

From Indicators to Action: The Case of Auckland

Ten Essentials of Sendai Framework

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Abstract

With increasing urban challenges associated with impacts of climate change, risks from natural and man-made hazards, population growth, and urban densification, a focus on long-term resilience to ensure a high level of liveability is essential. Auckland has a vision and plans to be **“a world class city where talent wants to live”**. Therefore, the city needs to have comprehensive resilience plans, in which resilience indicators are measured and analysed. This paper presents the process, experience and findings of Auckland’s resilience assessment which was designed based on United Nations Office for Disaster Risk Reduction (UNISDR) Local Urban Indicators (LUI) tool. The study was designed and facilitated by The University of Auckland and the Auckland Civil Defence and Emergency Management (CDEM) Group. The study outcomes are the result of discussions of about 100 individuals from more than 30 organisations including private, academic, and local government sectors. The current status of Auckland’s resilience was assessed and categorised under “Ten Essentials” of Sendai Framework 2015-2030. A review of results indicated that the workshop was a good starting point for the assessment of Auckland’s resilience. Workshop participants contributed a wealth of expert knowledge and made suggestions to improve the resilience of the Auckland region.

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Introduction

In recent years urban challenges associated with impacts of climate change, hazards, population growth, and urban densification, are increasing (UNISDR, 2013, 2015b). Cities need to be prepared to withstand stresses, survive and at the same time absorb shocks from disasters. This ability together with rapid recovery is known as resilience (Walker, Holling, Carpenter, & Kinzig, 2004). Building resilience is essential for long-term sustainability in urban areas. Proper and accurate measurement of resilience indicators is a starting point to build a resilient region. Auckland is the most populated urban area in New Zealand and is exposed to several shocks and stresses that unfortunately appears to be increasing over the following decades¹. These threats including volcanic hazards, tsunamis, tropical cyclones, drought, earthquake, urban fires, flooding, coastal erosion, and land instability can affect the whole unique aspects of the city and can cause disruption and losses. For maintaining liveability and reduce losses, it is imperative to plan for potential risks and shocks and build a more resilient region. In Auckland, the Civil Defence and Emergency Management (CDEM) Group is responsible for assessing different aspects of resiliency. Auckland CDEM Group, in collaboration with The University of Auckland (Centre for Disaster Resilience, Recovery, and Reconstruction (CDRRR)), have been reviewing a number of assessment tools and frameworks to test their application and usability for Auckland. New Local Urban Indicators (LUI) were chosen as an international tool which is a part of UNISDR's global Making Cities Resilient Campaign². The campaign supports building resilience in cities through raising awareness of Disaster Risk Reduction (DRR) among local governments and stakeholders. This paper presents the process, experience and findings of applying of LUI in Auckland, New Zealand. The primary purpose of this paper is to assess resilience indicators under the 'Ten Essentials for Making Cities Resilient' that is based on Sendai Framework for Disaster Risk Reduction (2015-2030)³. This tool helps to find gaps, weakness, and strengths that currently exist and also helps to determine the set of priorities for resilience works in Auckland.

¹ The Auckland Plan, Chapter 8-470, 2012

² <https://www.unisdr.org/we/campaign/cities>

³ <https://www.unisdr.org/we/coordinate/sendai-framework>

Resilience & Resilience Measurements

Globally, disasters use Disaster Risk Reduction (DRR) techniques to mitigate the effects of a disaster (UNISDR 2005, 2013). One of the probabilistic components of DRR is known by the technique of “Risk Management” (Purdy, 2010). In Risk Management assumption is once risks have been identified and quantified, they can be managed (Davies, Robinson, & Ericksen, 2015). However, this assumption is valid for the risks that are known, frequently occurring and minor. The risks associated with the larger, less frequent and more damaging events that trigger significantly big disasters are different (Davies et al., 2015). Managing these disasters and reducing their effects are more complicated and need extra efforts. This is a reason that despite substantial efforts, it is hard to reduce disaster effects and costs continue to increase (Neumayer, Plümper, & Barthel, 2014). One complementary approach to reducing the effects of disasters is by increasing the resilience to the shocks and stresses. Resilience has different definition across different disciplines. Generally, resilience is defined as; the capacity of a system to absorb disorder while undergoing change so can maintain the same function and structure (Walker et al., 2004); Or adapt to changes in a way that retain pre-existing structural form with limited effects to the system or without modification of base component of the system (Sauer, 2015). This definition also can be used for urban areas as “*ResilientCity.org*” defines it similarly as⁴:

“A Resilient City is one that has developed capacities to help absorb future shocks and stresses to its social, economic, and technical systems and infrastructures so as to still be able to maintain essentially the same functions, structures, systems, and identity.”

Building a resilient city requires us to understand what indicators contribute to resilience. A number of tools have been created to assess urban resilience. These tools have different indicators and use different approaches to measure resilience. However, they are often used as a diagnostic tool and a foundation for policy making and planning. Assessment tool is useful in establishing a baseline for monitoring progress and recognising success (Cutter, 2016). Some of the well-known tools are developed by United Nations including United Nations

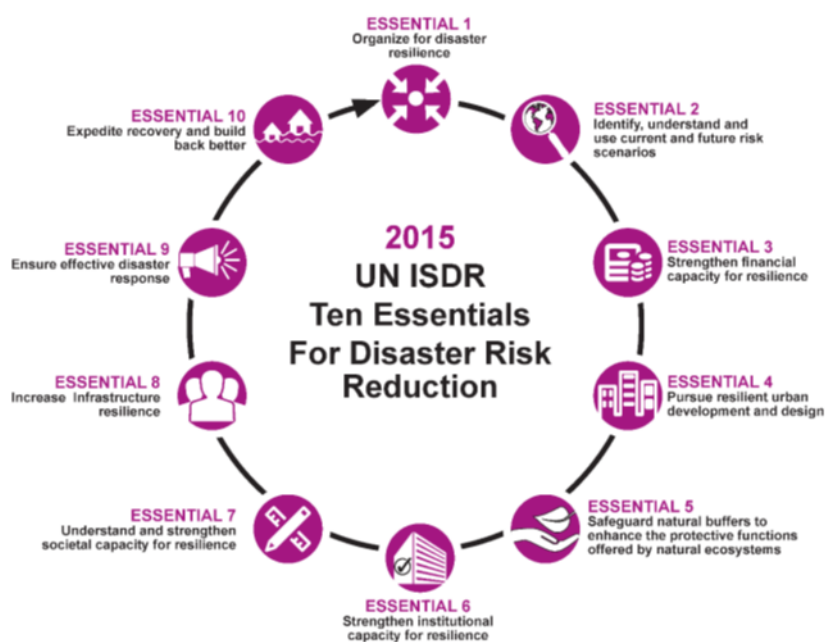
⁴ <https://www.resilientcity.org/index.cfm?id=11449>

International Strategy for Disaster Risk Reduction Scorecards (UNISDR Scorecard), Local Government Self-Assessment Tool (LGSAT), and lately Local Urban Indicators (LUI)). The City Resilience Index (CRI) is another well-known tool, developed by Arup, with support from the Rockefeller Foundation. Similar to UNISDR, the CRI is a comprehensive, accessible and technically robust basis for measuring resilience at a city scale (ARUP, 2017).

Local Urban Indicators (LUI) is the latest tool developed by the UN with the support of USAID, European Commission, IBM and AECOM⁵. The LUI was informed by learnings from the implementation of the Local Government Self-Assessment Tool (LGSAT) and the UNISDR Scorecard. The LUI tool presents a total of 230 questions in four layers: Layer 0, Layer 1, Layer 2 and Layer 3. Layer 0 has eight pre-set questions in line with the Sendai Framework global target indicators. Questions in this layer can be answered by statement or quantitative data from different sources such as the city profile and previous disaster data. Layer 3 has qualitative and quantitative questions. These questions can be answered by pre-defined scenarios on the scale of 0 to 5. Layer 1 and 2 are purely qualitative. In Auckland, data for layers 1 and 2 was collected at the “National Disaster Resilience Strategy Workshop” held by the Ministry of Civil Defence & Emergency Management (MCDEM) in Auckland on 6th April 2017. The LUI enables a city to capture a snapshot of *‘how the city is doing’* in relation to disaster resilience, highlighting areas of strength and key challenges, thus allowing the city to develop a prioritised list of actions to improve resilience to corresponding to gaps or weaknesses identified.

⁵https://www.unisdr.org/campaign/resilientcities/assets/documents/privatepages/02_Local%20Indicators_Handout.pdf

Figure 1: Ten Essentials for Making Cities Resilient



Source: (AECOM, 2016)

Auckland

Auckland with about one-third of New Zealand's population, around 1.5 million⁶, is the most populated urban area of New Zealand. More than half of the overseas population of New Zealand live in Auckland, making Auckland the most ethnically diverse region in New Zealand, and one of the world's most culturally diverse cities. New Zealand's Māori culture and heritage is unique, and Auckland is home to the country's largest Māori population. In addition, two-thirds of New Zealand's Pacific people reside in Auckland bringing languages, culture, customs that enhance Auckland's uniqueness and diversity.

⁶http://archive.stats.govt.nz/browse_for_stats/population/estimates_and_projections/SubnationalPopulationEstimates_HOTPAJun16.aspx

However, the diversity is not limited to social and culture; unique environment including harbours, volcanoes, productive soils, ranges, islands, lakes and streams add to the value of diversity of the city. Auckland is the largest commercial centre of New Zealand and contributed 37.5 per cent (\$101.4 billion) to the total national GDP of \$270.6 billion⁷. Auckland has a unique combination of social, culture, economic, and natural environments. However, Auckland is exposed to several shocks and stresses including floods, volcanic activity, coastal erosion, housing shortages and weather activity⁸. It is vital to plan for potential risks and shocks and build a more resilient city which can absorb and mitigate the negative impacts of disasters.

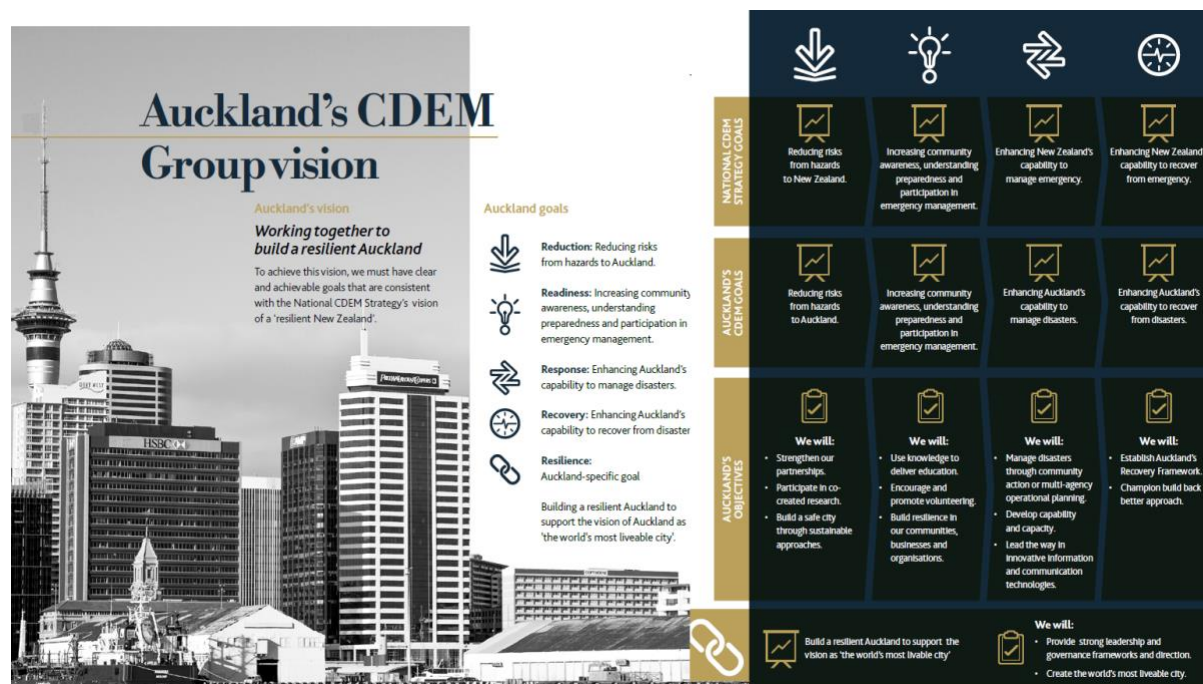
Auckland's CDEM Group's vision is "**Working together to build a resilient Auckland**" (CDEM Group Plan, 2016-2021)⁹. Building resilience is about everyone taking responsibility, individuals and whānau that make up neighbourhoods and communities, right through to small, medium and large businesses, non-government organisation and all levels of government. How the region achieve this vision is detailed in Auckland's Civil Defence and Emergency Management Group Plan (2016 – 2021) and the framework is included below.

⁷ Statistics New Zealand, year ended March 2017

⁸<http://www.mfe.govt.nz/climate-change/likely-impacts-of-climate-change/overview-of-likely-climate-change-impacts>

⁹https://www.aucklandemergencymanagement.org.nz/media/1054/19-pro-0212-_resilient-auckland_-online-doc-update_proof1.pdf

Figure 2: Auckland's CDEM Group Vision



Source: Modified from Fig 1 Auckland CDEM Group Plan 2016 - 2021

The principles underlying the role of CDEM management and governance in Auckland are as follows:

- Strategy – Auckland's strategic direction is the foundation of all CDEM activities.
- Leadership – provide strong leadership and commitment across CDEM at political and executive levels.
- Engagement – active engagement across the CDEM Group, key partners and stakeholders, and Auckland's communities to deliver the regional and local outcomes that will support and promote a resilient Auckland.
- Decision-making – contribute to the development of policies and frameworks across CDEM that will underpin the success of the Group Plan. By placing emphasis on what is important, having attention to detail, and allowing the CDEM Group to make effective, efficient and legitimate decisions, Auckland will continue to build resilience.
- Roles and responsibilities – CDEM Group, key partners and stakeholders understand their obligations under their own legislation. This plan will not affect those obligations.
- Value Te Ao Māori – ensure Māori values and perspectives are taken into account when developing long-term business direction. Developing performance standards and collective goals that contribute to key Te Tiriti o Waitangi / the Treaty of Waitangi outcomes.

In addition to the principle directly above, the Auckland CDEM Group have committed to:

- Incorporate a culture of Māori capability and capacity.

- Collaborate with Māori communities in the development of strategies to enhance resilience.
- Embed a department-wide culture of confident, effortless Māori responsiveness.
- Support effective Māori participation in democracy.
- Increase in Māori leadership at all levels

Auckland is building its resilience through various legislation, policies and plans. An example of these documents are The Local Government (Auckland Council) Act and other legislation, The Auckland Plan and Auckland's Unitary Plan, and the Auckland Civil Defence and Emergency Management Group Plan,

Methodological Approach: Roundtable Focus Groups Discussions

“Stakeholder-focused Method” was used for collecting data in the Roundtable Focus Groups Discussion settings. The workshop was designed to address Layer 1, and 2 of the LUI and to provide observations for the ten essentials. Around 100 people participated, mainly from the Auckland region, from national and local governments and local businesses, universities, and NGO's, who have an understanding, interest and knowledge of aspects of Auckland's resilience.

The workshop was structured around ten focus groups corresponding to one of the Ten Essentials. The discussions in the focus group intended to start a conversation and provide relevant data. The face-to-face discussions enabled clarification and explanation of new and different ideas and exploration of issues that appeared throughout the discussion. It also facilitated exploration of various perspectives on issues of concern (Magis, 2010). Each table (focus group) was hosted by one presenter from CDEM and a senior researcher from a university. The presenters acted as facilitators making sure everyone was comfortable, the pace was managed, and gave encouragement to ensure participants felt comfortable to speak up. At each table, a senior researcher attended from the University of Auckland to help explain the questions if needed, but mainly to ensure the discussion was captured. Other attendees on the tables were a mix of participants from central and local government, welfare and lifeline utility agencies and organisations, business, and academia. At the beginning of the workshop attendees were asked to complete the focus group questions and add additional comments, as

necessary. After the completion of individual questions, the group had an opportunity to discuss the questions, form a consensus view and make suggestions for improvement. The workshop lasted about an hour.

Findings and Discussions

Essential 1 - Organise for Disaster Resilience

“Put in place an organizational structure and identify the necessary processes to understand and act on reducing exposure, impact and vulnerability to disasters”(UNISDR, 2017).

Workshop Findings

Participants in the Table 1 focus group concurred that in New Zealand, local governments have a process to prioritise local disaster risk reduction activities and exercise decisions in an emergency. In Auckland, it is understood that there is both an organisational structures and processes in place to reduce exposure, impact and vulnerability to disasters. All stakeholders accepted that there is a single point of coordination, which is Auckland CDEM. It was understood that the Auckland CDEM has authority and systems in place to act in times of disasters. Participants felt that there was consultation with stakeholders. Participants agreed that disaster risk reduction is considered in the supporting strategic plans of the Auckland Plan, and there is also substantial work that indirectly relates to resilience.

Workshop Suggestions

Clarity of Roles and DRR Processes

The participants felt that the roles of various stakeholders involved in developing or contributing to resilience should be more clearly identified. The question arose whether local government mechanisms need to prioritize local DRR and emergency activities in line with any national policies defined by MCDEM.

Developing Learning

The participants suggested that local and national governance structures could include a capability for learning from Auckland’s experiences as well as from other cities. This will include developing feedback loops

and conducting evaluations on resilience approaches and methods that have worked well. Developing government knowledge in defining, building and measuring resilience through research was suggested.

Embedding Resilience

The workshop identified that there is a need to embed resilience through the establishment of new plans and adaptation of existing plans, strategies, acts, laws and to integrate resilience qualities fully into the Auckland Plan.

Strengthening Networks

There was a perceived lack of collaboration, cooperation, and sharing amongst stakeholders. Participants stated that some of stakeholders were not sufficiently engaged. Building networks with communities was seen as important. Participants commented that there needed to be a better understanding of how stakeholder and community engagement programmes could be improved. Building alliances with all relevant stakeholder groups was suggested.

Conclusions

The findings showed that in Auckland it is understood that there is both an organizational structure and processes in place to reduce exposure, impact and vulnerability to disasters. The workshop gave some suggestions for improvement, particularly around systems for sharing ideas and disaster information to educate and include stakeholders.

Identified priorities for Auckland under Essential One include:

- Clarify the roles of all agencies in pre-, during and post-disaster events.
- Embed resilience work fully into the Auckland Plan including necessary strategies, acts, laws, and codes.
- Engage all stakeholders and improve collaboration, cooperation, and sharing among them.
- Develop feedback loops and conduct evaluations on resilience approaches and methods that have worked well.

ESSENTIAL 2 - Identify, Understand and Use Current and Future Risk Scenarios

"City governments should identify and understand their risk, including hazards, exposure and vulnerabilities, and use this knowledge to inform decision making" (UNISDR, 2017).

Workshop Findings

The general consensus was that there is a lot of information about hazards and hazard changes over time, particularly as a consequence of urbanization, land use and climate change. Risk assessments are regularly updated as a result. It was recognized that the CDEM Group are working to include exposure and vulnerability information into the Auckland Plan and supporting strategic plans such as the City Centre Master Plan¹⁰ and the Auckland CDEM Group Plan¹¹.

Workshop Suggestions

A Multi-Hazard Approach

The workshop participants stated that a multi-hazard approach is best where accumulation and combination of multiple hazards and their effects need to be estimated and taking into consideration in planning.

Communicating Hazards, Exposure, Vulnerabilities

Participants felt that Auckland CDEM seems to be active in conducting risk assessments which are regularly updated, but that communication and the use of information from the risk assessments for decision-making purposes could be strengthened. The focus group discussed suggestions for communicating information

¹⁰<https://www.aucklandcouncil.govt.nz/plans-projects-policies-reports-bylaws/our-plans-strategies/place-based-plans/Pages/city-centre-masterplan.aspx>

¹¹ <http://www.aucklandcivildefence.org.nz/about-us/our-group-plan-2016-2021/>

included making risks assessments available and accessible to agencies and organisations, and working out who needs to know what, and how the information should be used in practice. To build hazard and risk awareness within the community, it was suggested that risk information should be regularly distributed to the public through forms such as social media, television, radio, newspapers, pamphlets etc. Participants proposed that Auckland CDEM should work with local universities to conduct research on awareness and education to assist in developing stakeholder and public understanding of disasters.

An Integrated Platform for Information

Participants agreed that an integrated platform such as a “Virtual Resilience Hub” should be developed as a single point of sharing information for stakeholders involved in DRR.

Conclusions

The responses from the participants show that hazards information appears to be available, but communication to and between stakeholders could be strengthened. A multi-hazard approach through an integrated information system was suggested as a means of improving understanding and knowledge sharing of risks and related information to all relevant stakeholders as well as the general public.

Identified priorities for Auckland under Essential Two include:

- Estimate accumulation and combination of multiple hazards.
- Make risk assessments accessible to relevant agencies and organisations and strengthen communications between agencies and organisations.
- Develop an integrated resilience platform for sharing information which would show risks, exposure, vulnerabilities, etc.
- Build disaster risk awareness among stakeholders and the public by distributing risk information regularly and support research that develops understanding and modelling of risk.

ESSENTIAL 3 - Strengthen Financial Capacity for Resilience

“Understand the economic impact of disasters and the need for investment in resilience. Identify and develop financial mechanisms that can support resilience activities” (UNISDR, 2017).

Workshop Findings

Participants understood that Auckland has in place a budget, the necessary resources and contingency fund arrangements for the “5R’s” (reduction, readiness, response, recovery and resilience). However, the participants felt that there is a need to further understand the ways in which funding can be used to improve Auckland’s resilience to disasters.

Workshop Suggestions

Understanding Funding Sources

The stakeholders proposed that Auckland should identify multiple funding options, including NGOs and foundations, businesses (in return for some benefit to the business), development banks, bank loans, and bonds. It was suggested that funding from agencies and departments not currently directly related to resilience should also be considered.

Small to Medium-Sized Enterprise (SME’s) and their Resilience

The participants felt that Auckland businesses could consider and adopt various ways to improve their resilience to disaster events. The participants understood that medium to large organisations have robust risk management systems that can help build resilience, but awareness of resilience seems to be limited in small-to medium-sized (SME) businesses. SMEs do not always seem to see the value of insurance and it was pointed out that this is an area where there is a need to change. The stakeholders felt that SMEs have limited knowledge of disaster risk management and resilience planning, but they are considered to be agile due to certain flexibilities of being a small business which may have an inherent resilience associated with this agility. It was suggested that Auckland CDEM could assess ways of formalising the process of building disaster resilience in SMEs during “business as usual” times.

Funding Opportunities and Incentives

Participants proposed that the part of the costs of building and business permits issued by the council could be used as a fund for business insurance. Similarly, opportunities can be created to incentivise homeowners, low-income families, communities, businesses and the public sector to invest in reducing risks.

Leveraging Co-Benefits

The participants suggested that leveraging co-benefits between risk reduction activities and other activities was thought to be one way of assisting homeowners and businesses in gaining finance. For example, installing rainwater tanks as a disaster preparedness measure which produces other benefits such as reduction in water costs, collecting rainwater for gardening purposes etc.

Information for Decision Making

Participants agreed that information on disaster risk reduction, resilience and preparedness is key to financing resilience practices. Businesses and communities require communication and information tools at different scales (local, regional and national) that engage with multiple stakeholders. There are needs to be a “one-stop-shop” for providing a single evidence-based information. The participants felt that high levels of uncertainty with decision-making can occur with a lack of relevant information, therefore an integrated whole-of-government information repository could be useful.

Accounting for resilience

The participants suggested that there is a need to better account for resilience building in methodologies that assess costs and benefits.

Pre-arrangements

It was suggested that the Council could require “resilience plans” that take into account DRR practices for disaster preparedness, response and recovery to be made available by businesses bidding for tendered work. For example, pre-arrangements for contracting by construction companies in an event is useful for an efficient response and rebuild effort.

Conclusions

Financing resilience is wide ranging. Although it was identified that Auckland has in place a budget for resilience building, suggestions made at the workshop could improve resilience financing, including providing information and mechanisms for incentivising and accounting for resilience building.

Identified priorities for Auckland under Essential Three include:

- Identify all available sources of funding that have not yet been considered.
- Build awareness of resilience for SMEs and promote business insurance.
- Create incentives for homeowners, low-income families, communities, businesses and the public sector to invest in reducing the risks they face.
- Account for resilience building in methodologies that assess costs and benefits.
- Require resilience plans from businesses/contractors for tendered works.

ESSENTIAL 4 - Pursue Resilient Urban Development and Design

"The built environment needs to be assessed and made resilient as applicable, informed by risk identified"(UNISDR, 2017).

Workshop Findings

Participants in table 4 felt that although up to date risk information is available it is not sufficiently influencing urban planning. It was suggested that current urban land zoning and management of urban growth should use available hazard and risk information as part of resilience building.

Workshop Suggestions

Land use planning and resilience

The participants understood that Auckland CDEM do consider and apply disaster risk management for resilience such as planned evacuation routes for highly populated areas, installation of tsunami sirens and information boards, hazard and risk information made available in different languages etc. It was suggested that

further consideration could be given to the use of resilient urban design solutions (such as green areas, water retention areas, ventilation that reduce the dependency on technical infrastructure like sewage systems etc.). It was identified that the needs of low-income groups should be taken into consideration when identifying suitable land for future development. The urban design solutions and low-income situation are not the remit of Auckland CDEM but Council as a whole, which confirms the need for resilience to be whole of council.

Consultation

The participants agreed that there needs to be adequate engagement and consultation with stakeholder groups in different stages of planning and implementing urban development projects. It was suggested that engaging all stakeholders should be considered in decision-making processes when making urban development decisions.

Resilient Buildings

Participants stated that building codes and standards need to be regularly updated and developed to relevant hazards and impacts of climate change e.g. not locating electrical cables on the ground floor of buildings in areas vulnerable to tsunami). Development, implementation, and updating of building codes should take into account of changing risks. It was suggested that consideration should be given to the adoption of innovative techniques to make new buildings more resilient.

Conclusions

The workshop discussions concluded that the link between risk information and its influence on urban planning in Auckland can be strengthened. In particular land-use planning, building codes and design should incorporate DRR and resilience building attributes.

Identified priorities for Auckland under Essential Four include:

- Use urban design solutions to cope with risks and reduce dependency on infrastructure systems.
- Engage all stakeholders in decision-making processes when making urban development decisions.
- Update building codes and standards and develop them according to potential hazards and impacts of climate change.
- Use innovative or existing/traditional techniques for design and implementation of new resilient buildings.

ESSENTIAL 5 - Safeguard Natural Buffers to Enhance the Protective Functions Offered by Natural Ecosystems

"Safeguard natural buffers to enhance the protective functions offered by natural ecosystems. Identify, protect and monitor critical ecosystems services that confer a disaster resilience benefit"(UNISDR, 2017).

Workshop Findings

Discussions at table 5 revealed that there is currently a gap in the knowledge about the environmental solutions needed to address current and future risks in Auckland. The participants felt that protection and restoration of ecosystems are not fully integrated into the Auckland Plan and its supporting strategies to their knowledge.

Workshop Suggestions

Improve Understanding

Identifying the need to improve understanding of the relationship between ecosystems and DRR activities were common themes at the workshop. The participants noted that there is a gap in information between knowledge and decision-making. For example, Auckland Council has a 100-year projection of sea level rise of 1m, however there is no current assessment of impact that this could have on ecosystems/natural buffers/ecosystem service providers, land use or groundwater reserves. The interactions between the built and natural environments are also not well understood. For example, renters and real estate agents do not seem to fully understand hazard zones and the risk of hazards on the lands they are selling and/or buying. The participants felt that there are insufficient legal and policy mechanisms ensuring the preservation and restoration of land that supports biodiversity and critical ecosystem services. It was suggested that there is a need to identify where and how to add additional ecosystem services through urban planning, along with a need to analyse changes from climate trends, urbanisation and planning to enable ecosystem services to withstand future impacts.

Raise Awareness

Raising awareness was covered in the workshop, including suggestions for environmental awareness programmes regarding ecosystems and the impact of disasters. Participants stated that there is a need to communicate concepts such as “natural buffer” and “ecosystem” to aid work on the ground and engagement with community. It was suggested that raising awareness should also include communicating to the public about the various environmental systems Auckland relies on.

Conclusions

The importance of the ecosystem and the impact of DRR activities on the ecosystem was covered in the workshop. There appeared to be a lack of knowledge and a need to raise awareness on the value of ecosystem protection and the impact on developing resilience.

Identified priorities for Auckland under Essential Five include:

- Improve understanding of value and benefits from ecosystems for disaster risk prevention.
- Identify where and how to add additional ecosystems through urban planning.
- Analyse changes from climate trends and urbanization and plan to enable ecosystems to withstand future impacts.
- Put in place relevant legal and policy mechanisms to ensure preservation and restoration of land that supports biodiversity and critical ecosystems.
- Raise awareness in communities by communicating to the public about the various environmental systems Auckland relies on.

ESSENTIAL 6 - Strengthen Institutional Capacity for Resilience

"It is important to ensure that all institutions relevant to a city's resilience have the capabilities they need to discharge their roles"(UNISDR, 2017).

Workshop Findings

The workshop participants at table 6 agreed that there is institutional capacity for resilience in place in Auckland. There is DRR legislation in place and there is an understanding of how to use the legislation to improve resilience. The participants proposed that there is a need to consolidate legislative information and use the information strategically to improve institutional capacity for resilience.

Workshop Suggestions

Improving Understanding of, and Use of, Legislation

The participants stated that knowledge of DRR legislation is at an acceptable level in Auckland, but that “legislation applies differently to various groups within and between organisations”. They felt that sometimes there is insufficient alignment. The stakeholders commented that there could be causes for conflict internally within organisations when different groups approach the same problem under different legislative provisions. Conflicts in objectives can also arise between different organisations and within organisations due to different interpretations of legislation. Once conflict arises internally in an organisation building resilience across an organisation becomes more difficult. It was acknowledged that there is a potential problem with the Privacy Act and sharing the information needed to build resilience. The participants commented that systems, processes and relationships need to be in place in advance so that information sharing can occur smoothly and permissions can be fast tracked in an emergency.

Improving Clarity of Roles and Strengthening Relationships

The participants felt that the competencies, capabilities and resource capacities that different partners and stakeholders hold is not clear in the DRR plans of response agencies and organisations. The disaster resilience roles and responsibilities are well defined but there seems to be a lack in alignment and clarity. The stakeholders stated that formalised processes are in place that strengthen and share knowledge and skills of agencies and organisations involved in disaster resilience but there are insufficient links into corporate companies and NGOs. Corporations engaging in communities potentially have a major role in resilience-building, so they need to be involved and included in resilience knowledge and conversations. The stakeholders observed that relationships with other organisations rely on informal connections rather than formalised relationships. In practice, there can

be a lack of understanding of roles and responsibilities and communication. It was suggested that networks could be extended to link into national-level ministries as well, for instance MBIE (Ministry of Business Innovation and Employment).

Pre-planning Relationships

The participants agreed that currently there is no pre-planned or organised relationships, communication strategy or roles established for stakeholders who will be called to assist in a disaster situation. They suggested that pre-planning the wider relationships is needed so there is less reliance on individual relationships.

Improve recovery

The table 6 participants agreed that the recovery process begins during the response period. They felt that recovery needs more attention. While response is often prioritised, there is need for greater focus on the transition from response to recovery. The stakeholders highlighted that there are limited resources which poses problems when deciding how these resources are distributed to obtain the best outcomes in the midst of competing demands. The participants pointed out in some instances commercial interests can also steer recovery, but it is important that businesses need to have a balance between business interests and responsibility to the community. There were also comments that there is a need for enhanced collaboration and coordination between organisations to cover recovery responsibilities. The participants felt that handing the full responsibility of recovery to a single construction organisation (e.g. Fulton Hogan in Christchurch recovery) is ineffective, and that recovery should engage many businesses to support them in their recovery as well.

Strengthen Processes

It was suggested that processes related to resilience and recovery require strengthening and alignment to be able to respond to events, as ad hoc responses are not effective or efficient. For instance, there is high reliance on the private sector, but the private sector is not necessarily aligned with resilience priorities from the council and government perspective. The government, private and NGO sectors need to all be connected and aligned to make cities truly resilient. The participants added that beyond having a “manual or procedure in place, there is a need to establish these relationships in practice and test the relationships in preparation for an event”.

Community Awareness

Participant at table 6 agreed that local communities are a part of the solution for strengthening institutional capacity. Raising community awareness includes the need to make communities aware of what they can do, and how they can help each other in an emergency. It was suggested that communities could be assisted in creating networks to help and support each other, create connections between different communities, and create communication channels. Concern was raised about core funding to community organisations such as community centres and schools being cut since they operate at the front line in an emergency. It was suggested that there is more support and education needed for communities on disaster risk reduction and resilience.

Education and Training

Education and training were raised as ways of improving institutional capacity. The participants proposed that lessons learnt locally, nationally and internationally could be used to provide education and training for future practice. Usually, the commercial imperative would be to get back into “business as usual” as soon as possible, but there should be a commitment in advance to learn from past lessons and experiences.

Conclusions

The workshop findings showed that institutional capacity for resilience appears strong in Auckland at present. The main suggestions came from a need to consolidate and communicate information to communities. Incorporating alignment of DRR processes with those of corporate organisations and NGOs was suggested, as well as a focus on education and training to improve institutional capacity.

Identified priorities for Auckland under Essential Six include:

- Put in place systems and processes so that information sharing can occur smoothly and permissions can be fast-tracked in an emergency.
- Formalise relationships between organisations, corporates, and NGO’s.
- Create data frameworks to enable data access and use by all stakeholders including information about competencies, capabilities, resources and capacity of different agencies and organisations.
- Create a clear plan for recovery spreading responsibility between organisations so that all responsibility does not land on one large organisation (Also Essential 10).

- Raise community awareness including the need to make communities aware of what they can do, and how they can help each other in an emergency (Also Essential 7).
- Create networks to help people support each other and create communication channels with communities so they receive and send information. (Also Essential 7).

ESSENTIAL 7 - Understand and Strengthen Societal Capacity for Resilience

"Ensure understanding and strengthening of societal capacity for resilience. Cultivate an environment for social connectedness which promotes a culture of mutual help through recognition of the role of cultural heritage and education in disaster risk reduction"(UNISDR, 2017).

Workshop Findings

The workshop participants recognised that the diversity of Auckland makes it difficult to generalise comments about social cohesion across communities. There was an agreement that although there is social support available in Auckland which may enhance the capacity to respond to hazards, there is uncertainty around the degree at which the support is available to different ethnic groups. The majority of the participants were of the opinion that social support varies from community to community because of the cosmopolitan nature of Auckland. Different factors were highlighted as barriers to accessing the programmes for social support and healthcare, including cultural and language barriers being significant. The participants contended that many international migrants have little awareness of how local systems for support operate. There is unequal access to education, including funding by government. The participants identified based on their expertise and experience that the Indian and Chinese communities have been identified as community groups that are disconnected from the larger community.

Workshop suggestions

Communication Barriers

The main question raised was: What is the best way to communicate to different community groups as well as within these groups? Participants agreed that communication for the different groups needs to be context specific. Engaging and collaborating with organisations such as churches, youth groups, clubs, advocacy groups connects people who may not have other links. Church groups have a role in connecting communities. The participants raised the importance of establishing and strengthening networks for transient groups such as students who are continually moving. It is necessary to identify how to communicate and share information to these groups. It was suggested that employment networks, tertiary networks, and other networks supporting transient communities should be included. Schools are a good way of sending messages to the community, but it is also necessary to consider other groups.

Communication Methods

Methods of communication were discussed, such as:

- Providing community groups with accurate and comprehensive data on risk scenarios and the current level of response capabilities which would help in strengthening resilience.
- Creating maps of key community groups in each area along with their capabilities and what resources and assistance they can provide.
- Engaging with employers as a communications channel for disaster awareness.
- Engaging local and ethnic media (TV, print, social media, etc.).
- Utilising mobile (phone/tablet) and web-based “systems of engagement” (e.g. crowdsourcing or disseminating data on preparedness).
- It was discussed that traditional approaches of communication may not be effective and the need to recognise differences in modes of communication between different age and social groups. It was highlighted that impactful messaging needs to be created.

Education

The participants stated that although schools and the education sector are used to share DRR knowledge, teachers are not formally trained in DRR. They felt that formal training in DRR would more fully equip teachers to translate this information effectively in schools. It was suggested that video games could be used to simulate disaster risk scenarios and build awareness. Children can interact with this information as well as adults and parents. It was suggested that active participatory education such as through online/video games would also be an effective way to spread knowledge.

Conclusions

Communication barriers, and how to overcome these barriers, were seen by workshop participants as critical for improving societal resilience. With changes in education and methods of communication, the ways messages are being communicated and received is changing. Consistent, clear messaging is still required.

Identified priorities for Auckland under Essential Seven include:

- Engage with community organisations
- Engage with employers who can act as a communications channel with their workforces for disaster awareness, business continuity planning, and training.
- Use methods of communication appropriate for the specific audiences.
- Train teachers in DRR to teach children effectively.
- Use active educational approaches (e.g. the use of video games)

ESSENTIAL 8 - Increase Infrastructure Resilience

"Assess the capacity and adequacy of, as well as linkages between, critical infrastructure systems and upgrade these as necessary"(UNISDR, 2017).

Workshop Findings

Participants at table 8 agreed that in Auckland, the major lifeline utility providers have individual plans to protect their critical infrastructure. Major lifeline utility providers are expected to have an infrastructure resilience and risk reduction strategies in place. Most critical infrastructure is built above the required building codes and regulations, with a life expectancy of 100 years. The Auckland Lifeline Group also maintains a register with available hot spots.

Workshop Suggestions

Sharing Information

The Auckland Lifelines Group serve as a vehicle for sharing information among key industry stakeholders. However, since participation in the network is voluntary, not all utility organisations are a member of the group. The stakeholders stated that the major utility organisations have emergency and continuity plans, and there is awareness of information about risks, but there may be a lack of knowledge surrounding hot spots. Suggestions from the workshop included:

- Sharing of information between industry stakeholders and Auckland Council.
- The need for a common language among supply chain contributors.
- Building connections between infrastructure agencies (including those in the private sector) to ensure resilience is considered appropriately.
- Resilience considered in project prioritisation, planning, design, implementation and maintenance cycles.

Improve Assessments, Solutions and Investment

The stakeholders felt that engineering assessments need to be improved. They stated that there is a lack of cost-effective solutions to achieve adequate infrastructure resilience. They also identified a lack of investment in infrastructure planning and provision to meet the increasing growth in population.

Focus on Retrofit

The participants agreed that there is a need to assess and retrofit critical infrastructure that is required for the operation of the city and as well as specifically for emergency response. Processes are also required for prioritization of retrofitting or replacement of unsafe infrastructure.

Recovery

Table 8 stated that the main issue to focus on should be rapid restoration of services in a service failure or emergency situation.

Conclusions

The focus group concluded that in Auckland, the major utility providers have plans to protect their critical infrastructure, and the main issues involved sharing information and the retrofitting of current critical infrastructure to improve resilience.

Identified priorities for Auckland under Essential Eight include:

- Share information among key industry stakeholders.
- Build connections between infrastructure agencies including private sector to ensure resilience is considered appropriately.
- Improve assessment and use cost-effective solutions to achieve adequate infrastructure resilience.
- Increase investment in infrastructural planning and provision to meet the increasing growth in population.
- Assess and retrofit critical infrastructure (Also Essentials 9 & 10).

ESSENTIAL 9 - Ensure Effective Preparedness and Disaster Response

"Ensure the creation and updating of disaster response plans are informed by risks identified and communicated to all stakeholders through use of an organizational structure"(UNISDR, 2017).

Workshop Findings

Participants discussed that current emergency plans exist in Auckland, but some organisations need more guidance on how to put the plans into practice. Hazard specific plans are produced but response/impact-based plans could be updated more often with up-to-date data.

Workshop Suggestions

Common Data

There were suggestions for creating a common operating procedure across organisations. This could be done by developing a set of common themes and data structures, and terminology between organisations. There were questions raised as to responsibility, for instance, “who would be responsible for updating and keeping data sets up to date?”

Communication and Early Warning

Communication and early warning systems were raised as areas for possible improvement. The Auckland CDEM Group’s investment towards getting early warning systems in place has been a positive outcome. Questions to be considered included:

- What percentage of the population are the early warning systems reaching?
- How well is the public educated about their risk?
- Do they know what resources are available?
- Who is leading communication and early warning?

It was discussed that individual organisations are effective at their individual activities, but collaboration between organisations is not effective at present. Better internal and external communications are needed, including possibly developing and installing detection and monitoring equipment, early warning systems and associated communication systems to reach all stakeholders and community groups.

Education & Training

The participants proposed the need to hold regular training, drills/tests and exercises for all aspects of the wider emergency response “system”, including community elements and volunteers. Increasing capacity was

seen as important because even though there is capacity and resources to some extent, there is a need to train more people for redundancy to account for staff who may not be available in a disaster scenario due to being affected themselves. A suggestion made was to integrate risk reduction and emergency response actions so that different stakeholders, such as engineers or contractors for example, are able to effectively engage in preparedness, response and recovery operations.

Improve Response Plans

Participants discussed the importance of regularly updating contingency/emergency and preparedness plans and communicating these to all stakeholders (especially including other levels of government and neighbouring CDEM Groups, infrastructure operators, community groups). A key question that emerged was around how human behaviour would be modelled to ensure that the arterial routes required by emergency services will remain accessible so that emergency services get first and fast access.

The stakeholders stated that most organisations have easy access to electronic and hard copies of emergency plans. They suggested that ensuring interoperability of emergency response systems between agencies and with neighbouring CDEM Groups is required.

Conclusions

Participants concluded that effective preparation requires good early warning systems, effective response plans and well-trained people. Common data, communication protocols and community understanding or systems were raised as areas for consideration.

Identified priorities for Auckland under Essential Nine include:

- Develop a set of common themes and data structures, and terminology between organisations.
- Build a single source of Early Warning to avoid conflicting messages by different sources.
- Increase the capacity for training of wider emergency response systems including community elements and volunteers.
- Regularly update contingency and preparedness plans and communicate to all stakeholders.

ESSENTIAL 10 - Expedite Recovery and Build Back Better

"Ensure sufficient pre-disaster plans according to risks identified and that after any disaster, the needs of the affected are at the centre of recovery and reconstruction, with their support to design and implement rebuilding" (UNISDR, 2017).

Workshop Findings

Participants discussed that the Auckland CDEM Group Plan and Auckland Plan are heading towards resilience. It was viewed that there are processes in place for post-disaster recovery. It was seen that there is a need to focus on new migrants and new businesses and how to include the needs of multiple stakeholders in recovery.

Workshop Suggestions

Developing Strategies and Plans

The participants felt that good plans such as the Auckland Plan and its supporting strategies are in place, but they need to be regularly practiced. It was highlighted that the levels of awareness of new migrants and new businesses on disaster risks and preparedness in terms of their roles, as well as their insurance requirements, need to be monitored. The wider Auckland Council, in partnership with stakeholders, would be taking a lead on coordinating for recovery. As part of the recovery process, it was noted that information is needed from research to consider new risks, better understand existing risks and other key information in reviewing and updating urban development plans and processes. The stakeholders felt that this information exists but may not be getting adopted to the extent that they should. It was discussed that there is a need for a comprehensive pre-disaster plan to support recovery, which includes psychosocial and economic recovery as well as physical rebuilding.

Build Back Better

Participants agreed that there is rhetoric around implementing the concept of "Build Back Better", but that this is not fully understood in practice. It was recognized that budgetary constraints often oppose "betterment". The participants felt that there is a desire to learn from other cities of a similar risk profile.

Funding for Recovery

It was identified that there is a need to explore funding options for post-disaster recovery, ensuring that a viable mechanism is in place for the rapid, rational and transparent disbursement of funds after a disaster. Integration of further disaster risk reduction in all investment decisions for recovery and reconstruction is needed.

Conclusions

The participants discussion concluded that there is some degree of pre-disaster planning in place but recovery still requires some thought, in particular around how to increase resilience during recovery to build-back-better. Regular practicing of plans enhances the ability to respond and recover well.

Identified priorities for Auckland under Essential Ten include:

- Develop strategies and plans for recovery, using all information that exists, and review and update them regularly.
- Create a comprehensive pre-disaster plan to arrange post-disaster shelter, food, water, communication, etc.
- Plan for business continuity and economic reboot.
- Explore funding options for post-disaster recovery and have a viable mechanism ready for rapid, rational and transparent disbursement of funds after a disaster.

Next Steps

The findings from this workshop should guide the next steps in understanding resilience for Auckland and developing strategies for improving resilience. For the UNISDR Making Cities Resilient, the next stage is to tailor questionnaires and interviews to give more depth to the information obtained from the workshop. Interviews and questionnaires would be conducted with qualified experts and officials from different sectors of the community.

This involvement could provide valuable opportunities for Auckland CDEM to engage all stakeholders, including the private sector and the broader public sector. Fostering a collaborative approach for action would be the blueprint for creating a resilient Auckland.

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Appendix

Organisations Involved

- AECOM	- Counties Manukau
- Air New Zealand	Health
- Aon Benfield	- DPMC (Department of
- Aon Benfield New Zealand	the Prime Minister and
- ASB	Cabinet)
- Auckland Airport	- Emergency
- Auckland CDEM	Management Bay of
- Auckland Council	Plenty
- Auckland Metro District Health	- Enfocus
Boards	- Fonterra Co-operative
- Auckland Regional Public Health	Group Limited
Service (ARPHS)	- GNS Science
- Auckland University of	- Independent Maori
Technology	Statutory Board
- AUT: School of Public Health and	- IRD
Psychosocial Studies	- MCDEM
- Bay of Plenty Regional Council	- Ministry of Health
- Beca	- Ministry of Social
- Centre of Disaster Resilience,	Development
Recovery and Reconstruction and	- MSD(Ministry of Social
Auckland University	Development)
	- New Zealand Fire
	Service
	- NIWA

Acronyms

Auckland CDEM* Auckland Civil Defence and Emergency Management Group

CDEM/Civil Defence Civil Defence Emergency Management

CDRRR Centre for Disaster Resilience, Recovery and Reconstruction

LGSAT Local Government Self-Assessment Tool

MBIE Ministry of Business Innovation and Employment

MCDEM Ministry of Civil Defence and Emergency Management

LUI Local Urban Indicators Tool

RNC Resilience to Nature's Challenges

UNISDR United Nations International Strategy for Disaster Reduction

*Auckland Civil Defence and Emergency Management (CDEM) has recently changed its name to "Auckland Emergency Management".