided to use this as the foundation of EMIS, instead of SharePoint 2007. This will allow E-Sponder to provide the additional functionality the configuration team agreed during the earlier workshops and will avoid a necessary upgrade to SP2010 soon after its roll-out. In other words, it will future-proof the system. However the decision to use SharePoint 2010 means the anticipated



implementation date for EMIS has been extended to allow for configuration, additional testing and training. It is now envisaged to conduct train-the-trainer training by the end of September to be able to go live by early October 2010.

Test planning for EMIS is well under way and detailed plans for the various test phases are being written. A training plan has been agreed and is currently being finalised prior to details being distributed to CDEM Groups. We have received a number of questions about the project and these, along with the answers have been published on our project information website <http://emis.projects.intergen.net.nz/default.aspx>

We are making every attempt to deliver the system before Exercise Tangaroa, scheduled for 20 October 2010. However Exercise Tangaroa objectives are primarily about the testing of tsunami warning procedures and not about the EMIS. The use of EMIS in the exercise will therefore be optional. ▲

## Emergency management technology developments

During November 2009 and May 2010, Gavin Treadgold, Director at Kestrel Group, attended the Research & Experimentation for Local & International Emergency & First Responders (RELIEF) Experiments symposiums in California. He reports on several technological developments relevant to civil defence emergency management.

The Experiments symposiums are a quarterly opportunity for participating organisations to come together and collaboratively test and prototype new technology and information tools for emergency management. Projects include software developments, mobile generators, solar technology, mesh networks and unmanned aircraft systems (UAS). The best rewards come from discussions and brainstorming with other participants.

Along with my colleagues from the Sahana Software Foundation (SSF), there was representation from other open source projects including OpenStreetMap and Walking Papers; as well as university researchers, local emergency managers, fire service and military representatives.

During RELIEF in November, the SSF developed a prototype application for Android-enabled mobile phones that allows a user to create and send geo-tagged text messages back to a server that also has a mobile phone attached. This enables the exact location of a person sending a text message to be accurately located on a map. The server platform was nothing more than a low-power netbook connected to a mobile phone. Once development work has been completed, it should be an affordable platform to assist collecting information from the field. For example, a person in the field locating a major



infrastructural failure can text the details to the emergency operations centre along with exact location of the failure. The system will also support wifi synchronisation back at the

emergency operations centre when cellular networks are not working.

Another example of collaboration was when a UAS was flown over the Experiments venue capturing images. Images were subsequently downloaded to a Google Earth Enterprise server that processed and served the imagery. These were then imported into Sahana using open standards to act as a base layer for text messages from the field.

Two projects that have a lot of potential are Walking Papers and Talking Papers. Walking Papers are paper maps that can be taken out in the field, annotated, and upon returning to base, scanned and uploaded to OpenStreetMap for easy editing and tracing.

Talking Papers are paper forms that contain a machine-readable data definition on the form. This allows paper forms to be customised during response and recovery, but still support importing into an EMIS.

For more information about these developments, contact Gavin Treadgold on 03 343 6169. ▲

# Chile earthquake and tsunami



All that remains of house near the coast at Dichato, totally devastated by the tsunami. (Photo: Katheryn Butterfield)

A magnitude 8.8 earthquake occurred offshore Maule, Chile on Saturday, 27 February 2010 at 3:34am local time. The earthquake generated strong ground movement, a destructive tsunami and landslides that all together reportedly caused the deaths of nearly 600 people.

**The New Zealand Society for Earthquake Engineering (NZSEE) and the Australian Earthquake Engineering Society (AEES) organised a joint mission to Chile to gather data on the earthquake resistant performance of systems, buildings and infrastructure relevant to New Zealand and Australia.**

The lessons range over a wide spectrum from actual earthquake loading levels compared with design levels, building structure performance, urban planning, and emergency management.

Fourteen members from New Zealand, and one Australian made up the mission, led by Dr Hugh Cowan (EQC) and Peter Smith (Spencer Holmes) with Chief of Party, John Hamilton (Director CDEM). NZSEE organised the trip (visit <http://db.nzsee.org.nz/EqMaule.xml> for more information).

## Earthquake characteristics

The earthquake was the fifth largest recorded world-wide since seismograph recording began in the early 20th century. The earthquake ruptured a section of the Nazca-South American plate boundary, 500km long and 100km deep beneath the offshore and coastal regions of central Chile.

Strong shaking lasted for more than 90 seconds, affecting approximately 80% of Chile's population and resulted in the damage or destruction of approximately 370,000 buildings. The fault rupture also warped the ocean floor and Chilean coastline and produced a tsunami with devastating affects there (as well as tsunami alerts for all of the Pacific).

The observation of earthquake and tsunami impacts in Chile demonstrated what can be expected from a local Hikurangi subduction zone earthquake along East Coast of the North Island of NZ. However, each earthquake is different with quite different effects on buildings and infrastructure, as evidenced by the team's observations.

Few recordings were obtained locally due to sparse instrumentation, a deficiency that New Zealand fortunately does not have to address given the GeoNet network. Strong motion has never been recorded by instruments close to such a large earthquake in the past, so copies of the few recordings that were made will be unique and useful indicators of the motions to be expected from such earthquakes.

The long duration of shaking affected taller buildings, bridges



*This could be downtown Wellington. At a glance all appears normal, however closer inspection reveals the dramatic sight of a multistorey building which has suffered partial collapse. This will severely hamper recovery efforts as demolition will require prolonged evacuation of the immediate neighbourhood.  
(Photo: José Restrepo)*

and port facilities and in many areas these effects were more severe than experienced by one and two-storey structures, including homes. This contributed to a lower casualty rate than might otherwise have been expected, because fewer commercial or industrial facilities were occupied at that hour of the day.

Liquefaction, spreading or settlement of soils was widespread and locally severe, indicating either strong amplification of shaking in soft soils and/or deformation with correspondingly more severe damage to structures and buried services in affected areas. Careful study of local ground conditions is therefore crucial to understanding likely impacts and to inform designs to mitigate them.

### **Performance of buildings and infrastructure**

Tall buildings over 10 storeys high and located on deep alluvial soils suffered the most severe structural damage. This included the widely reported total collapse of an 18 storey apartment building in Concepcion and a large number of taller buildings with significant damage to their shear walls.

It is fortunate that in New Zealand there are measures in place that ensure appropriate recognition is given to the subsoil conditions when a new building is designed. Newer shear-wall buildings in New Zealand are designed to remain standing even when damaged, but there may be a need to consider retrofitting older shear-wall buildings in light of observations in Chile.

Collapse or partial collapse of a building can require prolonged evacuation of the immediate neighbourhood with all the associated welfare and economic implications. In particular the disruption and displacement of apartment occupants in Chile following damage due to the earthquake was widespread.

Widespread damage to non-structural building elements such as suspended ceilings, glazing, partition walls and building services, contributed more than any other form of damage to downtime, displacement of occupants and loss of income and employment. The failure of non-structural building elements is a serious vulnerability that is common to New Zealand and should be a crucial area for reassessment of risk and improved practice.

Structural weaknesses in buildings revealed by this earthquake indicated the need for a more robust understanding of the potential seismic demand and retrofit strategies for some of New Zealand's 1950s-1990s buildings, plus constant vigilance in the application of design standards. New Zealand building owners and body corporates should be encouraged to be proactive in strengthening their buildings, including apartment buildings.

The risk to the public must be reconsidered in New Zealand with regard to certain types of glazing above streets and footpaths. 'Curtain wall' glazing, glazing exterior to the frame, performed very well but more rigid systems were severely damaged. The timing of the earthquake fortunately meant that few people were on the streets at the time of the earthquake.

Bridges and some port structures built on reclaimed land suffered major damage as piles and foundations moved with the liquefaction of the soil. In New Zealand there is a good understanding of the condition of most bridges and appropriate retrofitting solutions are being instituted, often under lifeline engineering programmes, for important but vulnerable structures.

### **EVENT STATISTICS**

**Death toll = 521** (source: Ministry of Interior 15/05/10)

**Missing persons = 56** (source: Ministry of Interior 15/05/10)

**2 million people** were directly affected; 800,000 people lost their homes.

**370,000 houses** were destroyed or damaged

**73 hospitals** were damaged

**4,000 schools** were damaged

**221 bridges** were damaged

**Economic losses estimated = US\$30 billion**  
(source: Presidency website)



The enormous task of housing so many displaced people is well underway as emergency accommodation 'towns' spring up in the worst affected areas. Above, military personnel work complete a home. (Photos: Noel Evans)

### Preparedness

In coastal communities many people self-evacuated and survived the initial tsunami. Tragically, some returned to the coast after hearing a false report that the warning had been cancelled. They were among the 500 or so killed in this event when subsequent tsunami waves arrived. Key lessons from this is that public education is a critical element of preparedness and that frequent and unambiguous messages during response to a tsunami warning must be maintained.

The low levels of personal preparedness of citizens in the largest urban community affected (Concepcion/Talcahuano) and the insecurity that followed the breakdown of basic public services was widely reported. This demonstrated the importance of household and neighbourhood arrangements to get through the first few days following a major event, a matter of concern for New Zealand as we continue to encourage improvements in the levels of personal preparedness. In Chile, the very low rates (3-4%) of voluntary residential insurance compared to New Zealand suggest significant risks to the recovery of communities there.

In terms of wider preparedness, the prior development of master plans and guidance material for the response, reconstruction, and recovery processes help. There were examples from Chile that highlighted the value of exercising and coordinating of disaster plans to encourage risk reduction activities and improve readiness and the effectiveness of response. In New Zealand, pre-event planning around understanding of hazard, risks, urban planning, community profiling and awareness-raising will continue to generate better levels of preparedness.

### Recovery

Redundancies built into key lifeline elements enabled a quicker restoration of services in the affected areas. Examples include: double-bridging on principal highways, spare parts for substations, parallel elements for water and electricity supply and back-up air-traffic control facilities. This disaster has opened a window of opportunity in Chile to build back better – including the use of improved urban design solutions.



Public awareness of the tsunami risk is relatively high, and many in coastal communities self-evacuated following the earthquake. However, confusion surrounding the official cancellation of a tsunami warning meant some returned, only to be killed by subsequent waves. (Photo: Noel Evans)

Therefore transitional arrangements and plans need to be carefully considered to avoid inappropriate solutions. This is particularly the case in the early days/weeks following the disaster as non-compliance with consenting rules is inevitable.

Disposal of waste is a major issue immediately following an urban earthquake and this was the case for Chile. New Zealand will need to give more attention to planning for waste and debris disposal prior to an event.

### Conclusion

The approach to earthquake preparedness in New Zealand and the efforts across reduction, readiness, response and recovery are appropriate. But there can be no room for complacency. Vulnerabilities like those seen in Chile exist here also. Continued research and testing, mitigation and planning, and public awareness raising contribute to increasing resilience to the risk in New Zealand. ▲

# Blueprint for the future

One of New Zealand's priceless environmental gems, the Coromandel, is also one of the more vulnerable parts of the national landscape.

**The increasing pressures of growth on the Coromandel's water, land, coast and marine use need to be managed in an integrated manner.**

To achieve this, regional hazards experts are among the technical team involved in helping to shape the district's future over the next 50 years in a multi-agency, community-driven project known as the Coromandel Peninsula Blueprint – Framework for our Future.

The Blueprint is about managing change, growth and sustainable development. It is a joint effort between those agencies that share the responsibility as environmental guardians, planners and providers of services and infrastructure across the Coromandel district including: Thames-Coromandel District Council, Environment Waikato, Hauraki Whaanui and Department of Conservation.

The Blueprint's project leader, Thames-Coromandel District Council Senior Strategic Planner Ruth Buckingham, has assembled a diverse team of public servants and independent advisors that has gelled quickly to meet a daunting deadline.

Greg Ryan, Environment Waikato Senior Regional Hazards and Emergency Management Officer, was among the technical specialists invited to take part in the project's recent Natural Area Process workshops held in Thames.

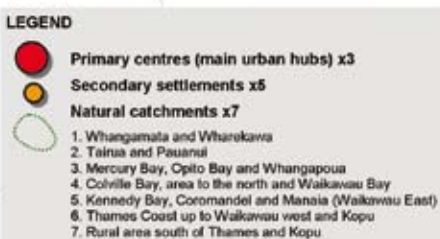
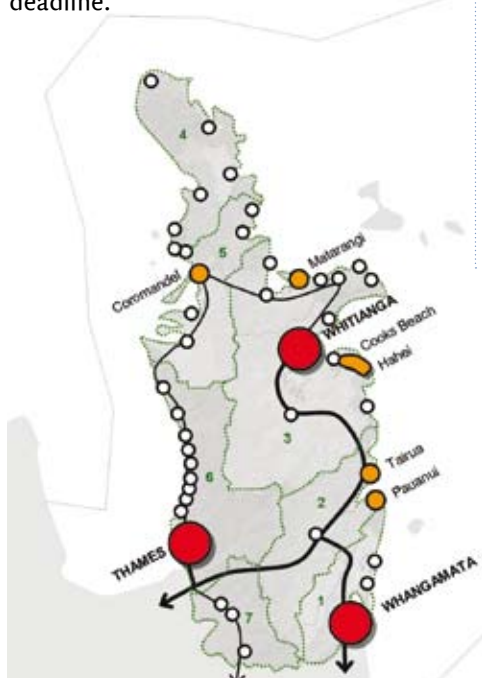
Future-proofing the district is no easy task. Protection of the natural environment remains the greatest priority and challenge.

Greg was among the team assembled to share information on the peninsula's special landscape and waters in a comprehensive study of the Coromandel's natural resources from the mountains to the sea.

The team used historical records as well as the latest mapping technology to create an accurate picture of the local environment and a better understanding of the threats – natural and man-made – which could harm it.

"The Thames-Coromandel District is vulnerable to a range of natural hazards, most notably coastal erosion and inundation, river erosion and inundation, land sliding, debris flows and tsunamis," says Greg.

"The Coromandel Peninsula Blueprint project is an opportunity for the district to proactively manage urban growth so that it does not increase the vulnerability of the community to the effects of these natural hazards. From a CDEM perspective, this opportunity extends across all four Rs" ▲



## Understanding the four Rs

### Reduction:

Recognising the presence of natural hazards and ensuring that future urban growth is not vulnerable to the effects of these. This also recognises and manages existing vulnerabilities.

### Readiness:

Promotion of natural hazard management to project stakeholders and the community, as part of the wider project engagement.

### Response and Recovery:

Recognising the need to plan for event response/recovery - even with good land use planning. This ensures that future urban growth is complementary to what is required e.g. tsunami evacuation routes, location of critical services and infrastructure.

# Capital plans for quake

**The Wellington Earthquake National Initial Response Plan (WENIRP) has been developed to coordinate the national response over the first three to five days to a damaging earthquake in the Wellington Region.**

It is a supporting plan to the Guide to the National CDEM Plan, where it is listed in Appendix 1.

The plan was approved by government officials on 28 April 2010 marking the culmination of 18 months of work by stakeholders from local, regional and national agencies. The plan will be published on the MCDEM website by the end of June.

While the plan is centred on the Wellington region, there could also be direct physical effects in regions ranging from Manawatu and Hawke's Bay to North Canterbury.

The plan is designed to be activated immediately following an earthquake; particularly if there are no telecommunications links operating from within the affected area.

As the exact parameters of such an event cannot be predicted, a critical component of the initial response will be the gathering of key information of the impacts and the state of the resources available. The immediate establishment of a logistics system will also be essential to ensure that required resources can be procured and distributed.

The plan is only one part of the process of preparing for a Wellington earthquake and stakeholder agencies are required to complete their own, more detailed, planning. Several have already begun and MCDEM staff will be discussing future work with other agencies.

It is anticipated that the plan will be tested in a national exercise, although a date for this has yet to be set. If you have any enquiries please contact Tane Woodley at MCDEM, on 04 495-6827. ▲



The southern end of Lambton Quay. Much of this area is reclaimed land, and this combined with multistorey buildings and narrow streets makes a significant earthquake potentially devastating.

## Planning guides for climate change

**The Ministry for the Environment has prepared a series of technical guidance manuals on preparing for climate change along with shorter publications aimed at a broader audience.**

These publications are popular references on best practice guidance to assist local government and engineers in assessing and managing the impacts of climate change on their planning and decision making processes as well as infrastructure and asset management.

*Climate Change Effects and Impacts Assessment* and its summary publication *Preparing for Climate Change*

This guidance provides the latest projections of the expected physical impacts of climate change, both at the national level and for regions around New Zealand. It is designed to help identify and quantify opportunities and risks that climate change poses for their functions, responsibilities and



infrastructure. It also demonstrates how to incorporate climate risk assessment into local government regulatory, assessment and planning processes to reduce vulnerability to the impacts of climate change.

*Coastal Hazards and Climate Change* and its summary publication *Preparing for Coastal Change*

This guidance highlights the impacts that climate change is expected to have on coastal hazards. It details the climate change impacts that are expected not only through sea-level rise but also through storm surge, wind and waves. The publication also discusses a risk management framework in which to consider the consequences of these hazards.

*Tools for Estimating the Effects of Climate Change on Flood Flow* and its summary publication *Preparing for Future Flooding*

This guidance details the key effects of climate change on flooding and presents methods for estimating changes in rainfall, flow rates and inundation. It also includes some best practice case studies to illustrate these methods. The summary publication also provides good practice information, guidance and examples to help local authorities incorporate climate change impacts into flood risk assessments.

These documents can be downloaded from the publications area of the MFE website, [www.mfe.govt.nz](http://www.mfe.govt.nz) ▲

# New Get Ready advertising



New Get Ready radio and television advertisements have been developed and went to air on 30 May. The Get Ready campaign is aimed at creating awareness of the hazards we face and encourages people to “Get ready now so you can get through”

The campaign, managed by MCDEM, is fronted by New Zealand actor Peter Elliott who presents a range of scenarios that are likely in the event of a major disaster. He reminds people of the need to plan to look after themselves for at least three days or more and offers advice on what to do to get ready.

As of May this year television advertisements include captioning for those with hearing impairment. This feature is only available for advertising on TVNZ.

Three new tactical 15 second television advertisements have been produced which can run at short notice, either in the period leading into a potential event or during an event. The aim with these tactical ads is to build on heightened awareness of a national or international event to prompt people to “take action now”. The three 15 second tactical advertisements are:

- **Generic** – reminding people to Get Ready Now Before a disaster happens
- **National** – with images/footage of a NZ disaster event to prompt action\*
- **International** – with images/footage of an international event to prompt action\*

(\*Dependent on obtaining footage/images and media slots at short notice)

The new advertisements were used for the first time in May when the generic ad was broadcast in response to the flooding in North Otago and the severe weather warnings for much of the country.

In addition to the three new 15 second advertisements, three of the original television ads have been revised with a stronger call to action for people to “get ready now”.

New radio advertisements focus on: raising awareness of the Sting (CDEM warning sound) and the need to listen out for CDEM announcements in an emergency; the importance of tuning in to radio for CDEM announcements and; a tsunami-specific ad to educate the public on how to recognise the natural warning signs for a local tsunami so they can act quickly.

The new radio ads have also been developed in Mandarin, Cantonese, Korean, Samoan and Hindi. This is based on results from our annual monitoring research that suggests these communities are less prepared for disasters.

Director of CDEM, John Hamilton, said that the new “Sting” ads have been developed to help people recognise the distinctive electronic warning sound that radio stations will use before broadcasting official civil defence emergency messages.



A screen-grab from one of the new 15 second tactical television ads with provision for adding images/footage of a recent disaster event.



Three of the original Get Ready ads have been revised to include a stronger call to action message at the end of each commercial.



“What has been found overseas is that where there is no clear signal or alarm, public safety messages blend into the surrounding advertising and programming. That had tragic consequences in the Victorian bush fires,” Mr Hamilton said. “In the aftermath, authorities learned that many people did not respond to evacuation and other messages broadcast on their radios because they heard them as commercials or other programmes, not as official warnings.”

In Victoria use of an alarm before a civil defence message is broadcast on the radio is now mandatory.

“We have not gone that far in New Zealand,” Mr Hamilton said. “We have worked with Radio New Zealand, The Radio Broadcasters’ Association, Radio Live and The Radio Network. They all take their emergency responsibilities seriously and have told us they want public safety messages to be as clear as possible.”

The new television and radio advertisements can be downloaded from the Get Ready website, [www.getthru.govt.nz](http://www.getthru.govt.nz). ▲

# Cyclone exercise tests Rotorua civil defence

**Rotorua District Council recently conducted a full day three-shift civil defence emergency management exercise called Operation Cyclax.**

The exercise was staged at the council's city headquarters in downtown Rotorua where an emergency operations centre was activated.

The exercise scenario involved dealing with the effects of an intense cyclone and days of heavy rain causing widespread flooding throughout the district.

"We had a range of related issues to deal with including a staged evacuation of 3000 residents and school children from a suburb threatened by a water reservoir rupture. We also had traffic accidents,

children missing from a school camp, sewerage leaks, water and gas supply interruptions, a tornado and a hydrothermal eruption in the city" said Rotorua civil defence Public Information Manager Rex Moore.

"It was an intense day of activity with around a hundred or so people involved, including representatives from local emergency services and agencies and observers from MCDEM.

"We learnt a lot from the exercise and we've identified a number of areas where we can strengthen our processes and

improve our preparedness for dealing with emergencies in the future.

"But overall the exercise gave us some confidence that we have achieved a reasonable level of planning and preparation that should see us come safely through a real life emergency of this nature," said Rex.

Rotorua District Council is looking at increasing the frequency and range of such exercises in the future so that local teams became more proficient and as well-equipped as possible. ▲



*Rotorua Emergency Operations Centre in action during emergency exercise 'Operation Cyclax.'*

## New impact assessment tool tested

**A workshop was held recently in Hawke's Bay to enable emergency management end-users to provide feedback on a newly developed disaster impact assessment tool.**

RiskScape is a government-funded joint venture between GNS Science and NIWA to develop an easy-to-use multi-hazard risk and impact analysis tool. When operational it has the potential to convert hazard exposure information into the likely impacts for a region. For example, damage and replacement costs, casualties, economic losses, disruption, and number of people affected.

The tool has undergone an initial four-year development phase for local authorities in Hawke's Bay, Christchurch City, and Westport. RiskScape is now in Phase 2, where project developers seek to make adjustments in order to make it operational.

The Hawke's Bay workshop was conducted in order to initiate discussion

with local/regional government and key infrastructure agencies about how to make RiskScape more user-friendly for different applications. Representatives provided feedback by working through exercises involving flooding and an earthquake.

The workshop concluded with discussion on the way forward, with agreement the RiskScape team needed to focus on two development streams: working with lifeline utilities in Hawke's Bay, and in the other pilot areas to incorporate infrastructure data and lifeline functions into RiskScape; and working with Hawke's Bay Local Authority planners to incorporate planning data and lifeline functions into RiskScape.

The RiskScape team plan to establish an end-user group where people can provide input into development. It was



*A screen-grab from the RiskScape application illustrating likely building impacts from an earthquake in Hawke's Bay*

also proposed that RiskScape should be used during the upcoming national exercise, Exercise Tangaroa, to demonstrate distant-source tsunami risks in the pilot areas and exhibit new capabilities of the tool.

Visit [www.riskscape.org.nz](http://www.riskscape.org.nz) for more information. ▲

# CDEM Competency Framework update

The CDEM Competency Framework, released in June 2009, provides a framework to support capable and competent CDEM personnel.

The CDEM Competency Framework describes the high-level competencies common to a wide range of roles in CDEM, as well as the things you would observe someone doing (indicators) for a particular competency. Role maps have been developed and published for many of these roles, in consultation with the sector. Role maps include all the skills, knowledge and attributes (SKAs) someone performing a particular role needs to have. It is the responsibility of the employing organisation to determine which SKAs are relevant to their CDEM personnel.

Now that the Framework and the role maps are available, MCDEM wants to ensure individuals and organisations working in CDEM have the tools and support to apply the Competency Framework to build their CDEM capability. Consultation with the sector indicated the need for guidance on using the CDEM Competency Framework and role maps to develop job profiles, learning objectives, training content and material, and interview questions.

The sector also asked for a needs analysis tool to support CDEM

organisations to identify learning needs. A Development Needs Analysis (DNA) helps to define desired performance, determine current performance, identify gaps and why these gaps exist, and determine the interventions or solutions to address these gaps. It includes but goes beyond a training needs analysis.

Solutions might include training (recognising that training should not be the first and only option), coaching, online learning, job aids and standard operating procedures.

A DNA should be promoted as a positive exercise. The focus is on identifying what success and great performance looks like and what is needed to achieve this. It looks ahead to anticipate change and trends, rather than to find performance deficiencies. Analysis can be on one or more of the following levels: organisational, operational/function, and individual.

A DNA process for the CDEM sector is being developed based on best practice involving: a review of current literature; a review of CDEM capability assessment reports; and a DNA pilot with the Hawke's Bay CDEM Group. The DNA will include a user-guide, as well as checklists for planning, tools for data collection and analysis, and templates. The aim is to produce a practical,



user-friendly resource. It is recognised that not all CDEM organisations will have the capacity or capability to conduct a DNA independently. MCDEM can support CDEM Groups to plan and carry out a DNA and determine the best solutions.

The DNA resources will be freely available online by 30 June 2010 on a dedicated space on the Ministry's website. Further resources will be added to the toolkit webpage as they are developed. The monthly e-Bulletin will provide regular updates about the timeline and progress.

For more information, contact Anneke Pinker on 04 495 6825, or visit [www.civildefence.govt.nz](http://www.civildefence.govt.nz) and select 'CDEM Competency Framework' in the right-hand 'Resources' box. ▲

## Exercise Tangaroa update

Exercise Tangaroa is a national, multi-agency CDEM exercise that will be held on 20 October 2010. The exercise is led by the Ministry of Civil Defence & Emergency Management and is supported by the 16 CDEM Groups, central government departments, emergency services, lifeline utilities, and other agencies as appropriate.

The exercise be played in real time and will focus on the national response to a distant source tsunami originating from South America. The objective is to make the exercise as realistic as possible, according to the latest tsunami research.

The exercise focuses on the lead-up to a tsunami arrival, stopping shortly before the first waves reach the New Zealand



coast. While stopping short of impact, the scenario will require careful consideration of onshore impacts. Some CDEM Groups have indicated that they will extend the exercise to be able to include some post-impact response considerations.

Key performance indicators for the exercise have been finalised and relevant

corrective actions from previous national exercises and some of the larger real events over the last few years have been identified. These corrective actions will be incorporated into the exercise and tested to measure progress.

The Ministry is running a series of exercise writing and management courses to support the exercise and these will be delivered in Tauranga, Wellington and Christchurch during June and July. Detailed information and updates about the exercise can be found on the Ministry website, along with a variety of tsunami related resources.

If you have any questions about the exercise please contact either Jo Guard on 04 495 6818 or Tane Woodley on 04 495 6827. ▲

# Taranaki's pet topic: Get ready, Get Thru



Recognising that pets are part of the family for many people, Taranaki CDEM Group is developing a Domestic Animal Welfare Plan in consultation with the SPCA, veterinarians, Animal Control Officers, and other interested parties.

Taranaki Group has prepared and circulated brochures and information material for pet owners, and ensured that most of its welfare centres are prepared to cater for small animals.

During the initial development of the Domestic Animal Welfare Plan the Group accepted an offer from an emergency management master's degree student Steve Glassey, to conduct a survey of pet owners' attitudes.

His study found that close to 100% of pet owners identify their pets as part of the family. As a result, more than 56% of pet owners said they would not evacuate unless they could take their animals and 79% said they were not prepared to leave their pets behind during an evacuation. Additionally, 58% said they would return to rescue their pets from an evacuation zone despite official warnings not to.

These results confirmed the Group's concern for developing an animal welfare plan. The Group was also aware of statistics from Hurricane Katrina where more than 50,000 pets were stranded in New Orleans and most of them died.

The newly-developed plan was the subject of a recent course attended by staff and volunteers from the Taranaki Emergency Management Office, District Council Animal Control Officers, Massey University veterinary faculty staff and students and representatives of New Zealand Red Cross and MCDEM. The workshop included a presentation by Steve Glassey, overviews of national, regional and local arrangements as well as practical exercises in using the draft Domestic Animal Welfare Plan and its administrative procedures. Many excellent suggestions emerged, which will result in amendments to the draft plan.

A Welfare Advisory Group (WAG) sub-committee has been established to deal with companion animal matters, and an Animal Welfare Co-ordinator position has been created within the WAG. This person will deal with pet-related issues at the welfare desk during emergencies, as well as liaise with welfare centres the SPCA and Animal Control Officers.

Basic equipment for an Animal Welfare Centre kit



A notice prepared for pet-owners whose animals have been temporarily housed during an emergency. The notice emphasises the owners' responsibility for all costs associated with care of their animal.

has been purchased including items such as chains, food and water bowls, blankets, leashes, muzzles, collars, tags, stationery, torches and all pet registration documentation. In addition, arrangements are in place with the region's three District Councils to include an information pamphlet to accompany annual dog registration reminder letters that go out in July.

Work yet to be completed includes making final changes to the plan following suggestions from course participants; purchasing cat carrier boxes; entering into a memorandum of understanding with neighbouring SPCA offices; talking to the region's veterinarians about the treatment of pets in the Group's care and payment arrangements and having the Domestic Animal Welfare Plan formally approved by the CEG and the Group.

While Steve Glassey's research has confirmed the importance of planning for pet welfare during an emergency, perhaps the final word should go to Mahatma Gandhi: "The greatness of a nation and its moral progress can be judged by the way its animals are treated." ▲



Public education brochure, distributed with annual dog registration reminder notices.