Northland Civil Defence Emergency Management Plan

2016-2021

Northland Civil Defence Emergency Management Group

Working together to create resilient communities in Northland

"Kia mahi tahi, kia hangaia he pakaritanga ki roto inga rohe o Te Taitokerau."

Contents

Glossary of Terms

Commonly used terms and abbreviations used throughout the Plan include:

4Rs: Four areas of emergency management: Reduction, Readiness, Response and Recovery.

The Act: The Civil Defence Emergency Management Act 2002

CDEM: Civil Defence Emergency Management

CDEM Group: The collective of local authorities, lifeline utilities, emergency services and welfare organisations that comprise the collective Northland CDEM Group

CDEM Joint Committee: A joint committee established under section 12 of the Civil Defence Emergency Management Act 2002 with membership comprising the Mayors representatives from the Far North, Whangarei and Kaipara District Councils and Chairperson of the Northland Regional Council.

CEG: Coordinating Executive Group established under Section 20 of the Act whose functions include providing advice to the CDEM Group and any sub-groups of the CDEM Group; coordinating and overseeing as appropriate the implementation of decisions of the Group by the Group CDEM Office or by individual members; and overseeing the implementation, development, maintenance, monitoring and evaluation of this Plan.

CIMS: Coordinated Incident Management System. Establishes a framework to assist in effective, efficient and consistent response to an incident/emergency management.

Emergency: As defined under the Act: 1. Is the result of any happening, whether natural or otherwise, including, without limitation, any explosion, earthquake, eruption, tsunami, land movement, flood, storm, tornado, cyclone, serious fire, leakage or spillage of any dangerous gas or substance, technological failure, infestation, plague, epidemic, failure of or disruption to an emergency service or a lifeline utility, or actual or imminent attack or warlike act; and 2. Causes or may cause loss of life or injury or illness or distress or in any way endangers the safety of the public or property in New Zealand or any part of New Zealand and 3. Cannot be dealt with by emergency services, or otherwise requires a significant and coordinated response under the Act.

Emergency Services: The New Zealand Police, New Zealand Fire Service, National Rural Fire Authority, rural fire authorities and hospital and health services.

EOP: Emergency Operating Procedure refers to a document describing a formally established set of operational procedures that are the commonly accepted method for performing certain emergency management tasks.

GECC/ECC: Group Emergency Operations Centre /Emergency Operations Centre. An established facility where the response to an event may be managed and supported.

ICP: Incident Control Point. A facility where site response to an incident is managed and controlled.

Lead Agency: The organisation with the legislative authority; or because of its expertise and resources, agreed authority; primarily responsible for control of an incident

Other abbreviations include:

ECC:	Emergency Coordination Centre
EMIS:	Emergency Management Information System
FNDC:	Far North District Council
KDC:	Kaipara District Council
MCDEM:	Ministry of Civil Defence & Emergency Management
NRC:	Northland Regional Council
WDC:	Whangarei District Council

Summary

The Northland Civil Defence Emergency Management (CDEM) Group has prepared this plan to demonstrate how CDEM will be delivered in the region over the next 5 years.

Goals and Objectives:

In support of its mission "**Working together to create resilient communities in Northland**", the Group has identified four key goals.

Goal 1. **Increasing community awareness, understanding, preparedness and participation in CDEM;** through public education initiatives and community-led CDEM planning.

Goal 2. **Reducing the risks from hazards in Northland;** by improving the Group's understanding of hazards and by developing and monitoring a Group-wide risk reduction programme which demonstrates how individual agency initiatives contribute to overall regional risk reduction.

Goal 3. **Enhancing capability to manage civil defence emergencies;** through increasing the number and capability of CDEM staff and by having effective plans, systems and procedures in place to respond to emergencies.

Goal 4. **Enhancing capability to recover from civil defence emergencies;** through a continued focus on Recovery Plans, Professional Development and Exercises.

The Northland CDEM Context:

Hazard analysis is an important starting point for the CDEM plan because understanding the region's risk profile assists with the prioritisation of CDEM planning resources. The hazard risk analysis is summarised in Section 2, and found that the highest risks for the Northland region are:

- River flooding caused by localised heavy rain/thunderstorms provides the highest risk to the Northland region, closely followed by storm with widespread heavy rain and wind. The region's road network has proven particularly vulnerable to damage in many recent events, with full recovery from the more significant events taking months to years.
- Tsunami: A locally generated tsunami resulting in 10-15m inundation above sea level has the potential to cause significant damage, though the probability is very low. The risk of human injury/death is high because of the short warning times with a local event.
- Electricity failure: The network has single points of vulnerability (the main electricity transmission line from Auckland and to the Refinery NZ Marsden Refinery) with the potential to cause widespread loss of service. If the failure is prolonged, there could be severe economic and social consequences.
- Human pandemic; the scenario evaluated was based on modeling that predicts a worst-case event with the first wave seeing 40% of people becoming ill in the first 8 weeks and 2% of these resulting in death.

Implications for the CDEM Group

In developing the most appropriate methods of achieving the Group's Goals, the regional context has also been analysed and it was found that:

- Self-reliance and preparedness is vital for the many rural communities that can become quickly isolated in an emergency - some households in these areas are without telecommunications, making them even more vulnerable.
- The vulnerability of some of the region's infrastructure may impact on the ability of the region to recover quickly from an emergency. Increased awareness of the risks of infrastructure failure may help to encourage businesses to have their own backups and become more resilient to these failures.

- In particular, the road network has suffered significant damage in past storm events and is vulnerable both in terms of land instability (slips) and flooding. Road access is critical for emergency services and other response agencies to carry out their functions and the resilience of the road network is a key issue for Northland.
- The dependence on farming and horticultural industries means that the economy is particularly susceptible to hazards that impact those sectors (animal/plant diseases, drought, storms).
- The high percentage of Maori in the community may mean a need to communicate information about hazards and preparedness measures differently.
- The high number of holiday homes can have an influence as 'baches' are less likely to have stocks to enable self-sufficiency for several days. Mass self-evacuation to Northland following an Auckland disaster is also a risk.
- Northland has high levels of socio-economic deprivation, which means that many communities are more susceptible to adverse effects of hazards and have less resources to support recovery.

Notwithstanding these issues, the Northland CDEM Group also recognises a number of strengths in the region. The CDEM sector has significant experience in responding to major weather events. There are many tight-knit, self-sufficient and resilient communities. Relationships with partner agencies across the CDEM sector are strong. This Plan aims to build on these strengths with consideration of the regional context outlined above.

CDEM Priorities

Since the previous CDEM Plan was released in 2009, the Northland CDEM Group has continued to work on putting in place effective arrangements to deliver CDEM in Northland. Each Section of this Plan summarises these arrangements and concludes with a number of actions to address the issues and objectives identified. Each year, the CDEM Group will prioritise these actions develop Group and Local work programmes to address these actions.

Significant issues that remain to be addressed include building further depth in CDEM capability around the region, supporting increased resilience in the road network and other critical lifelines infrastructure and embedding and continuing to develop community resilience initiatives. Further work also needs to be done in the area of warning systems (both technological solutions and education around responding to physical signs) and revising arrangements to accommodate national CDEM changes in Recovery and Welfare functions.

Specific priority actions for the first two years include:

- Review the tsunami hazard risk for the region following the release of new reports in 2015.
- Facilitate information exchange on risk reduction and the development of a Group Risk Reduction Strategy.
- Support the development of a regional Road Network Resilience Plan by an appropriate agency.
- Develop a Public Education Strategy and programme.
- Develop Community Response Plans for the remaining priority communities and processes for maintaining existing plans.
- Review technology available for tsunami warning systems.
- Develop a Professional Development Strategy and programme.
- Develop an Exercise Strategy and programme.
- Encourage and support agencies to provide increased depth in CDEM capability.
- Review and harmonise existing CDEM Group plans and procedures.
- Develop regional protocols for inter-agency reporting during an emergency event.
- Review recovery plan and arrangements.
- Support the ongoing work of the Northland Lifelines Group, including development of an Air Operations Plan.
- Ensure that processes are being maintained for the actions that occur regularly, such as engaging with planners and policy makers during key reviews, updating websites, etc.

1.Introduction

SECTION 1 OUTLINES THE PLAN PURPOSE, AUDIENCE AND STRUCTURE AND THE PROCESS BY WHICH THE PLAN WAS DEVELOPED. IT ALSO PROVIDES AN INTRODUCTION TO THE NORTHLAND REGION AND THE NORTHLAND CDEM GROUP, INCLUDING THE GROUP'S MEMBERSHIP, STAKEHOLDERS, VISION AND GOALS AND HOW THOSE GOALS ALIGN WITH THE NATIONAL CDEM PLAN AND STRATEGY.

1.1 Setting the Scene

The Civil Defence Emergency Management Act (CDEM) 2002 required the establishment of CDEM Groups based on Regional Council boundaries. CDEM Groups are a consortium of local authorities working in partnership with emergency services and other stakeholders to deliver CDEM at a regional and local level.

This Plan is the statutory reference for the Northland CDEM Group and details the arrangements for the implementation of CDEM within the Group's jurisdiction. It has been developed in accordance with the Director's Guideline for CDEM Group Plan Review (DGL0915) to support national consistency of CDEM Group Plans.

1.1.1 Who this Plan is for

Target audiences are individuals and agencies with roles and responsibilities in addressing hazards and risks in the Northland region under the CDEM Act, being:

- Local authorities – to coordinate and integrate all aspects of their hazards and emergency management functions and activities under this Act and other legislation
- Emergency services and community support agencies – in support of their readiness, response and recovery planning and delivery
- Lifeline utilities (including local authority services) – to link with their strategic risk reduction and operational planning for emergency readiness, response and recovery of services
- Government departments- to integrate national planning and service delivery in support of local CDEM management.

Members of the public will gain an overview of how the above agencies are planning to manage hazards and risks in their region. However specific information on local hazard management, emergency procedures and self-preparedness are available on the Northland CDEM website and within relevant public policies and plans of local councils, government departments and local community organisations.

⇨ APPENDIX A LISTS THE NORTHLAND CDEM PRIMARY AND STRATEGIC STAKEHOLDERS.

1.1.2 Plan Purpose

The purpose of this Plan is to enable the effective and efficient management of hazards and risks within the Northland region for which coordinated and integrated approaches across the 4Rs and agencies are required. The Plan sets out a strategic direction, Group objectives and a framework for continuous improvement. This CDEM Group Plan seeks to:

- ***Strengthen relationships*** between agencies involved in CDEM
- ***Encourage cooperative planning and action*** between the various emergency management agencies and the community
- ***Demonstrate commitment*** to deliver more effective CDEM through an agreed work programme.

The Plan also provides information on the hazards and risks in Northland and documents the principles of operation within which agencies involved in CDEM agree to cooperate.

1.1.3 Plan Status and Change

This is the third Northland CDEM Group Plan (the first two Plans were adopted in 2004 and 2010). The Draft Plan was publicly notified on 7 September 2015 and submissions were considered together with the Minister's comment before the final revised Plan was approved by the Northland CDEM Group on 1 December 2015 and took effect from that time.

This Plan will remain in effect for five years from the date of approval until reviewed by the Group and either amended, revoked, replaced or left unchanged. The CDEM Act 2002 (s56, s57) sets out a public process by which amendments can be made to the Plan and, other than those deemed to be "minor", any amendments to the Plan are required to be publicly notified to allow affected parties to lodge submissions.

1.2 The Northland Context

1.2.1 The Region

The area covered by the CDEM Group and this Plan is shown in Figure 2. It includes the Far North, Whangarei and Kaipara Districts and the coastal marine area to the seaward boundary of 12 nautical miles.

Northland covers around 5% of the country's total land area. It is a 260 kilometre long narrow peninsula, 80 km across at its widest point and just 10 km wide at its narrowest point with over 3,000km of coastline made up of rugged cliffs, sandy beaches and sheltered harbours.

Northland is New Zealand's least urbanised region, with around 50% of the population living in urban areas and an average density much lower than the NZ average (the total population was 151,692 in the 2013 Census).

As a consequence of this dispersed and often isolated population, the general approach to CDEM is one of centralised coordination with localised delivery.

Figure 2: Northland Region

⇨ REFER SECTION 2.2 FOR FURTHER INFORMATION ON THE CDEM GROUP ENVIRONMENT.

1.2.1 The Northland CDEM Group Structure

The Northland Group is governed by a joint committee of elected representatives from the Whangarei, Kaipara, and Far North District Councils and the Northland Regional Council. Representatives of the Police and Fire Service also attend meetings. The functions of the Group are detailed in s.17 of the CDEM Act (2002); one of these functions is to develop, approve, implement and monitor a CDEM Plan.

Supporting the CDEM Group is the Northland CEG, a statutory group comprising Chief Executive Officers (or senior representatives) of local authorities, senior emergency services managers and the Northland District Health Board. CEG implements the decisions of the CDEM Group and provides them with strategic advice.

The Group is funded by members to a level acceptable to each member. The local authorities employ staff to manage the local CDEM work programmes agreed by the Northland CDEM Group. The Group's Emergency Management Office coordinates the implementation of the Group's programmes by these CDEM staff.

1.3 National Context

This Plan is a statutory requirement of the CDEM Act 2002 (s48). Figure 3 shows CDEM framework and the relationship between National and local plans.

The National CDEM Plan identifies the principles and responsibilities for delivery of CDEM in New Zealand. This Plan aims to identify how the Northland CDEM Group will deliver its role.

The National CDEM Strategy (2007) defines five national CDEM principles which guide the activity of the Northland CDEM Group. These principles are as follows:

- **Individual and community responsibility and self-reliance.** The CDEM arrangements support and encourage local ownership of individual and community safety and livelihood security.
- **A transparent and systematic approach to managing the risks from hazards.** A logical and consistent process needs to be followed when identifying and assessing risks, consulting and communicating with communities and implementing any agreed mitigation measures.
- **Addressing the consequences of hazards.** Focusing on consequences (built , social, environmental and economic) enables more effective planning and action through improved prioritisation and resource allocation.
- **Making best use of information, expertise and structures**. Reliable information and the availability of expert advice is crucial. The CDEM sector (professional and voluntary) needs to ensure the development of appropriate skills and knowledge, along with the use of best practice in risk management and operational activity.
- **Comprehensive and integrated hazard risk management.** Integrated activity promotes the coordinated involvement of all agencies with a role in managing risks. Comprehensive risk management means dealing with the risks associated with all hazards through the '4 Rs' of risk reduction, readiness, response and recovery.

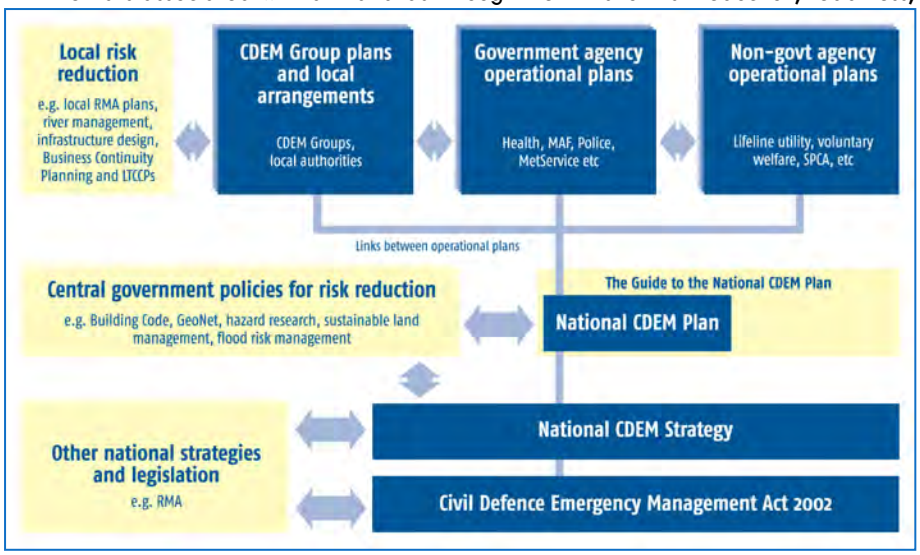

Figure 3: The NZ CDEM Framework

1.4 CDEM Vision and Goals

CDEM Groups are the mechanism by which the Crown can achieve its own vision, goals and objectives, based on the underlying principles described in section 1.3.1. Careful consideration has been given to ensure that the Group's direction, as described in this section, supports these national goals.

The **Vision** of the Northland CDEM Group reflects the importance of an integrated effort; one of partnerships and cooperation with agencies working together for the benefit of the community:

Working together to create resilient communities in Northland

"Kia mahi tahi, kia hangaia he pakaritanga ki roto inga rohe o Te Taitokerau."

The **Goals** set out the broad criteria against which the CDEM Group Plan will be measured and monitored. The goals of the CDEM Group are directly aligned to the national CDEM goals and are:

Goal 1: Increased community awareness, understanding, preparedness and participation in civil defence emergency management (Readiness).

Individuals are ultimately responsible for their own safety and the security of their livelihoods and should be prepared to look after themselves and their immediate neighbours for up to three days after an emergency. A resilient community is well-informed about hazards and consequences, committed to managing risks, takes steps to be prepared and learns from emergencies. One of the best ways to achieve this is to provide opportunities for the public to participate in civil defence activities (decision making, exercises, volunteer rescue, welfare teams) and encourage participation in other types of volunteer groups.

Goal 2: Reducing the risks from hazards (Reduction).

A **reduction** in the impacts of hazards is a fundamental step towards realising a resilient Northland community. Many impacts can be reduced through measures such as:

- effective building controls and/or planning (e.g. floor height above likely flood levels; effective border controls and containment for human and animal diseases)
- redundancy in critical infrastructure
- careful and secure location of critical services and infrastructure
- simple mitigation measures such as securing equipment to desks or walls (for earthquakes).

Goal 3: Enhancing capability to manage civil defence emergencies (Response)

An effective **response** capability is one in which coordination is timely and efficient such that the community is supported and the basics of life are restored as quickly as possible. This will require:

- integrated planning by all agencies with a role to play in responding to emergencies
- a high level of cooperation and information sharing between responding agencies
- a clear understanding of respective roles and responsibilities in an emergency.

Goal 4: Enhancing capability to recover from civil defence emergencies (Recovery)

After an emergency, affected communities depend on immediate relief and an effective and efficient rebuilding process. **Recovery** focuses on minimising the escalation of the consequences of an emergency and rehabilitating the community's social, emotional and physical well being. This will require:

- integrated planning by all agencies with a role to play in recovering from emergencies
- steps taken to reduce future exposure to hazards and their associated risks
- reassessing community priorities and adapting to changed environmental, economic and social needs.

Within each of the 4Rs areas, the Group has sought to link its objectives with those of the national CDEM strategy. The alignment of national and Northland objectives, and the methodology, tools and actions that will be used to deliver these objectives, are detailed in sections 3 to 7 of this Plan.

2.Northland's Risk Profile

SECTION 2 PROVIDES THE CONTEXT FOR THE NORTHLAND CDEM GROUP AREA AND ITS NATURAL, SOCIAL, BUILT AND ECONOMIC ENVIRONMENTS. THE SECTION DESCRIBES THE HAZARDS THAT COULD IMPACT UPON THE NORTHLAND CDEM GROUP, POTENTIALLY REQUIRING CDEM INVOLVEMENT, AND CHARACTERISATION OF THEIR LIKELIHOOD AND CONSEQUENCES.

Knowledge of the region's vulnerability to hazards is fundamental to guiding the level of activity and effort applied across the '4R's' and developing comprehensive and integrated risk reduction, readiness, response and recovery programmes. The characterisation of the risk environment in this section provides a basis for sound prioritisation of resources and effort in CDEM planning. It also provides a snapshot in time of the risk profile, as a baseline for ongoing monitoring and evaluation of risk reduction programmes.

2.1 Northland CDEM Group Environment

2.1.1 Social Environment

General Population

Northland's population was 151,689 in the 2013 Census. The population is generally concentrated along the east coast, particularly in the Whangarei and Bay of Islands area. In summer months the population swells with visitors from other regions and tourists from overseas. The people are distributed across a topography offering challenges of access/isolation, and communication.

Northland has one city (Whangarei) a number of rural towns, numerous townships and hamlets and areas of coastal settlement with minimal services. Projected population from Statistics NZ are shown in Figure 4.

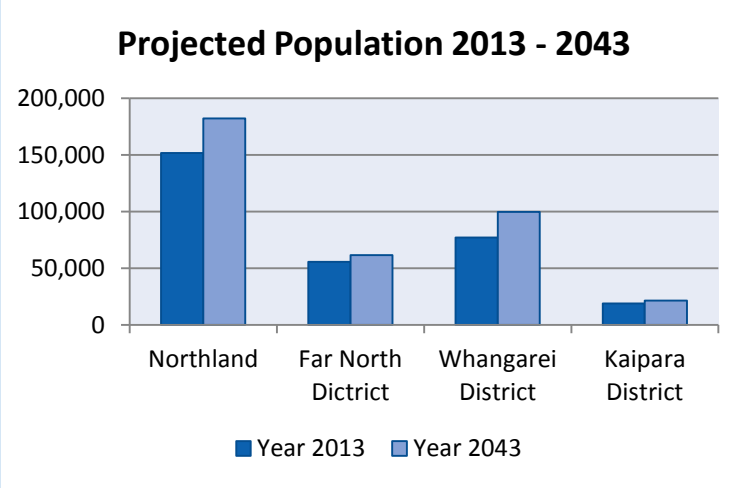

Figure 4: Projected Population 2013 - 2043

The 2013 Census indicated that the population increased by 2.2% between 2006 and 2013; the Maori population growth in Northland during the same period was 3.2%.

Ethnic Groups in the Northland Region

The Region's largest ethnic group is European, as shown in Figure 5. However Maori have a higher than New Zealand average for the region with 44,928 residents in the 2013 Census.

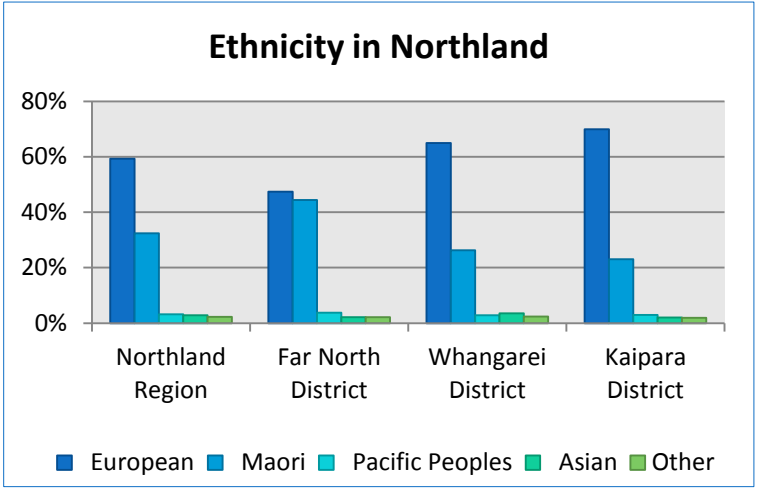

Figure 5: Ethnicity in Northland (MSD Report 2008)

Vulnerable groups

Forty four thousand people in Northland are vulnerable (29% of the population – the second highest rate in New Zealand). Groups that are particularly vulnerable in CDEM emergencies include:

- those with disabilities or medical conditions
- the elderly
- children in schools and care centres
- people in prisons or being detained on home detention
- international residents and English speakers of other languages
- those in isolated communities (especially in coastal areas)
- low-income households

2.1.2 Built Environment

Land Use

In the 2006 Census, New Zealand recorded 1,765,896 dwellings (of which around 10% are unoccupied) and the Northland region 74,337 dwellings (of which 18% are unoccupied). This reflects the high number of holiday homes in the Region.

Whangarei is the main commercial hub in the region with the Bay of Islands and many other coastal areas supporting a significant tourist population. The main industrial sites include the Fonterra Dairy Processing Plant in Kauri and the industrial area in Bream Bay, along with other infrastructure-related sites such as NZ Refinery as further detailed below.

Telecommunications:

Figure 6 illustrates that, compared with national averages, Northland's residents have less access to the various forms of telecommunications systems than the rest of NZ. Only 68% of households in Northland have internet access compared with 77% of households in New Zealand.

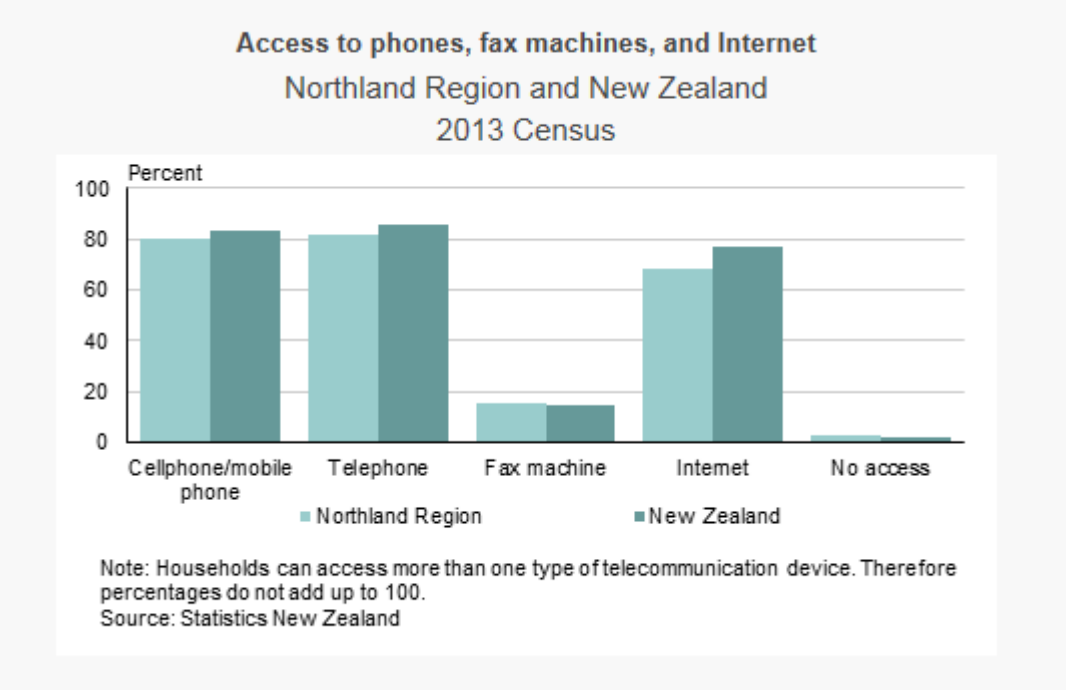

Figure 6: Household Access to Phones, Internet and Fax Machines in Northland Region, 2013 Census

Transport

The transportation network in 2015 includes 6,530 kilometres of road, a freight rail link from Auckland via Whangarei to Otiria, a deepwater port at Marsden Point and commercial airports at Whangarei, Kerikeri and Kaitaia. Other than the Whangarei bus service there is minimal public passenger transport services.

Storm events in the past decade have highlighted the vulnerability of the road network to flooding and landslips. There is the potential for the region or parts of the region to be completely isolated through road network damage (further details are included in the Northland Lifelines Group Severe Event Plan, December 2014).

Road network risk areas are shown in Figure 7, and strategies to address these risks are outlined in the Regional Land Transport Plan 2015-2021.

Electricity

Within the region there is a very small hydro-electric power station on the Wairua River and a geothermal power plant at Ngawha. The Ngawha plant is currently being expanded and there are discussions on a possible expansion of the Wairua River plant. However the vast majority of Northland's power needs are generated from outside the region and transmitted via the national grid through Auckland. Potential exists for expansion of other electricity generation options to meet the region's foreseeable needs. These alternatives are being investigated further and include an application for a Gas Turbine Power Station in Rodney by Genesis Energy. There are also investigations into wind power generation in various locations.

Gas

All gas supplied into the Maui pipeline is from gas producers in the Taranaki and supplied to Northland via the Vector 150mm nominal diameter high pressure gas transmission pipeline.

Fuel

Petroleum (Petrol, Diesel and Jet Fuel) for Northland (and much of NZ) is sourced from the Refining NZ at Marsden Point, Ruakaka. In Northland diesel and petrol is delivered from a Bulk Tanker Loading Facility (Marsden Point TLF) via a fleet of fuel company road tankers to a network of service stations, truck stops and marine fill stations at various locations across the Northland region. Distribution of petroleum to key fuel terminals outside Northland occurs via the pipeline to Auckland's Wiri Fuel Terminal and Auckland Airport and by two coastal shipping tankers to terminals at key NZ port facilities.

Water Supply

Whangarei District Council supplies treated water to around 23,000 customers in Bream Bay, Whangarei City, Whangarei Heads, Hikurangi and Maungatapere. There are three water schemes in the Kaipara District servicing; Dargaville (which also feeds Baylys Beach), Ruawai and Maungaturoto. Far North District Council manages water supply schemes for the townships of Kaitaia, Kerikeri, Kawakawa, Paihia, Opononi, Rawene and Kaikohe.

Wastewater

Council wastewater systems include Whangarei City, Ruakaka/One Tree Point, Langs Beach/Waipu Cove, Waipu, Ngunguru, Oakura, Hikurangi, Portland, Waiotira, Tutukaka, Dargaville, Maungaturoto, Te Kopuru, Kaitaia, Kerikeri, Russell, Paihia, Rawene, Opononi, Mangawhai, Kaiwaka and Kaikohe.

⇨ REFER NORTHLAND LIFELINE GROUP "INFRASTRUCTURE RESILIENCE PLAN" FOR FURTHER INFORMATION

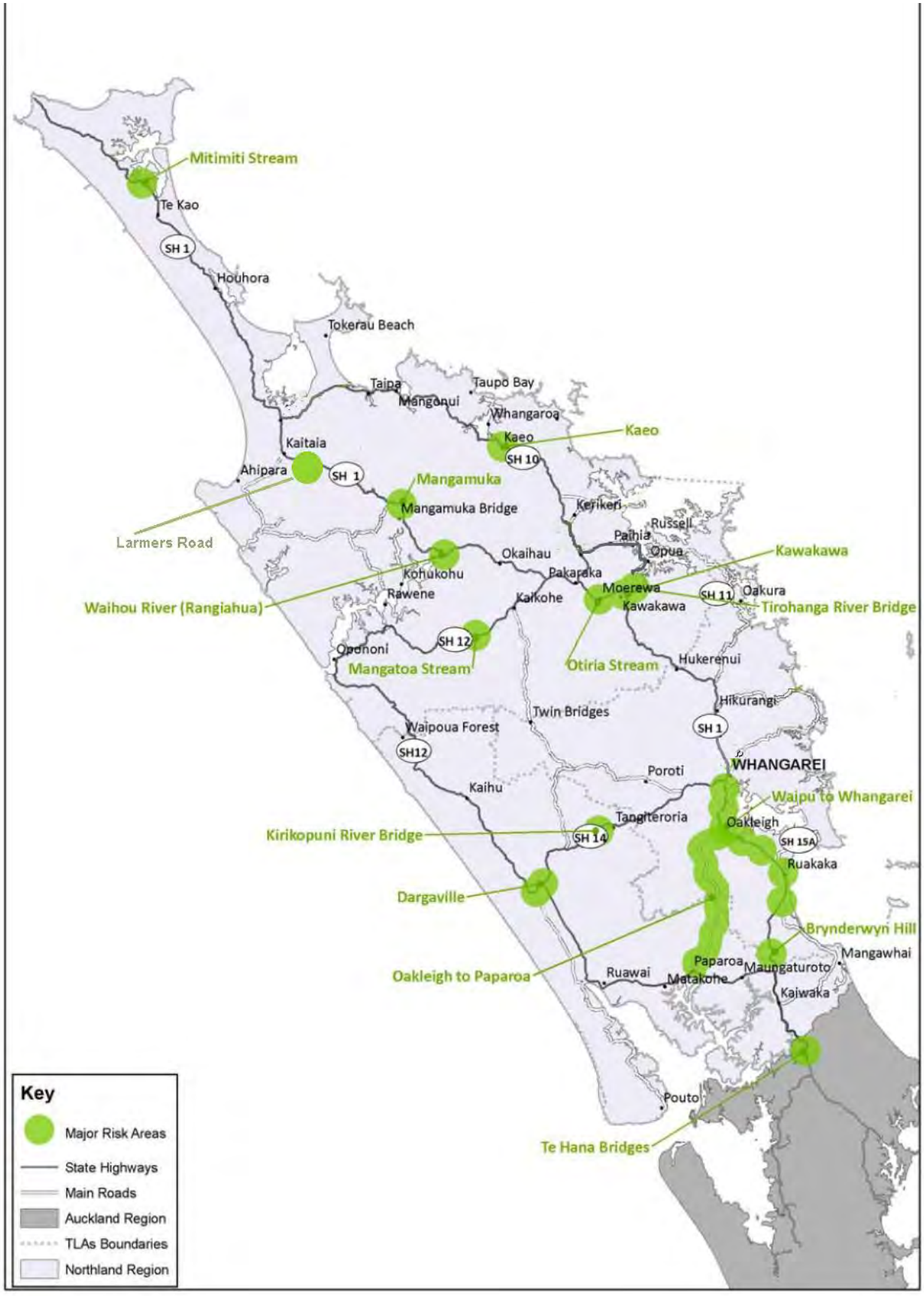

Figure 7: Northland Road Network Risk Areas

2.1.1 Economic Environment

Profile

Economic growth in Northland has been slow over the past five years due to the impacts of the Global Financial Crisis and various climatic events. Over the five year period 2004-09, Northland's economy grew by 1.8% per annum. Since 2009 it has grown at an annual rate of just 0.5%, much slower than the national rate of 1.6%.

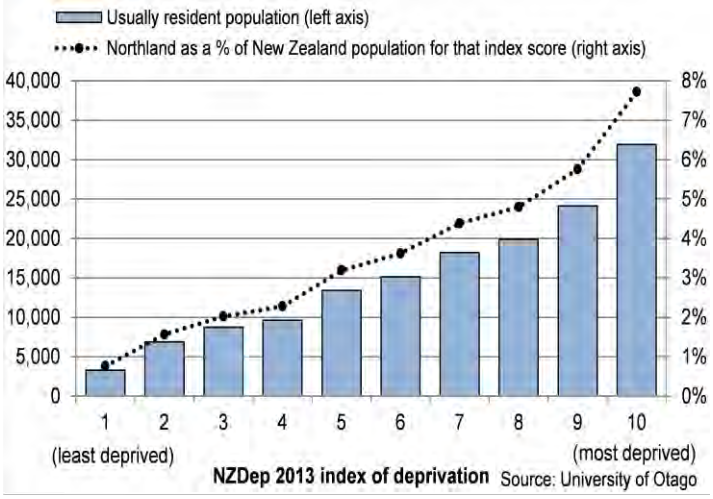

Figure 8: Deprivation Statistics

Whangarei accounts for around 59% of the region's value added, Far North 29% and Kaipara about 12%. Of Northland's approximately 19,800 businesses, the majority are small, part time, or "lifestyle" businesses.

Around 1/5 of the region's population are living in areas that have been assigned an NZDep2013 index value of 10, i.e. areas that have the 10% most deprived NZDep scores (Figure 8).[1] At the other end of the scale, just 3300 people live in areas that have an Index of 1, i.e. areas that have the 10% least deprived NZDep scores.

Unemployment

As a consequence of the slow-down in economic activity, Northland's unemployment rate rose from a historical low of 4.1% in the year ended March 2008 to around 9% in March 2010, and has remained around this level for the past five years. Northland has the highest regional unemployment rate in New Zealand, ahead of Manawatu-Wanganui and Gisborne/Hawke's Bay.

Key sectors

The main sector's contributing to Northland's economy are shown in Figure 9, Northland's prosperity is strongly tied to key industries such as tourism, primary production and processing (e.g. dairy and forestry) and marine manufacturing, and in lifting education and skills, providing a resilient transport network and delivering greater digital connectivity.

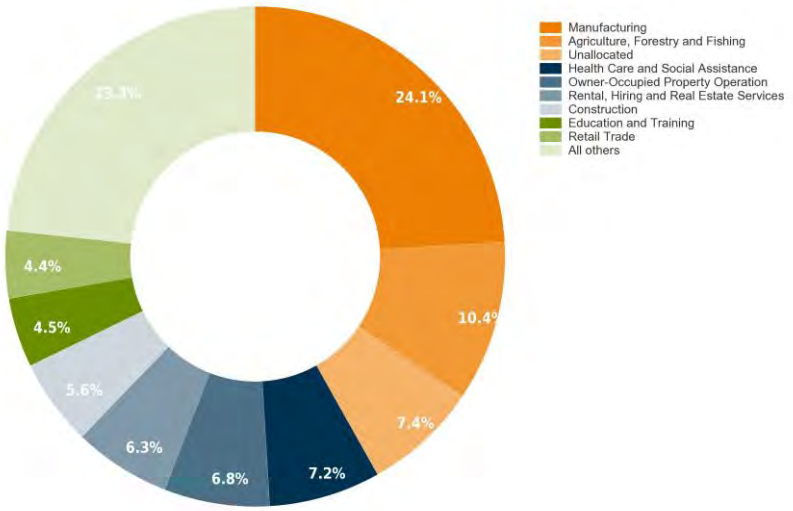

Figure 9: Northland's Economic Sectors

2.1.2 Natural Environment

Geography

Northland consists of a long narrow peninsula bounded by the Tasman Sea to the west and the Pacific Ocean to the east. It has a land area of around 12,500 km^2 with a coastal marine area (CMA) occupying an area of approximately 12,000 km^2. There are no significant mountain ranges and the highest point, Te Raupua in the Waima Range, is only 781 metres above sea level.

[1] The NZDep2013 Index of Deprivation is constructed from census data and is designed to measure relative socioeconomic deprivation, i.e. it reflects a continuum from 'least deprivation' to 'most deprivation'. A one to ten scale is produced from the distribution of scores, where, for example, a value of 10 indicates that the area is in the most deprived 10% of small areas in New Zealand.

Geology

Northland's geology is a mixture of basement rock (greywacke), volcanic rock, sedimentary rocks, alluvial material, and sands. Uplifted blocks of hard blue-grey sandstone (greywacke) extend along the east coast from north of the Bay of Islands as far south as the Brynderwyn range, and inland from Whangarei. To the west of these surface outcrops, greywacke forms a basement deep beneath various sedimentary and volcanic rocks. Old volcanic rock outcrops are a dramatic feature of the Northland landscape and these areas form part of a potentially active volcanic field, described further under the volcanic hazard in Appendix C. Land slips are a frequent consequence of rain in Northland due to the steep topography and the soil structure.

Rising sea levels have drowned river valleys to create several harbours which extend well into the interior of the region. As a result, rivers tend to be short, dropping quickly in boulder streams from higher country, and then meandering sluggishly through mangrove lined channels into harbours and estuaries.

Climate

Northland has a sub-tropical climate that is characterised by mild, humid and often windy weather. The region experiences, on average, 2,000 hours of sunshine per year. Winds are mostly south-westerly but tropical cyclones in the summer bring strong north-easterly winds and heavy rainfall. Northland's rainfall distribution pattern is dictated by its narrow shape and its topography. Annual rainfalls range from 900 mm in low-lying coastal areas to over 2,900 mm in higher altitude areas such as Tutamoe Plateau. Seasonal influences on rainfall are well defined due to the seasonal movement of high pressure belts with up to one third of the annual total often falling in the three winter months. Northland also experiences high intensity rainfalls which can result in flash floods.

Human Modification

Land change has generally led to an increase in hazards, particularly floods, landslides, and coastal hazards. Restoration of catchments, wetlands, dunes and other natural systems is now recognised as an integral part of hazard management. In Northland this is promoted through land use planning and the distribution of funds to revegetate land, protect wetlands and riparian margins, and promote restoration and management of dune environments.

2.1.3 Implications for the Northland CDEM Group Environment

The implications of Northland's regional profile for civil defence emergency management are identified below. These issues have been considered in developing the CDEM work plan and priorities.

1. Numerous rural communities have the potential to become quickly isolated in an emergency because of their remoteness, access (often gravel roads) and geography. Self-reliance and preparedness become even more important for these communities.
2. The vulnerability of some of the region's infrastructure (power, roads) may impact on the ability of the region to recover quickly from an emergency. Increased awareness of the region's vulnerability to infrastructure failure may help to encourage businesses to have their own backup systems and become more resilient to these failures.
3. In particular, the road network has suffered significant damage in past storm events and is vulnerable both in terms of land instability (slips) and flooding. Road access is critical for emergency services and other response agencies to carry out their functions and the resilience of the road network is a key issue for Northland.
4. The dependence on farming and horticultural industries means that the economy is vulnerable to hazards that impact those sectors (animal/plant diseases, drought, storms).
5. The high percentage of Maori in the community may mean a need to communicate information about hazards and preparedness measures differently.
6. Communication strategies will need to consider internet access, which is below the national average. For example, not relying wholly on the NRC website to provide hazard information to communities.
7. There are some communities/households without telecommunications, making them particularly vulnerable in an emergency.

8. The high number of holiday homes can have an influence as holiday homes are less likely to have stocks to enable self-sufficiency for several days. Also, there is a belief that in a major Auckland disaster many thousands of people may self-evacuate to holiday homes in Northland.
9. Northland has high levels of socio-economic deprivation, which means that many communities are more susceptible to adverse effects of hazards and have less resources to support recovery.

2.2 CDEM Group Hazardscape

2.2.1 Analysing the Level of Hazard Risk

The combination of all hazards within an area such as the CDEM Group is commonly referred to as the hazardscape. The Northland region is subject to a wide range of significant natural, human-made and biological hazards, including:

Natural Hazards: Storm/Cyclone, Tsunami, Volcano, Earthquake, Rural Fire, Human Pandemic, Drought, Tornados.

Technological Hazards: Lifeline Utility Failure, Hazardous Substances Spill, Major transport accident, Criminal Act/Terrorism, Major Industrial Accident, Urban Fire, Animal/Plant Diseases and Pests.

⇨ EACH OF THE HAZARDS IS DETAILED FURTHER IN APPENDIX C.

The risk posed by each hazard was evaluated using the risk management process described in Appendix B. The evaluation was carried out through a combination of facilitated workshops with CEG members (initial assessment November 2009, reviewed in August 2015) and analysis of available scientific hazard and historical event data.

Figure 10 shows the results of the high level risk evaluation and Figure 11 shows the risk evaluation matrix used to rate the hazard risks.

	Likelihood	Consequence	Rating
Localised Heavy Rain/Flooding	A	2.8	VH
Severe Widespread Storm	B	3.4	H
Electricity failure	B	3.1	H
Human Pandemic	C	3.6	H
Regional/Distal Tsunami	B	2.7	H
Local Tsunami	E	4.3	M
Fuel supply disruption	C	2.8	M
Drought (Agricultural)	B	1.9	M
Drought (Water Supply)	B	1.8	M
Telecommunications failure	C	2.3	M
Rural Fire	C	2.2	M
Distal Volcano	C	2.2	M
Animal Epidemic	C	2.0	M
Plant & Animal Pests	C	2.1	M
Criminal Act/Terrorism	C	2.4	M
Tornado	C	1.9	M
Major Industrial Accident	D	2.8	M
Local Volcano	E	3.4	L
Urban Fire	D	2.2	L
Major transport accident - marine	D	2.1	L
Hazardous substances spill	D	1.7	L
Earthquake	E	2.1	VL
Likelihood A (likely) to E (rare).			
Consequence 1 (insignificant) to 5 (catastrophic)			
VL (Very Low) L (Low), M (Moderate), H (High), VH (Very High) E (Extr			

Figure 10: Northland's Hazard Risk Analysis

	1	2	3	4	5
	Consequence of the risk occurring				
Likelihood (that the risk will occur in next ten years)	**Insignificant**	**Minor**	**Moderate**	**Major**	**Catastrophic**
A: Almost Certain (more than 1:10 year probability)	M	H	VH	E	E
B: Likely (probability between 10-90 year occurrence)	L	M	H	VH	E
C: Possible: (probability between 100-500 year occurrence)	L	M	M	H	VH
D: Unlikely: (probability between 500-2000 year occurrence)	VL	L	M	H	VH
E: Rare (> 2000 year event probability)	VL	VL	L	M	H

Figure 11: Risk Evaluation Framework

Unsurprisingly, river flooding caused by localised heavy rain/thunderstorms provides the highest risk to the Northland region, closely followed by storm with widespread heavy rain and wind.

(provides an overview of the river networks and some of the key flooding issues in each catchment).

The other highest risks include:

- Tsunami: A locally generated tsunami resulting in 10-15m inundation above sea level has the potential to cause significant damage. The risk of human injury/death is high because of the short warning times with a local event. However the probability of such an event is very low (3000-5000 years). A more likely (approx 50 year event) regional/distant tsunami with 4-5m inundation would cause damage to the immediate coastal fringe and rates as a higher overall risk to the region.
- Electricity failure: The network has single points of vulnerability (the main electricity transmission line from Auckland and the Refinery NZ Marsden refinery respectively) with the potential to cause widespread loss of service. If the failure is prolonged, there could be severe economic and social consequences.
- Human pandemic; the scenario evaluated was based on modeling that predicts a worst-case event with the first wave seeing 40% of people becoming ill in the first 8 weeks and 2% of these resulting in death.

More information on particular hazard and risks is available from local authorities though various information sources, such as Land Information and Property Information Memoranda, hazard mapping, policies and plans and public information/educational programmes on hazard management and civil defence.

It is noted that climate change is incorporated as an exacerbating factor for other hazards in the risk analysis detailed in Appendix B. Similarly, landslides are considered as a potential consequence of hazards likely to generate the landslide (flooding, earthquake).

2.3 Hazard Risk Priorities

2.3.1 The Risk Prioritisation Model

The National CDEM Group Planning Director's Guidelines outlines a more detailed risk assessment process to supplement the high level assessment presented above. The assessment considers the seriousness, manageability and likely growth of the hazard risk to calculate an overall risk priority. The assessment process and results are presented in Appendix B.

The hazards have been divided into three bands – high, medium and low priority hazards for CDEM planning. Flooding has, and will continue to be a high priority for Northland CDEM. Other hazards that the risk prioritisation process suggests need continued and/or increased focus include tsunami, volcano, pandemic and electricity/fuel failure. Consideration should also be given to improving planning in the medium priority areas, including telecommunications failure, rural fire, distant volcano and animal/plant pests or disease. However the risk evaluation process does not take into account the probability of failure in prioritising risks for action. Therefore, the much lower probability events (such as local volcanic activity) may be given less priority than the table shows.

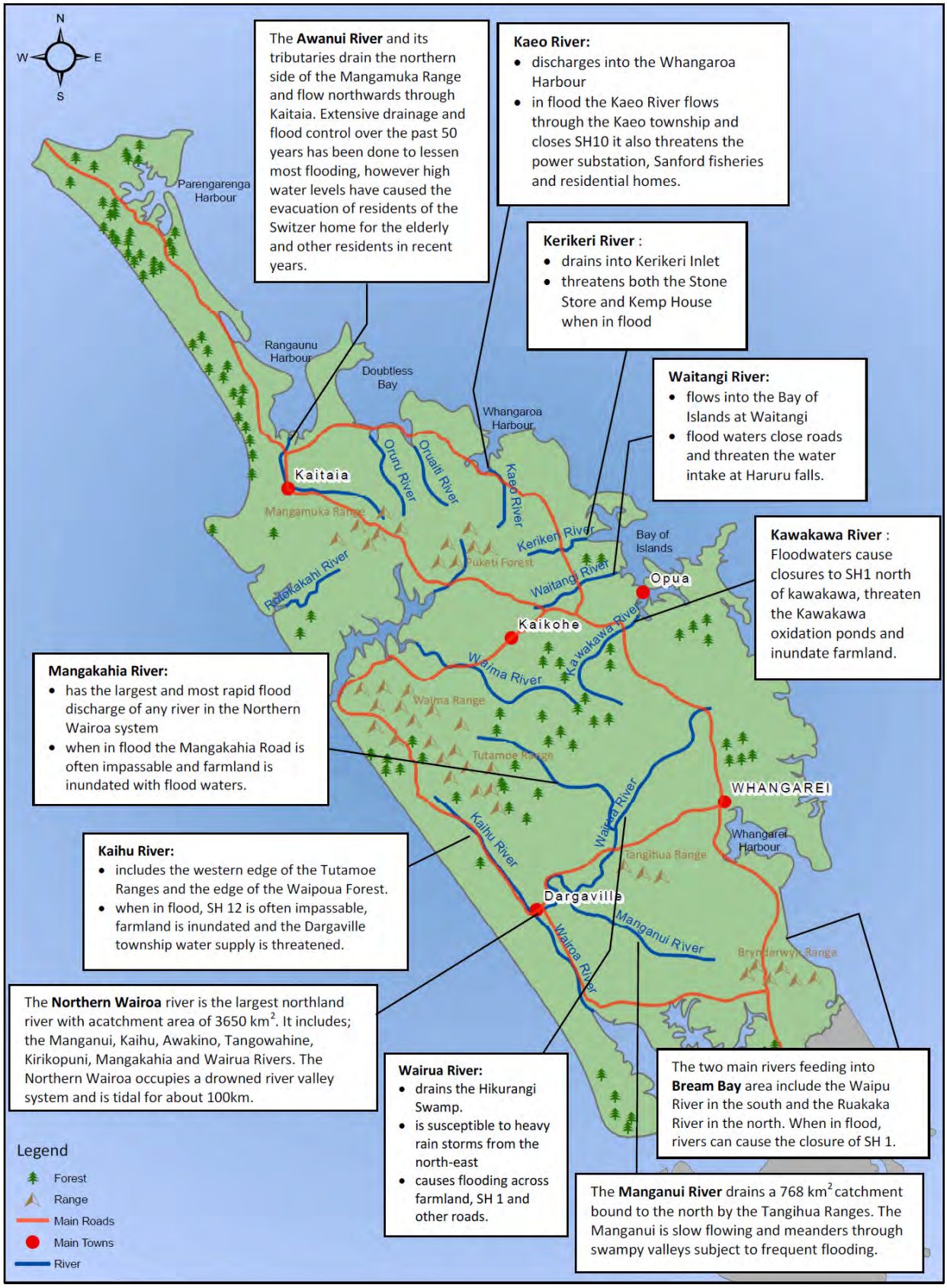

Figure 12: River Network in Northland

3.Reducing Northland's Hazard Risks

THIS SECTION PROVIDES AN OVERVIEW OF PROCESSES TO ACHIEVE LONG TERM COMPREHENSIVE RISK REDUCTION. IT STATES THE PRINCIPLES FOR RISK REDUCTION WITHIN THE NORTHLAND CDEM GROUP AND DESCRIBES HOW RISK REDUCTION CHALLENGES WILL BE MANAGED. AT THE END OF THE SECTION IS A SUMMARY OF THE SPECIFIC RISK REDUCTION OBJECTIVES AND ACTIONS BY WHICH THESE WILL BE ACHIEVED.

3.1 Overview

Risk reduction is the process of "*Identifying and analysing long-term risks to human life and property from hazards; taking steps to eliminate these risks if practicable, and, if not, reducing the magnitude of their impact and the likelihood of their occurring" (National CDEM Strategy 2007).*

The purpose of CDEM is to manage hazard risks (as far as practicable) within acceptable levels, balancing the costs and benefits achieved with consideration of the communities' priorities for reducing risk.

3.1.1 Principles

The Northland CDEM Group risk reduction principles are:

- To identify and coordinate reduction activities among key stakeholders and the community.
- To prioritise reduction activities taking into account the impact on human life and safety, the economy and the built and natural environment as well as the manageability of the risk and the likelihood of it occurring.
- To develop practical, achievable objectives and methodologies to reduce risk in the region.

3.1.2 Issues and Priorities

The CDEM Group Plan has identified the following issues relating to risk reduction:

- Northland has a complex hazardscape with a wide range of hazards. Some good material exists on the hazard analyses for the region, however there are gaps in some areas that require further scientific input and analysis or updating to reflect latest research.
- Hazard management, risk assessment and implementation of mitigation measures are fragmented and lack consistency across a broad range of organisations.
- Risk reduction is actively practiced across many areas; and many CDEM Group members and stakeholders have ongoing programmes to reduce the risk of hazards on the region. However this has not been consolidated into a regional picture or programme.
- Risk reduction is often perceived as being a high cost option compared with the other 3Rs. The upfront costs of risk reduction for infrastructure and property (such as upgrading infrastructure, raising floor levels above flood heights and re-location of built assets outside hazard zones) are often difficult for a small population base to fund, especially where benefits are to accrue over a longer term.
- Northland's lifelines infrastructure is vulnerable to many hazards – for example, the road network performs poorly in major rain events and the electricity sector in high winds. There is the need for works to improve the road network's resilience to heavy rainfall events including its resilience to flooding and landslips.

3.1.3 Objectives

In response to the issues identified above, Northland CDEM has set the following objectives:

1. Support the coordinated development and dissemination of hazards information in Northland.
2. Coordinate risk reduction planning with stakeholders to support a long term, collaborative approach to risk reduction.
3. Encourage all CDEM stakeholders to reduce the risks from hazards to acceptable levels.

4. Encourage actions by central government to improve the resilience of road and other lifelines infrastructure in, and in support of, Northland.

3.2 Current Arrangements

One of the strengths for Northland in this area is the high level of awareness of hazards and potential impacts by both the CDEM sector and the wider community.

3.2.1 Regulation

Risk reduction is undertaken through regulation such as national building codes (to ensure the built environment is resilient to hazards such as earthquake and wind) and regional/local land use planning (to avoid building in hazard prone areas).

3.2.2 Hazard Information

Development of hazard information provides the basis for these codes and plans. A significant amount of effort goes into improving the understanding of flood risk in Northland through flood monitoring and modelling. Tsunami modelling has also been a key research focus. The effort applied reflects the high risks associated with these hazards.

Figure 13: Building flood mitigation efforts aim to keep habitable floors above flood design heights.

3.2.3 Building and Infrastructure Upgrades

Individual agencies such as lifeline utilities design and upgrade their networks to have resilience to hazards (for example, minimum storage volumes in pump stations to allow time to respond to pump failure and battery/standby generator backups at telecommunication sites). These mitigation efforts are prioritised and planned through business continuity and asset management plans.

Notable progress that has been made since the last CDEM Plan include:

- Ongoing improvements in tsunami and flood modelling and mapping (NRC led), such as the Priority Rivers Catchment and Flood Scheme programmes.
- Communication of hazard risks to communities, as part of Community Response Planning.
- Further work by the Northland Lifelines Group, including Regional Lifelines Plans for Severe Weather and Tsunami events.

3.3 Action Plan

Objectives	Actions	Lead Agency
1. Support the coordinated development and dissemination of hazards information in Northland.	a) Facilitate information exchange on risk reduction through CDEM seminars and workshops. b) Develop a regional hazard portal through which all local and regional hazard information can be shared. c) Continue to update CDEM website as latest hazard information becomes available. d) Research into coastal erosion and inundation. e) Update regional tsunami risk assessment with new reports being released in 2015.	Northland Regional Council, supported by other local authorities.
	f) Engage with planners and policy makers during key reviews (eg: District Plan, Regional Policy Statements, Long Term Plans, major resource consent applications) to ensure strong linkage with CDEM priorities.	CDEM Group, supported by local authorities.
	g) Broaden the assessment of hazard risk for the CDEM Plan (an 'all hazards' approach including technological risks such as cyber terrorism).	CDEM Group, supported by NRC.
2. Coordinate risk reduction planning with stakeholders to support a long term, collaborative approach to risk reduction.	h) Develop, monitor and report against a regional Risk Reduction Strategy and programme across all key agencies involved in risk reduction.	CDEM Group, supported by all CDEM agencies.
	i) Continue to support the Northland Lifelines Group (NLG) programme to coordinate planning in the lifelines sector.	NLG, supported by CDEM Group and lifeline utilities.
3. Encourage all CDEM stakeholders to reduce the risks from hazards to acceptable levels.	j) Take an advocate role in supporting applications for funding for resilience projects. k) Support the development of a regional road network resilience plan by the Northland Lifelines Group or another appropriate agency.	CDEM Group, supported by all CDEM agencies.
	l) Monitor and support implementation of road network resilience projects identified in the Regional Land Transport Plan.	CDEM Group, NLG
4. Encourage actions by central government to improve the resilience of road and other lifelines infrastructure in, and in support of, Northland.	m) Take an advocate role in encouraging actions to central government to improve road and other lifelines resilience.	CDEM Group.

4.Community Readiness

THIS SECTION PROVIDES AN OVERVIEW OF COMMUNITY READINESS (HOW AWARE AND PREPARED THE COMMUNITY IS TO MEET THEIR OWN NEEDS IN AN EMERGENCY). THE PLAN OBJECTIVES AND PROPOSED ACTIONS FOR IMPROVING READINESS ARE OUTLINED.

4.1 Overview

Community readiness focuses on the ability of communities, families and individuals to be able to meet their own needs during and after an emergency.

4.1.1 Principles

- Individuals and communities must be able to care for themselves and each other, as much as possible, when the normal functions of daily life are disrupted.
- CDEM arrangements support and encourage local ownership of this responsibility.

4.1.2 Issues and Priorities

Northland CDEM has identified the following issues in relation to community readiness:

- The need to maintain and improve community awareness of hazards, particularly those that are not as high profile, and ensure this awareness turns into actual planning activities (surveys indicate that residents are mostly aware of storm/cyclone events and less aware and prepared for the other hazards).
- Ensuring that the community is capable of responding appropriately to warnings (formal, informal and natural).
- Ensuring that the method of raising awareness and capability is targeted to the Northland community which has factors such as high levels of rural and Maori residents.
- Only a small proportion of Northland businesses have effective business continuity planning.

4.1.3 Objectives

In response to the issues identified above, the Northland CDEM has set the following objectives:

1. Increase the level of business and community awareness through public education and consultation ensuring that messaging is targeted to Northlands at risk communities.
2. Improve community participation and preparedness through community-based planning.
3. Provide effective warning systems to enable agencies and the communities to respond rapidly to potential events.

4.2 Current Arrangements

Northland communities have experienced many severe weather events in recent decades and, through experience, have become more resilient to these events. There are many tight-knit and self-sufficient communities across the region and resilience is being further enhanced through the Community Response Planning process. Overall, many communities in Northland are considered relatively self-reliant and resilient.

4.2.1 Community Response Plans

Many communities in Northland can be isolated during an emergency event making this level of self-reliance even more critical. The CDEM sector has been working to address these issues by working with local communities to formulate Community Response Plans. These plans aim to:

- Ensure that communities identify hazards and risks and collectively understand how they will manage in any future event, particularly by identifying roles, responsibilities and resources before an event occurs.

- Identify local leaders or an individual (volunteers) in the community who is prepared to champion CDEM in the community. The leader will communicate CDEM information to the community and relay community concerns back to the local authority's CDEM support structure.
- Outline what resources the community has and how they may be used in an emergency, for example communications, identification of community led centres physical equipment and a list of key community contacts.

Over the last ten years, around 54 Community Response Plans have been completed and both the Plan development process and the outcomes have been considered very successful. There are a small number of 'at risk' communities that still need to have Community Plans developed.

Figure 14: Whau Valley Community Isolated by Slip in 2014 Storms

4.2.2 Public Education and Consultation

The Northland CDEM Group has identified public education as the foundation for improving levels of community resilience. As well as community response plans, Northland CDEM has invested in Business Continuity Programs, Visitor Action Planning, Vulnerable Group's Projects and community level welfare training.

Technology has also been provided to ensure that up to date information on websites is available during weather events. The group has an active Facebook page which it also uses for public education. Various existing networks have been used to support and leverage national campaigns.

The Northland CDEM Group recognises that partnerships and strategic networks are essential in building message credibility and targeting audiences.

4.2.3 Public Alerting

Northland's warning systems are detailed in the Northland CDEM Group Warning Systems Emergency Operating Procedure, EOP2. The main methods of alerting communities in advance of an event are:

- Public information – media messaging, websites, facebook and social media (in accordance with EOP 3, Public Information).
- Tsunami sirens deployed in coastal communities (around 145 sirens at time of Plan preparation).
- Emergency services.
- Community Response Plan groups.
- Text messaging and email notifications.
- Public education programmes targeted at local source tsunami risk.

4.2.4 Maori Engagement

Recently the Northland CDEM Group has developed a Marae Preparedness project that targets Marae based readiness and response, in partnership with Te Puni Kokiri.

The programme is designed to hui with maori to discuss welfare in a general context, to identify the hazards which threaten the marae, establish methods of communication, determine how marae protocols would operate in an emergency and link to any existing plans such as Community Response Plans.

4.3 Action Plan

Objectives	Actions	Lead Agency
1. **Increase the level of business and community awareness through public education and consultation.**	Develop, monitor and report on a Public Education Strategy which identifies priority groups, key messages and delivery methods and a detailed action plan. This should include consideration of the way to engage communities to determine risk tolerance levels and risk reduction priorities.	CDEM Group
2. **Improve community participation and preparedness through community-based planning.**	Complete the remaining CRPs. Establishing a process for maintaining existing CRPs (web-based). Proactively undertake (or support the community to undertake) the activities identified as needing improvement in the plans, including extending plans to include recovery and hazard risk reduction. Provide opportunities for community plan leaders to attend CIMS courses and other professional development activities, such as training and exercises.	CDEM Group, in partnership with Community Groups
3. **Provide effective warning systems to enable agencies and the communities to respond rapidly to potential events.**	Maintain the existing tsunami warning network and proactively reviewing and considering technological advances that may enhance tsunami and all hazards warnings in the region.	CDEM Group

Note that hazard development and dissemination actions in the risk reduction section also contribute to the achievement of the above objectives.

5.CDEM Sector Readiness

THIS SECTION PROVIDES AN OVERVIEW OF READINESS OF CDEM ORGANISATIONS (THE CAPABILITIES AND RESOURCES OF CDEM AGENCIES AND STAKEHOLDER ORGANISATIONS). THE PLAN OBJECTIVES AND PROPOSED ACTIONS FOR IMPROVING READINESS ARE OUTLINED.

5.1 Overview

This Section focuses on the readiness of emergency response organisations, emergency services, lifeline utilities and other CDEM stakeholders.

5.1.1 Principles

The CDEM Group and key CDEM agencies with a role in CDEM (Appendix A), will:

- Maintain plans, arrangements and systems for response and recovery.
- Maintain capability and capacity to respond and recovery from CDEM emergencies.

5.1.2 Issues and Priorities

Northland CDEM has identified the following issues in relation to CDEM sector readiness:

- While there has been some good work done in Controllers, CIMS 4 and EMIS training, there is a need to increase the depth of capability at the local level and carry out training in specialist roles such as logistics, operations, ECC management, planning, intelligence, recovery, welfare and public information management.
- The knowledge and acceptance of legislative responsibilities needs to be improved at the executive and elected levels.
- In some agencies there is concern about the depth (capacity) of CDEM experience and a reliance on too few key people that may not be available in an emergency.
- While the CDEM Group has an extensive range of plans in place, there needs to be wider understanding and knowledge of the arrangements within.
- The CDEM sector has generally excellent relationships with key agencies, though some national organisations are difficult to engage with in the region. The New Zealand Defence Force has indicated a desire to work more actively with CDEM to support response efforts.
- The CDEM Group encourages and supports a number of groups which aim to foster that ongoing collaboration on CDEM planning. It is also considered a priority to maintain the many programmes and relationships that have been developed to ensure CDEM Sector readiness, as described in Section 5.2 below.

5.1.3 Objectives

In response to the issues identified above, Northland CDEM has set the following objectives:

1. Continue to enhance professional development for all emergency management personnel through training, exercises and learning from other CDEM Groups.
2. Maintain a high level of coordination and cooperation amongst all relevant sectors in planning for and responding to an emergency.
3. Develop and maintain appropriate documentation to describe key activities, functional responses and protocols in support of the CDEM Group Plan.
4. Provide effective warning systems to enable agencies and the community to respond rapidly to a potential event.

5.2 Current Arrangements

5.2.1 Capability Development

Effective performance during response to and recovery from an emergency is enhanced by strong working relationships established and exercised prior to emergency events. It is important that senior management demonstrate commitment to professional development through allocation of resources and staff release time.

CIMS training is regularly available and is recommended for all Northland people involved in emergency response and recovery (CDEM Plan 2005) though uptake is not consistent amongst all CDEM stakeholders. Emergency Management Information System (EMIS) and Controller training has also been undertaken across the region.

Exercises play an important role in assessing readiness and allow plans and staff capabilities to be assessed and gaps for improvements to be identified. Inter and across agency exercises have been carried out on a regular basis. Northland also has the opportunity to respond to emergency events relatively regularly and has demonstrated that it does have effective and efficient arrangements in place to respond to and recover from emergencies.

Areas of focus for further capacity development will be targeted at those priority issues identified in Section 5.1.2, i.e., increased depth of capability at a local CDEM level and increased training for specialist roles across all of the ECC functions.

5.2.2 Operational Planning Groups

Emergency management operational planning covers a wide field and a number of emergencies that are extremely varied in nature and consequences. Integrated and coordinated planning facilitates consideration of all the consequences of the threat or impact of an emergency event on a community. In addition to the operational planning undertaken by the Northland CDEM Group, there are a number of other groups and structures that contribute to operational planning in the region.

- **Civil Defence Officers Group (CDO Group):** CDEM staff from local authorities integrate and coordinate CDEM and local authority planning to deliver Group Plan objectives and priorities. Chaired by Group Manager and reports to CEG.
- **Emergency Services Coordinating Committees (ESCCs):** coordination of planning and relationship building at a local level between emergency services and allied response organisations within each district. Led by NZ Police.
- **Hazardous Substances Technical Liaison Committee (HSTLC**): provide a mechanism for the hazardous substances industry (enforcement agencies and emergency responders) to share information, plan for, and debrief after incidents or emergencies involving hazardous substances. Led by the NZ Fire Service. No formal links with CEG – primarily deal with non-CDEM events.
- **Northern Rural Fire Authority:** responsible for prevention, restriction, detection and suppression of vegetation fires in the region. A Regional Fire Emergency can be declared by the National Rural Fire Officer should there be either a significant fire hazard or fire occurring in one or more of the five Rural Fire Authorities (FNDC, WDC, KDC, DOC and Ahopouri/Karikari). Represented on CEG – primarily deal with non-CDEM events.
- **Northland Lifelines Group:** representatives from Northland's lifeline utilities work on shared programmes to improve the resilience of Northland's lifelines infrastructure to hazards. The NLG is linked to and supported by the Northland CDEM Group through shared membership and is funded by the participating organisations. The Group works to a 2 yearly business plan / work programme.
  ⇨ NORTHLAND LIFELINES GROUP BUSINESS PLAN, 2014-15 (UPDATED 2 YEARLY)
- **Welfare Coordination Group:** a collective of welfare service agencies, chaired by the Group Welfare Manager with a purpose of ensuring that welfare service delivery is planned, organized, integrated, coordination and supported at regional and local level prior to and during an emergency. Operates under the direction of (and reporting to) the CEG in readiness, the Group Controller in response and in recovery, will coordinate activities with the Group Recovery Manager.

⇨ NORTHLAND CDEM GROUP EOP 4: WELFARE

- **Rural Support Trust:** created in response to the 2007 flooding events and is part of a national network to ensure that rural communities are well prepared, supported and able to recover quickly from a range of adverse weather events. The Trust have developed response and recovery plans which identify responsibilities and types of assistance available. The Trust also aims to strengthen the network of rural landowners, managers, professionals and other industry organisations and identify key professional development requirements.

5.2.3 CDEM Plans and Procedures

A number of functional plans, contingency plans and emergency operating procedures (EOPs) are in place to give effect to the operational arrangements outlined in this Plan, as illustrated in Figure 15.

CEG is responsible for developing and approving the supporting Group plans and EOPs. Where required, other agencies or specialist groups will take the lead or joint lead in developing a supporting plan. For example the Welfare Plan was created by the Welfare Coordination Group and the Lifeline Utility Coordination Plan was developed by the Northland Lifelines Group.

In addition to joining together to form a CDEM Group and produce a CDEM Group Plan (this Plan), territorial local authorities must plan and provide for civil defence emergency management within their own districts (s.64(1) CDEM Act 2002). Local CDEM Plans have been developed in each local district in the past. However it is intended that these be replaced with local CDEM work programmes reflecting Group Plan priorities that will be monitored by, and reported to, CEG.

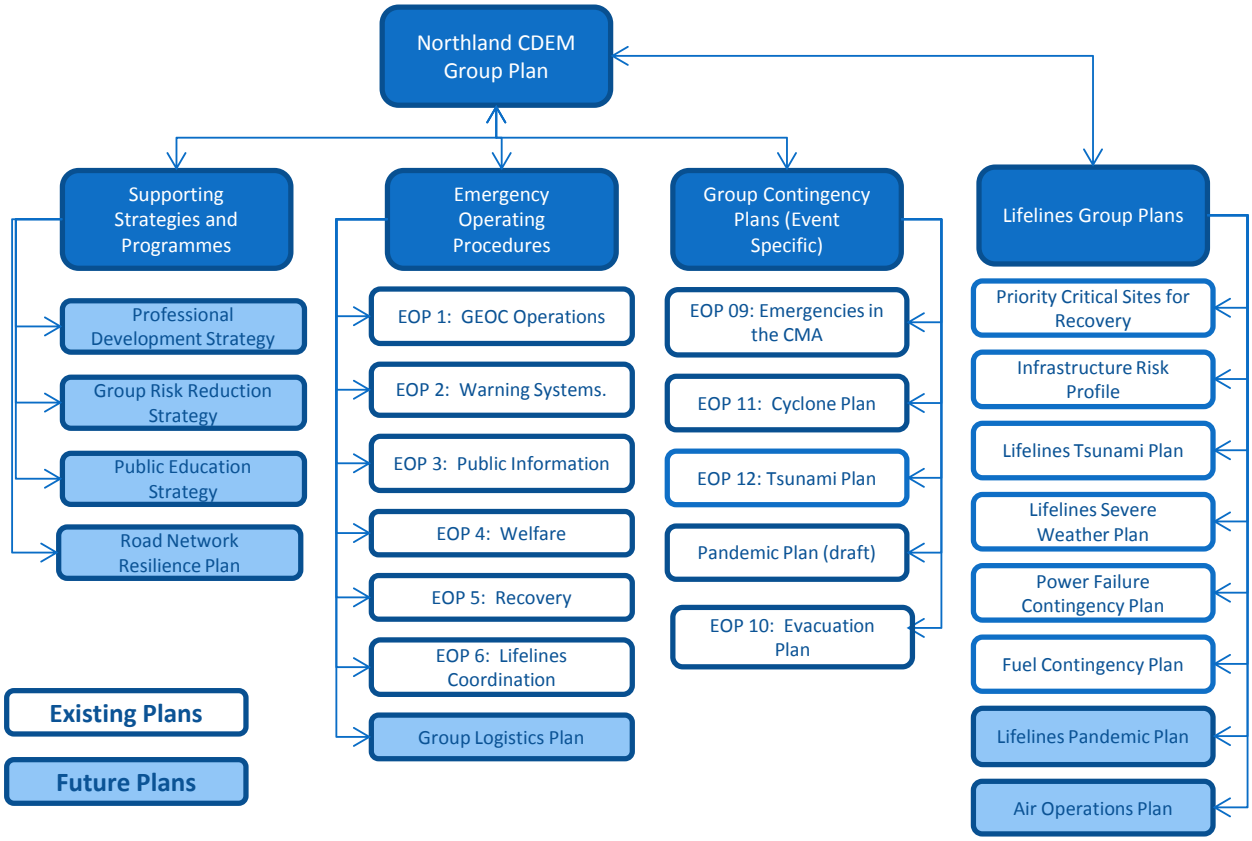

Figure 15: CDEM Group Plans

Transport Network Response Plans

As previously discussed in this Plan, the Northland road network has suffered considerable damage and disruption in storm events in recent years. There is potential to isolate large areas of Northland causing social and health impacts, issues relating to food distribution and limited alternative capacity in alternative sea and air routes.

Standard operating procedures are in place to ensure that key response agencies and the community are updated regularly on the state of the region's roads during any emergency event. Detailed alternate route planning has been completed and is available to emergency services and other key response agencies. Since the 2014 storms, the Northland Lifelines Group have conducted a debrief and identified opportunities for improvement which can be incorporated into the Severe Weather Event Plan.

5.2.4 CDEM Warning Systems

The MCDEM is responsible for issuing National warnings to CDEM Groups and other key emergency response agencies for events of national significance. The Northland CDEM Group is required to be capable of receiving, acknowledging and responding to National warning messages at all times within 30 minutes and have procedures in place to facilitate an effective response. The National Warning System is tested by MCDEM quarterly.

The Group CDEM Office coordinates the issue, dissemination, and confirmation at the regional level in accordance with the Warnings Procedure (EOP 02). The procedure outlines the agencies responsible for issuing warnings, levels of warnings and explanations of warning criteria.

5.3 Action Plan

Objectives	Actions	Lead Agency
1. Continue to enhance professional development for all emergency management personnel through training, exercises and learning from other CDEM Groups.	a) Develop a Group-wide professional development strategy and programme to encourage consistency and incorporate training for specialist roles and CDEM training for executives/elected representatives including links to the Integrated Training Framework. b) As part of the above, establish a professional development database and programme for monitoring the capability and capacity development across the CDEM Sector. c) Maintain a calendar of relevant professional development opportunities, available to CDEM agencies/stakeholders. d) Develop an exercise strategy and programme which is consistent with the National Exercise Programme (NEP) and which ensures that all CDEM Group Members and Strategic Partners are involved regularly. e) Encourage agencies to provide increased depth in CDEM capability and to incorporate CDEM in relevant job descriptions from executive level down.	CDEM Group, supported by partner agencies.
2. Maintain a high level of coordination and cooperation amongst all relevant sectors in planning for and responding to an emergency.	f) Continue to support and communicate with operational planning groups and encourage reporting to CEG on matters of interest. g) Engage with the Defence Force over CDEM planning and response coordination. h) Encourage and support national agencies to find a practical way to engage in the Northland region.	CDEM Group, supported by partner agencies.
3. Develop and maintain appropriate documentation to describe key activities, functional responses and protocols in support of the CDEM Group Plan.	i) Review existing plans at the review frequency identified in each plan, with consideration of rationalization and harmonization. Major reviews are due for welfare and recovery. j) Develop the 'future plans' shown in Figure 14 over the 2016-2021 period of this CDEM Plan. k) Incorporate training on relevant CDEM Plans into CDEM professional development programme.	CDEM Group

6.Response

THIS SECTION OUTLINES THE CDEM GROUP'S RESPONSE PRINCIPLES, OBJECTIVES, PRIORITIES, INFORMATION FLOWS AND THE ORGANISATIONAL FRAMEWORK THAT WILL BE USED IN RESPONDING TO EMERGENCIES. RESPONSE ROLES, FUNCTIONS, RESPONSIBILITIES AND RELATIONSHIPS (LOCALLY, REGIONALLY AND NATIONALLY) ARE DEFINED. PROCESSES FOR EMERGENCY ESCALATION AND DECLARING STATES OF EMERGENCIES ARE ALSO DESCRIBED.

⇨ REFER TO THE NORTHLAND CDEM GROUP PLANS FOR FULL DETAILS ON:

EOP 1: FOR GECC STRUCTURE, STAFFING AND OPERATION
EOP 2: FOR WARNING SYSTEMS AND PROCESSES
EOP 3: FOR PUBLIC INFORMATION AND MEDIA MANAGEMENT PROCESSES
EOP 4: FOR WELFARE ARRANGEMENTS
EOP 10: FOR EVACUATION PROCEDURES
EOP 11: FOR RESPONSES SPECIFIC TO CYCLONE EVENTS.
EOP 12: FOR TSUNAMI

6.1 Overview

Response describes the actions taken immediately before, during or directly after a civil defence emergency to save lives, protect property and support communities to recover.

6.1.1 Principles

Key principles for the Northland CDEM Group are:

- Locally delivered, regionally coordinated and centrally supported emergency management.
- While the first priority during an emergency is the safety of life, response planning aims to minimise all the effects of an emergency and ensure that people are given early support to recover.
- Command, control and coordination of incidents, emergencies and disasters will be dealt with using the Coordinated Incident Management System (CIMS), the nationally agreed and recognised response mechanism for interagency emergency response.
- The response will escalate only to the level required to manage the emergency and the ECC size will be scalable to support the level of response required.
- The CDEM Group is the mechanism through which resources and support for emergency services agencies and welfare are coordinated (it is not a primary care or emergency service agency).
- Emergency response will be in accordance with national objectives and priorities.

6.1.2 Issues and Priorities

The combined experience and strong relationships between CDEM partner agencies is an area of strength for the Northland CDEM sector. Any issues impacting potential response situations are discussed in the 'readiness' section.

6.1.3 Objectives

Objectives in relation to response are:

- Establish and maintain effective and resilient inter-agency communication networks and processes.
- Mobilise or source sufficient resources for an effective response.
- Create and maintain an accurate and widely understood common operating picture.

- Coordinate the response though accurate hazard analysis and response planning, to set the basis for a transition to recovery.

6.2 Current Arrangements

6.2.1 Modes of Operation

Response roles, activities and ECC operation change as an emergency escalates. The National CDEM Plan describes the following modes of operation.

Table 1: Modes of Operation

Response Level	Description
National	Includes agency coordination centres and headquarters, national level sector coordinating entities, and all-of-government coordination across national agencies. Coordinated from National Coordination Centres (NCC).
Regional	Includes CDEM Groups, district health boards, enlarged rural fire districts, and regional agency offices. Coordinated from Emergency Coordination Centres (ECC).
Local	Includes local authorities, rural fire districts, and agency offices at the local (district/city) level. Coordinated from Emergency Operations Centres (EOC).
Incident	The first official level of agency response. It includes first responders. Coordinated from Incident Control Points (ICP).
Community	The general public including individuals, families/whānau, community groups and businesses.

The process for activation of different levels of emergency are:

- The Incident Controller will contact the local Civil Defence Officers or the Local Controller if coordination or support is required in managing small scale events.
- The Local ECC and Welfare Centres are activated at the direction of the Local Controller, guided by information from the Civil Defence Officer, emergency services and other responders. The Group Controller will be informed of any activation. Local ECCs will provide regular reports to the Group ECC.
- The Group ECC will be activated by Group Controller on advice from the Civil Defence Officer and others, where required to coordinate resources across the region. The Group Controller will inform the Local Controller and NCMC of activation status and provide regular reports to the MCDEM/NCMC.
- The NCMC is activated when the GECC is activated. If multiple CDEM Groups are affected and/or the situation escalates beyond the capacity of the CDEM Group to manage the emergency, the Minister of CDEM may declare a state of national emergency.

6.2.2 CDEM Emergency Coordination Centres

Figure 16 shows the relationship between the various ECCs. Table 1 summarised the roles of each during different levels of emergency.

The focus at the GECC level is coordination of the event through tactical and strategic management, whereas at the local ECC level the focus is on the immediate operational tasks and activities. The GECC collects, collates and assesses information, issues warnings, public statements and advice, coordinates the response, and maintain records.

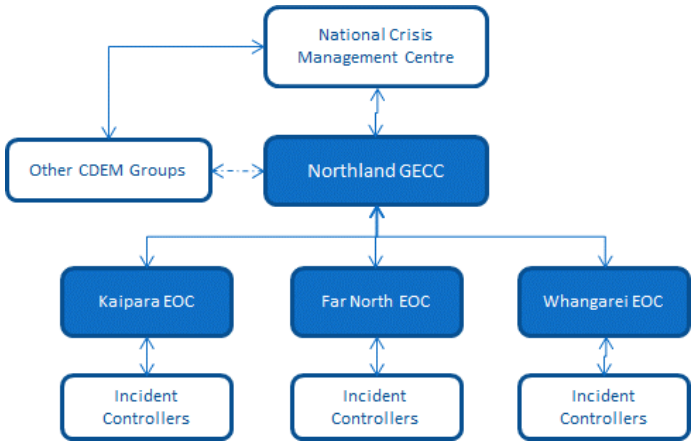

Figure 16: Relationship between ECCs

⇨ THE ROLE OF THE GECC IS FURTHER DETAILED IN THE NORTHLAND CDEMG EOP 1.

Each local territorial authority in the Group maintains a local ECC within its jurisdiction. The role of the Local ECC is to coordinate the response of local emergency agencies within the area of the ECC, including logistics, welfare, information management, media advise and recovery preparation. Once activated, the local ECCs report to the GECC.

⇨ THE ROLE OF THE LOCAL ECC IS FURTHER DETAILED IN EOP 1 AND LOCAL CDEM PLANS.

Other key locations for emergency management functions include individual agency ECCs (where they are either operating as lead or support agency) and Civil Defence Centres (which provide the point of contact for many agencies to interact with impacted communities).

⇨ THE WELFARE PLAN (EOP 4) CONTAINS FURTHER INFORMATION ON CIVIL DEFENCE CENTRES

6.2.3 Emergency Communication Systems

The ability to effectively communicate in the lead up to, during and after an emergency is a critical component of Northland's operational capability. It is the Group's expectation of all responding agencies that they can effectively communicate with each other at all times.

Telephone, (i.e. land lines), cell phones and email are the usual means of communication and are utilised first in an emergency situation. As a backup, a VHF/FM radio network operates throughout the area with HF Radio also available.

⇨ FURTHER INFORMATION ON COMMUNICATION PATHWAYS IS CONTAINED IN EOP 1.

In some sectors, specific processes for sector reporting and communication have been agreed (for example the Lifelines/CDEM Coordination Protocols).

The CDEM ECCs use the Emergency Management Information System implemented by MCDEM and encourage the use of stakeholders to use this as well. Many lifeline utility organisations are now doing so.

6.2.4 ECC Staff Roles and Responsibilities

Key ECC roles are described in EOP 1, Appendix 1, and are summarised briefly as:

- The primary roles of the Controller during response are to assess impacts, prioritise response measures, monitor agencies and coordinate and allocate resources where required. The CDEM Group has appointed Group and Local Controllers in accordance with Sections 26 and 27 of the CDEM Act (2002).
- Other Group ECC Managers shown in Figure 17.

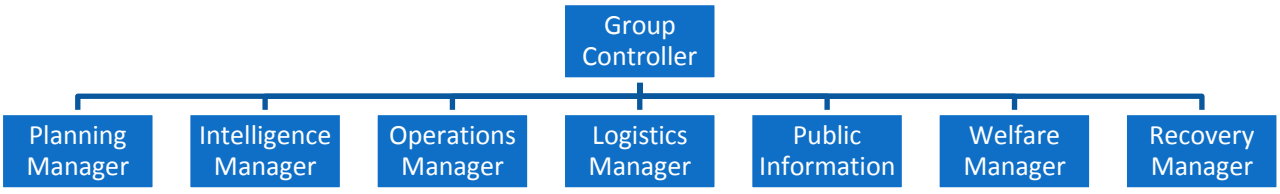

Figure 17: Group ECC Structure

6.2.5 Other Response Functions and Processes

Lead and Support Agencies

In the event that a declaration is made, the Lead Agency may change, either by existing mandate or by direction from the Controller. .

Declaration

While the Lead Agency for a specific function may not change as the result of a declaration, overall coordination becomes the responsibility of the CDEM Group. Declaring a state of emergency gives the Controller and others access to statutory powers under the CDEM Act to protect life and property in extraordinary emergency events.

If there is potentially a need to declare a state of local emergency, the Group Controller will contact the first available CDEM Group representative in the following order: 1) Chairperson, Northland CDEM Group, 2) Deputy Chairperson, Northland CDEM Group, 3) Any other available member of the CDEM Group

⇨DIRECTOR'S GUIDELINE FOR CDEM SECTOR (DGL 13/13); DECLARATIONS, PROVIDES DETAILED GUIDANCE ON THE DECLARATION PROCESS.

Volunteer Management

There are likely to be two types of volunteers; those from a specific organisation such as the Red Cross and the Salvation Army (organised volunteers) and those members of the general public who offer their services after the disaster has occurred (spontaneous volunteers). The CDEM Group uses the NZ Red Cross and Salvation Army volunteers to undertake the specific roles related to the operational arrangements of Civil Defence Centres.. The CDEM Group has a responsibility to plan for and to coordinate spontaneous volunteers.

Lifelines Coordination

Response and recovery coordination arrangements between lifeline utilities and CDEM agencies are outlined in the Lifeline Utility Protocols.

⇨ EOP 6 LIFELINE UTILITY COORDINATION PROTOCOLS, RESPONSIBILITY AND RECOVERY

Evacuation

The evacuation of a particular area is necessary when a hazard, be it natural or technological, threatens and puts at risk the safety of those within the area, or following the impact of a hazard which has subsequently rendered the area uninhabitable. Evacuation becomes necessary when the benefits of leaving significantly outweigh the risk of 'sheltering-in-place'.

⇨REFER TO THE GROUP EVACUATION PLAN EOP 10 FOR FURTHER DETAILS.

Welfare Management

Welfare service agencies are responsible for delivering welfare services to individuals, families/whanau, and communities affected by an emergency.

⇨REFER TO THE GROUP WELFARE PLAN EOP 4 FOR FURTHER DETAILS.

Public Information management

The appropriate management of public information and the media are critical elements in the response and recovery phases of any event. The continuity of information during response and recovery is important. The Controller, via the Public Information Manager, needs to provide timely and accurate information to the media and other communication means.

⇨REFER TO THE GROUP PUBLIC INFORMATION AND MEDIA MANAGEMENT PLAN EOP 3 FOR FURTHER DETAILS.

Monitoring and Debrief

During a state of emergency, the Group Controller will ensure that the functions and powers of the CDEM Group, Group Controller and Local Controllers are exercised in a responsible and considered manner and that the level of response is appropriate to the situation. Debriefs will be held at the end of any GECC activation to identify learnings and agree any corrective actions. A copy of the findings will be communicated to all relevant agencies involved in the event.

Support from outside the Group

An emergency in Northland may require resources from other CDEM Groups. Table 2 outlines the type of support that may be required and the agencies that will potentially provide that support. A major emergency in New Zealand may generate offers of assistance from overseas or necessitate requests from New Zealand for external help. International agencies responding to emergencies in New Zealand will be coordinated by the National Controller through the NCMC.

6.3 Action Plan

Objectives	Actions	Lead Agency
1. **Establish and maintain effective and resilient inter-agency communication networks and processes.**	a) Agree and implement region wide protocols for inter-agency reporting during an emergency event.	CDEM Group

7.Recovery

THIS SECTION SETS OUT THE PLANNING ARRANGEMENTS, FRAMEWORKS, STRUCTURES, RESPONSIBILITIES AND PROCESSES FOR HELPING THE COMMUNITY TO RECOVER FROM AN EMERGENCY. THE TRANSITION FROM RESPONSE TO RECOVERY, THE RECOVERY MANAGERS ROLE, FINANCIAL ARRANGEMENTS DURING RECOVERY AND THE RECOVERY EXIT STRATEGY ARE ALSO COVERED.

7.1 Overview

Recovery is defined as the coordinated efforts and processes to effect the immediate, medium and long-term holistic regeneration of a community following a disaster. It is the process of re-establishing the quality of life of the community following an emergency while taking opportunities to meet future community needs and reduce future exposure to hazards and risks.

7.1.1 Principles

- Recovery activity starts in the response phase at the beginning of the emergency and will continue through recovery.
- The aim of immediate recovery activity is to restore as quickly as possible the quality of life of those affected so that they are able to continue functioning as part of the wider community.
- Recovery addresses the economic, social, natural, and built environmental effects of an emergency.
- Recovery should be implemented as soon as possible, although early consideration will need to be given to the long-term implications of re-establishing affected communities in the same location as before the event.
- Recovery planning and preparedness activities are coordinated and planned pre event.

7.1.2 Issues and Priorities

Northland CDEM has identified the following issues in relation to recovery planning:

- The need to understand and incorporate the implications of proposed new legislation which will provide legislative powers to Recovery Managers appointed under the Act.
- The arrangements are well tested at small and medium scale events, but there are questions around whether these will extend well to a large scale recovery.
- There is not a widespread understanding of the scope of recovery, what the national level of recovery is and expectations at Group level.

7.1.3 Objectives

Objectives in relation to recovery are:

1. Implement effective recovery planning activities across all agencies and the wider community.
2. Promote coordinated and standardised recovery activities amongst partner agencies.

7.2 Current Arrangements

7.2.1 Recovery Planning and Resourcing

There has been a number of events over the last decade requiring recovery arrangements to be put in place and this has helped to build capability in the region.

A Group Recovery Plan has been developed to guide the recovery of such events and training and exercises have been undertaken in accordance with the Plan

⇨ REFER TO THE NORTHLAND CDEM GROUP EOP 5: RECOVERY FOR FULL DETAILS ON RECOVERY ARRANGEMENTS.

7.2.2 Recovery Functions

Recovery functions coordinated by the CDEM Group include:

- Damage and needs assessment.
- Facilitation of Government Assistance.
- Public information and communication.
- Information management and reporting on recovery efforts and progress.
- Coordinating financial arrangements and government reimbursement.
- Exit Strategy to manage the end of the recovery process.
- Review and improvement involving debriefs at appropriate times during the recovery process with key stakeholders.
- Coordinating support from other regions through the National Recovery Manager.

7.2.3 Recovery Structure

The recovery management structure of the Northland CDEM Group is shown In Figure 18 and is based upon the national recovery framework. The recovery management structure comprises the following:

- Recovery offices at the local, group and national levels.
- Recovery task groups as required at the local and national levels.

The recovery role at both the local and Group levels includes:

- Coordinating and supporting the recovery process with communities and recovery staff.
- Continuation of response initiatives that support recovery.
- Re-provisioning and readiness for subsequent emergencies.
- Emphasising reduction opportunities for those in a position to influence change.

The local, group and national offices operate as follows:

- Local Recovery Offices are the fundamental delivery points for recovery management. The Local Recovery Manager reports to the Group Recovery Manager and sometimes the National Recovery Officer if there is limited Group involvement.
- The Group Recovery Manager liaises with the National Recovery Office. The Group has appointed a Group Recovery Manager to give effect to Group coordination of recovery during and following an emergency.
- The Director of the Ministry of CDEM is responsible for coordinating the recovery process at national level and reporting to Government. The Director fulfils this responsibility by appointment of the National Recovery Manager and where necessary the establishment of the National Recovery Office.

The recovery organisational arrangements will need to support administration, information management, public liaison, aid management, financial management and coordination of government initiatives such as Enhanced Task Force Green. The arrangements need to be flexible enough to allow the recovery organisation to rapidly adjust to the specific nature and duration of the event.

Task Groups provide support for specific sectors and play an important role in ensuring coordination of activities at local, group and national level. There are four key task groups as shown in Figure 18 that are represented at the local and national level depending on the scale of the recovery required (but not at the regional level due to a lack of resources and duplication of roles and responsibilities). This recovery structure was tested during the March and July floods of 2007 and in July 2014 and proved to be effective and efficient.

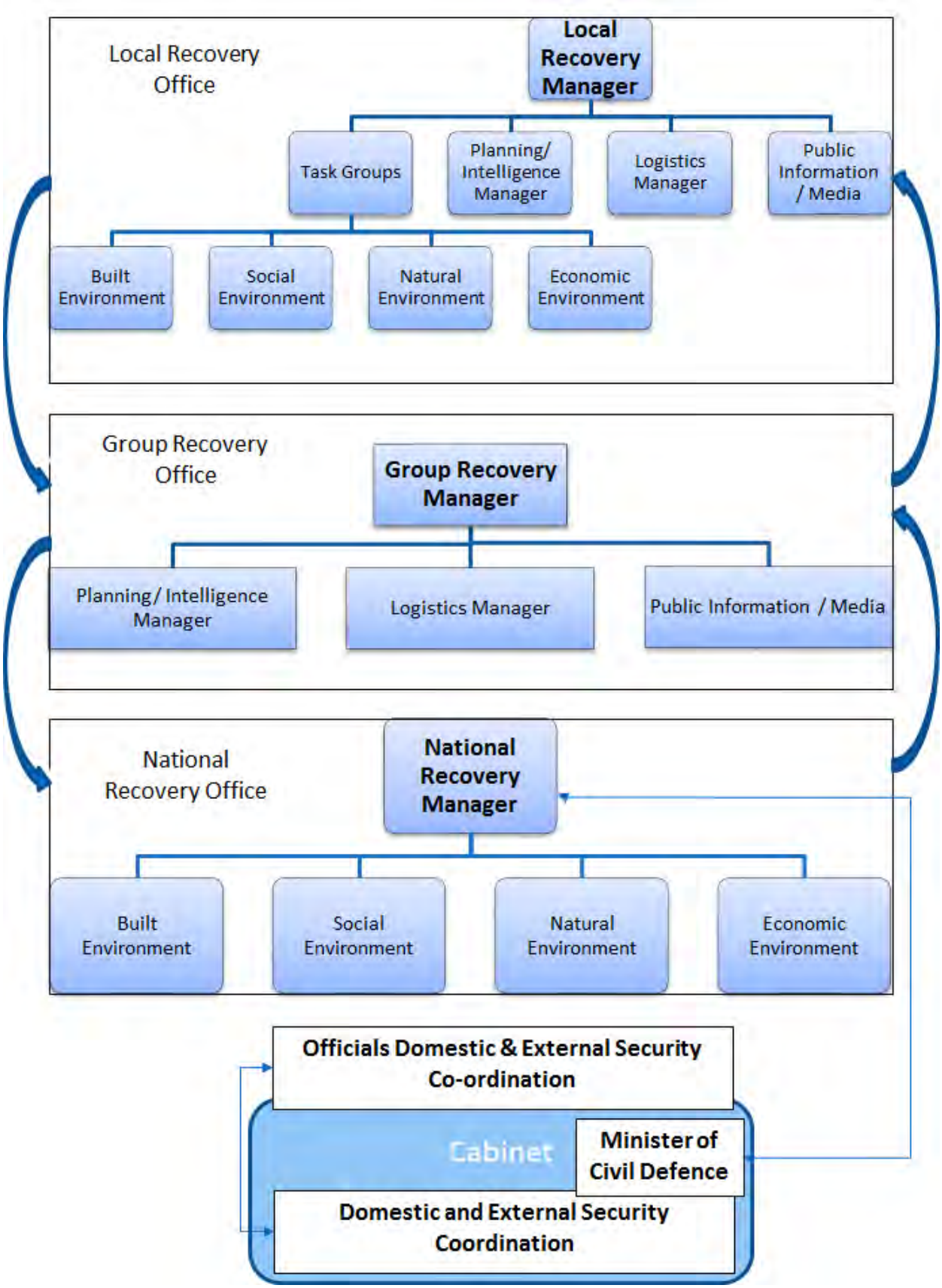

Figure 18: Northland CDEM Group recovery structure

7.2.4 Recovery managers

The role of the Local Recovery Manager is to coordinate the recovery activity within the local authority area. Further information on Local recovery arrangements are outlined in Local CDEM Plans and in the Group Recovery Plan.

The role of the Group Recovery Manager is to coordinate the recovery activity within the Group, and to liaise with both the National Recovery Manager and the Local Recovery Managers to ensure recovery is undertaken in accordance with EOP 5 and national recovery arrangements.

The Northland CDEM Group has designated a Recovery Manager and an alternate in the event of a vacancy. The Group Recovery Manager may, at the CDEM Group's sole discretion, commence some recovery activities, whether or not an emergency has been declared. .

7.2.5 Transition from Response to Recovery

The Recovery Manager commences recovery activities on the first day of the response phase to become familiar with the situation, liaise with the Controller, and make the necessary preparations to execute a smooth transfer from the response to the recovery phase of the emergency. During this time, the Controller continues to exercise the statutory power to direct and coordinate all resources provided with the Recovery Manager focusing on preparation for the recovery task.

The transition from response to recovery incorporates:

- The preparation of a response transition report by the Controller immediately prior to the termination of the response phase
- Acknowledgement of the transfer of control and accountability from the Controller to the Recovery Manager
- The establishment and agreed terms of reference for the Recovery Manager including funding, expenditure authority and reporting requirements
- Transfer of responsibilities and outstanding issues from the response phase which continue into recovery phase
- A transition briefing
- Development of a Recovery Action Plan.

7.3 Action Plan

Objectives	Actions	Lead Agency
Implement effective recovery planning activities across all agencies and the wider community.	Incorporate Recovery as a key component of Exercise and Training. Hold a Regional Recovery Forum every year.	CDEM Group
Promote coordinated and standardised recovery activities amongst partner agencies.	Review of existing recovery plan and arrangements to ensure that plans provide for recovery scope and scalability and how structures will escalate in large scale events. Support and advocate the development of recovery strategies by key agencies that support the overall Group Recovery Strategy.	CDEM Group, with MCDEM

8.Management and Governance

This section describes the management and governance arrangements for the provision of CDEM in Northland. This includes how CDEM will be delivered and the roles and responsibilities of CDEMG, CEG members and the Group Emergency Management Office. Key appointments and funding arrangements are also described.

8.1 Overview

The MCDEM 2015 Capability Assessment identified "a clear and evident culture of collaboration and cooperation in Northland. Roles and responsibilities are understood, and largely given effect". The strong relationships and level of accountability is considered a key enabler of Northland's resilience.

8.1.1 Principles

- The CDEM Group Committee own the CDEM Group Plan and hold accountability for CDEM in the region.
- The Coordinating Executive Group oversee the implementation of the CDEM Group Plan via the Group Emergency Management Office and local CDEM arrangements.
- The Group Emergency Management Office is accountable to the CEG and maintains a Group work programme which delivers the CDEM Group Plan.
- Local CDEM arrangements develop and work to a local work programme aligned with the CDEM Group work programme.
- Funding and financial management is transparent and equitable.

8.1.2 Issues and Priorities

- The Group has been heavily dependent of MCDEM resilience funding for projects and some staff arrangements and, while appropriate use has been made of the funds, there is a need to review member funding contributions aligned to work programmes.
- There could be stronger alignment between Group and Local Work programmes and clarity on how these deliver on Group Plan objectives.

8.1.3 Objectives

1. Effective CDEM organisational structures are in place.
2. CDEM Group Culture positively influences the effective delivery of CDEM.
3. CDEM Plans and Work Programmes are aligned to a common purpose.
4. Transparent and equitable funding arrangements are in place to deliver CDEM work programmes.

8.2 Current Arrangements

The structure of the CDEM group is illustrated in Figure 19. The CDEM group includes all agencies shown in the diagram. The CDEM Group refers the governance committee described below.

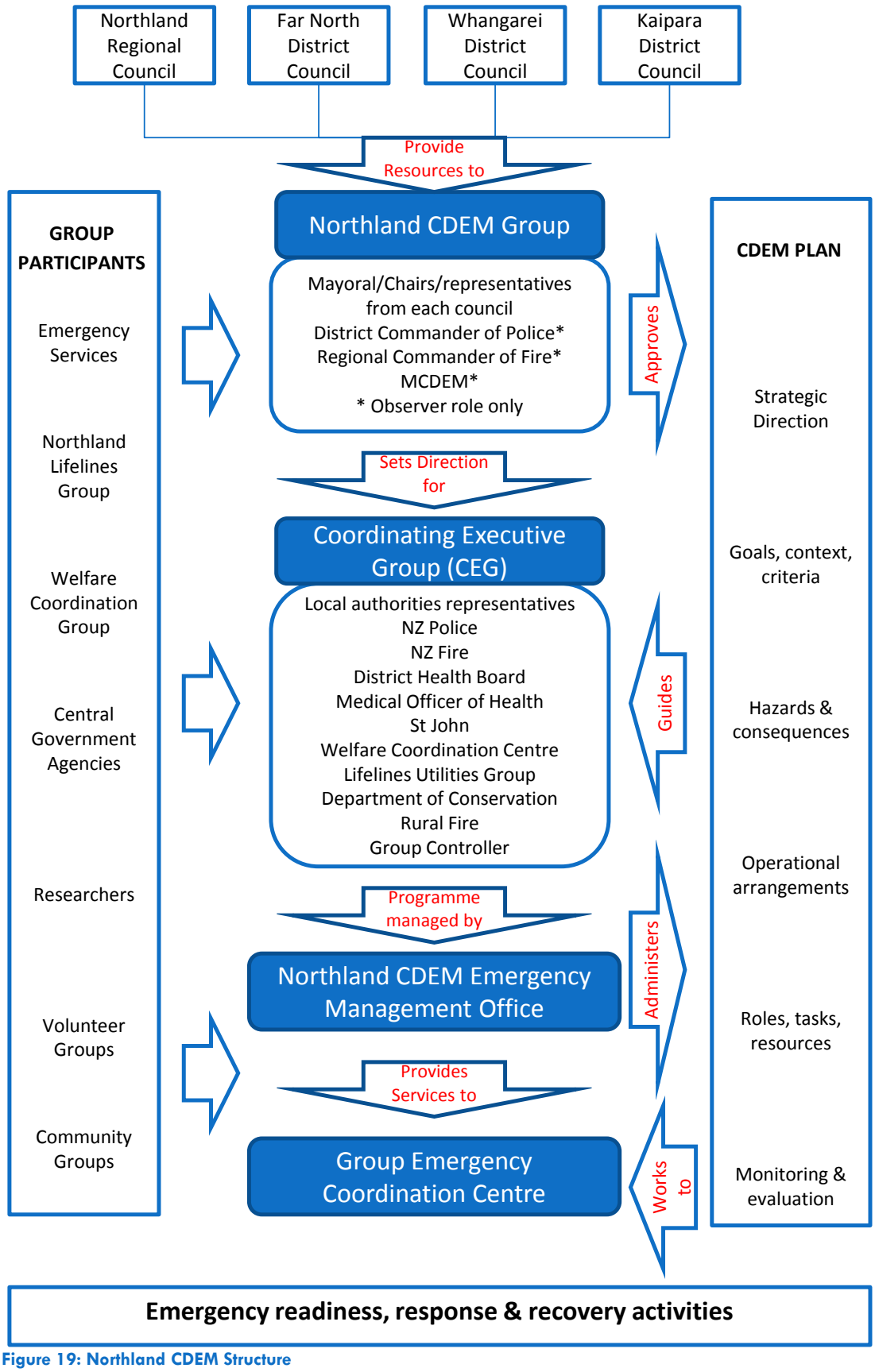

Figure 19: Northland CDEM Structure

8.2.1 CDEM Group

The Northland CDEM Group was constituted in March 2002 under section 12 of the CDEM Act, as a Joint Standing Committee. This Committee comprises the Mayor or Chairperson (or their delegated representative) of the Group's three local authorities and regional council. Each member also appoints an alternate representative to act in the absence of the appointed representative. All representatives have authority to vote and make decisions for their respective organisation without having to seek further approval. The NZ Fire Service and NZ Police are represented by the District Commander's on the Joint Standing Committee in an observer capacity.

The powers and obligations of members of the CDEM Group are covered in section 16 of the Act (2002). The Group has all the powers that are reasonably necessary advantageous to enable it to perform its functions, including the power to delegate any of its functions to members, the Group Controller, or any other person.

The functions of the Group are detailed in section 17 of the CDEM Act 2002, and include risk management, CDEM planning, CDEM delivery, providing assistance to other CDEM Groups and promoting and monitoring CDEM in the region.

The CDEM Group is responsible for the conduct of the CDEM business in the Group. The CDEM Group will:

1. Set the strategic direction of the Group via the CDEM Group Plan.
2. Approve annual work programmes.
3. Monitor and report on the work progress in implementing the work programme.
4. Amend and approve the CDEM Group Plan as required.
5. Appoint Controllers and delegate powers as required.
6. Appoint the Group Recovery Manager and the Local Recovery Managers as required.

⇨ FURTHER DETAILS ABOUT CDEM GROUP ADMINISTRATION ARE COVERED IN THE ESTABLISHMENT AGREEMENT, 2003

8.2.2 Coordinating Executive Group (CEG)

The CEG is responsible to the CDEM Group for delivering CDEM as defined. below. It comprises the statutory appointments of:

- The Chief Executive Officer, or their representative, from each member local authority
- A senior member of the Police
- A senior member of the Fire Service
- The Chief Executive, or their representative, from the Northland District Health Board
- The Medical Officer of Health.

In addition, the CDEM Group has appointed the following non-statutory members as full members and specialist advisors of the CEG:

- The Chief Executive, or their representative, of St John (ambulance services)
- Welfare Coordination Group chairperson
- Northland Lifelines Group representative
- The Conservator of the Department of Conservation
- Rural Fire committee chairperson
- The Group Controller.

The CEG has the following prescribed functions (s.20(2) CDEM Act):

- providing advice to the CDEM Group and any subgroups or subcommittees

- implementing, as appropriate, the decisions of the CDEM Group
- overseeing the implementation, development, maintenance, monitoring, and evaluation of the CDEM Group Plan.

Individual CEG members' responsibilities include:

- ensuring effective liaison and communication on CDEM matters with their respective elected representative on the CDEM Group (where applicable)
- facilitating the implementation of the CDEM Group Plan within their respective organisations.

8.2.3 Administrating authority

The Northland Regional Council is the administering authority for the Northland CDEM Group (CDEM Act (2002) (s23)) and CEG.

The administrative and related services the Northland Regional Council provides include:

- Secretariat for the CDEM Group and CEG (eg: convening meetings, providing venues, organising agendas, providing minutes and catering).
- Accountant for CDEM Group finances and budgets.
- Publishing the CDEM Group's work programme, budget and performance (once adopted).
- Entering into contracts with service providers on behalf of the Group.

The costs of undertaking these services are to be met by the Group.

8.2.4 CDEM Group Emergency Management Office

The Group CDEM Office is physically located at the Northland Regional Council. The CDEM Office coordinates and facilitates the 'day-to-day' planning and project work on behalf of the CDEM Group and CEG, and is responsible to CEG. The functions of the Group CDEM Office include:

- Advice and technical support to the CEG and the CDEM Group.
- Project coordination and management, including the ongoing development, implementation, monitoring and review of the CDEM Group Plan and supporting documentation.
- Coordination of regional CDEM policy and its implementation.
- Management of contracts entered into on behalf of the CDEM Group or CEG.
- Management of and administering CDEM Group staff on behalf of the CDEM Group.
- Providing for the training of key personnel for CDEM.
- Monitoring and responding to, the adverse effects of emergencies on behalf of the CDEM Group and disseminating warnings.
- Maintaining the Group ECC.
- Assisting with recovery operations on behalf of the CDEM Group.
- External liaison with the CDEM sector.
- Preparation in consultation with CEG, of the annual report of the CDEM Group's activities, budget and performance to the Group for adoption.
- Representing the CDEM Group on national bodies and projects.

The costs of undertaking these services are to be met by the Northland Regional Council.

To manage other members of the CDEM Group Emergency the CDEM Office has adopted the following strategy:

- Executive members of CEG task and direct the appropriate local authority or agency to carry out a plan objective.

- Local Emergency Management Officers will be supported from within member councils by the CEG representative and coordinated by the Group Emergency Management Officer to ensure that implementation of the Annual Plan is achieved with best effect.

8.2.5 Delegated authorities, functions and powers

Key Appointments:

Although the CDEM Group retains the responsibility for CDEM in the region there are a number of authorities, functions and powers that need to be delegated (CDEM Act (2002) (s18, 25-27)) to persons and/or positions as key appointments. Key appointments with delegated powers include:

1. Group Controller
2. Alternate Group Controllers
3. Local Controllers

The list of people appointed to these roles is available at www.nrc.govt.nz/civildefenceplan.

Declarations

In accordance with section 25(1) of the Act, the CDEM Group must appoint at least one person as a person authorized to declare a state of local emergency for its area. The Northland CDEM Group appoints the Chairperson of the CDEM Group as that person. In their absence the Deputy Chairperson or any other available member of the Northland CDEM Group can declare.

In accordance with section 25(5) the persons authorised to declare a state of local emergency are identified in section 5.8 as being:

- the Mayor of the territorial authority affected
- or an elected member of that territorial authority designated to act on behalf of the Mayor

Any person authorised to declare a state of local emergency may also make a declaration to extend or terminate a state of emergency in accordance with section 71 and 72 of the Act.

Controllers

In accordance with sections 26(1), 26(2) and 27(1) of the Act (2002), the CDEM Group has appointed personnel to the positions of Group Controller, Alternative Group Controller and Local Controller. The persons appointed as local controllers are identified in respective Local CDEM Plans.

The CDEM Group have not delegated any functions or powers to the Group Controller other than those inferred by section 28(2) of the Act.

The following details the powers of the Group Controller that are delegated to the Group Controller by the CDEM Group under the CDEM Act (2002).

1. *General powers:* The Group Controller is delegated the authority to coordinate the activities (as are required to perform his/her duties) detailed in s.18 (2), under the direction of the CEG.
2. *Power to require information:* The Group Controller is delegated the authority to require information to be provided under s.76.
3. *Information to obtain a warrant:* The Group Controller is delegated the authority to provide the necessary information under oath for a warrant to be issued under s.78.
4. *Receipt of information:* The Group Controller is delegated the authority to receive information seized under s.81.

5. *Emergency Powers:* The Group Controller is delegated the authority to exercise all the emergency powers conferred on the Group by s.85 and shall make reports on the actions undertaken at such intervals as are directed by the Chairperson of the Group. For the avoidance of doubt, the Group Controller has the specific emergency powers conferred on Controllers in ss.86-92 and s.94.

8.2.6 Financial Arrangements

The activities of the CDEM Group incur costs as part of:

***Programmed Activities*:** Administrative and related services under s.24 of the CDEM Act, 2002 and the annual work programme.

***Emergency Expenditure*:** Expenditure incurred by the Group in the lead up to, during and immediately after a declared state of emergency (e.g. reimbursement for cost of specialist advice).

Programmed Activities

The Group is responsible for funding:

- ❖ administrative and related services under s.24 of the CDEM Act, 2002
- ❖ agreed annual work programme

Apart from any agreed direct contribution as its share of Group costs, each local authority member of the Group will be responsible for:

- ❖ funding the reduction, readiness, response and recovery arrangements required in its district
- ❖ funding and resourcing the preparation and implementation of Local CDEM Plans
- ❖ meeting the costs of its representation on the CDEM Group and CEG.

Unless agreed otherwise, the costs of completing any specific agency actions as outlined in the annual work plan will be met by the local authority or agency concerned.

Expenditure in a Civil Defence Emergency

In the lead up to a declared emergency (Level 3)

The Group is responsible for funding:

- ❖ All costs associated with the resourcing, activation and operation of the GECC
- ❖ All reasonable direct expenses incurred by the Group Controller
- ❖ All reasonable direct expenses (such as travel, meals and accommodation) incurred by recognised technical advisors when they are requested to attend meetings to provide specialist technical advice.

Local authorities are responsible for meeting all costs associated with their own CDEM personnel, facilities and resources.

During a declared emergency (Level 4)

The Group is responsible for funding as per Level 3 above.

Local authorities take full first line responsibility for dealing with the impact of disaster in their geographic and functional areas of responsibility. This includes the prior provision of the necessary physical and financial resources needed for response and recovery.

Each local authority is to be responsible for meeting all emergency expenditure incurred in its district or under its jurisdiction, and arising out of the use of its resources and services under the control of either a local Controller

(directed to carry out any of the functions or duties of, or delegated to by, the Group Controller), or the Group Controller.

A clear record of who authorises any expenditure, its purpose etc is required to be kept.

The Group Controller will ensure all costs are properly accounted for.

Recovering Costs in a Civil Defence Emergency

At the termination of any emergency, the Group Controller will recommend to the CDEM Group which costs could reasonably be met by the Group. There may be circumstances where shared Group funding could be applied where there are widespread adverse regional impacts, and consequential regional benefits from localised response efforts to reverse these impacts.

Claims for government assistance are to be made by the organisation incurring the expenditure. When a declaration involves more than one district, the CDEM Group will coordinate and check respective local authority claims, independently prepare a claim for agreed Group costs, and submit the consolidated application.

Any reimbursement of CDEM Group expenditure by central government will be distributed back to constituent councils in accord with the method outlined in section 8.4.5, or as otherwise agreed.

Volunteers suffering personal injury or damage to or loss of property while carrying out emergency work under the control or authority of a Controller may also submit claims to the local authority employing the Controller, or in the case of the Group Controller to the CDEM Group (refer to sections 108 and 109 CDEM Act 2002).

Emergency Recovery Finances

At the termination of an emergency, the expenditure management regime established for the response phase must be closed off and re-commenced for the recovery phase under the control of the Recovery Manager.

A clear record of who authorises any expenditure, its purpose etc is required to be kept to support claims for Government subsidies and repayments. The Recovery Manager will ensure all costs are properly accounted for.

The Recovery Manager will recommend to the CDEM Group which recovery costs could reasonably be met by the Group, and which costs could be recovered from the government. Claims for government assistance are to be made by the organisation incurring the expenditure, or in the case where there are agreed Group costs, by the CDEM Group. Any central government involvement will be contingent upon the principles and conditions set out in Part 10, Naional CDEM Pan Order 2015.

If it becomes apparent that there will be a significant number of people suffering financial hardship and more immediate relief is required, Mayoral Relief Funds may be established (*refer Section 6, section 6.6.7*).

Cost Apportionment

For those costs agreed to be met by the Group, the cost will be apportioned equally between the four local authorities (3 District Councils and regional council).

In an emergency, in the interim, costs will lie where they fall, or where a territorial authority requests a resource, the cost will lie with the relevant territorial authority or where the Group Controller directs a resource, the cost will be apportioned by agreed negotiation.

8.2.7 Cooperation with other CDEM Groups

Flexible support agreements

In accordance with section 17(1)(f), the CDEM Group will support other CDEM Groups in New Zealand. The basis of this support is outlined below and is built upon memoranda of understanding which were previously in place with neighbouring Groups.

The specific nature of support that the CDEM Group can provide during the response and recovery phases of an emergency will depend on the circumstances at the time and to what extent an emergency has affected each CDEM Group. The support outlined below will be conditional on a best endeavours basis having regard for all of the circumstances, and may include:

- Personnel (ECC staff, radio operators, rescue personnel, media liaison, other specialists)
- Equipment (Stock on hand of particular items or supplies or support with purchasing)
- Logistics management (Management of air, rail and other supply points outside of the other CDEM Group area that are being used for logistics transfer operations)
- Displaced people (coordinating the provision of welfare services to displaced people arriving from the affected area including registration, needs assessment, meeting immediate needs such as food, clothing, shelter and accommodation).

The Group agrees to consult on priorities for resources, which includes without limitation, equipment, material, services and personnel. Competing demands for resources are always likely to be evident, particularly where the emergency affects both parties, and active consultation to resolve competing demands and achieve optimum resources allocation will have precedence over all other mutual support.

The CDEM Act (2002) (s113) provides for the recovery of actual and reasonable costs associated with provision of assistance to other CDEM Groups.

8.2.8 Collaborative Planning

The CDEM Group will take all opportunities to share and coordinate planning and other activities for mutual benefit, and the CDEM Group will maintain contact with other groups, share plans, data and arrangements to facilitate a common approach and provide access to training and exercises by staff from other Groups.

8.3 Action Plan

Objectives	Actions	Lead Agency
CDEM Plans and Work Programmes are aligned to a common purpose.	Develop Group and Local work programmes that deliver on Group Plan objectives and priorities.	CDEM Group
Transparent and equitable funding arrangements are in place to deliver CDEM work programmes.	Develop a Group Financial Plan. Review member funding arrangements to deliver on local work programmes.	CDEM Group

9.Organisational Resilience

This section describes the resilience of organisations in the CDEM group, consideration arrangements such as risk and business continuity planning, leadership and culture and adaptive capacity.

9.1 Overview

The 2015 MCDEM Capability Assessment processes introduced the need to consider individual organisational resilience within the CDEM sector. Organisational resilience reflects the ability of an organisation to adapt and respond to change – in the CDEM environment this change is usually a significant emergency.

9.1.1 Principles

CDEM member and partner organisations:

- ❖ Are responsible for the business continuity and risk arrangements of their own organisations.
- ❖ Foster adaptive capacity through leadership and capability development.

9.1.2 Issues and Priorities

The MCDEM 2015 Capability Assessment Report indicates that the main issues is the lack of clarity about the extent to which organisations should/do apply business continuity arrangements.

9.1.3 Objectives

- ❖ Organisational resilience in the CDEM sector is developed through risk management and planned strategies.

9.2 Current Arrangements

This is a relatively new area for the CDEM sector to be involved in. There is a wide range of approaches and sophistication in business continuity and risk management planning across CDEM partners and stakeholders. The focus over the period of this Plan will be to assess capability in this area and identify the need for CDEM Group involvement in supporting organisations in this area.

9.3 Action Plan

Objectives	Actions	Lead Agency
1. Organisational resilience in the CDEM sector is developed through risk management and planned strategies.	a) Encourage all CDEM partner agencies to undertake a resilience assessment (potentially using the MCDEM tool) to assess the gaps in the sector and identify corrective actions.	CDEM Group

10. Monitoring and Evaluation

THIS SECTION PROVIDES A BASIS FOR MONITORING AND EVALUATION OF THE CDEM GROUP PLAN. IT SETS OUT THE CRITERIA AND METHODS FOR MEASURING ACHIEVEMENT OF PLAN OBJECTIVES AND A PROCESS FOR PLAN REVIEWS. THE MEANS OF MONITORING LEGISLATIVE COMPLIANCE IS ALSO OUTLINED. A BROAD 5 YEAR CDEM WORK PROGRAMME IS PRESENTED.

10.1 Overview

Monitoring and evaluation allows comparisons between actual and desired states and ongoing analysis and improvement of processes and outcomes. Monitoring involves tracking progress against a plan or performance against standards, generally using quantitative data. Evaluation is about measuring effectiveness; it compares what is happening against what was intended by the plan (the goals, objectives and targets) and interprets the reasons for any differences.

The legislative requirements of CDEM Groups for monitoring and evaluation are:

- Section 17(1) (h) – Monitor and report compliance within its area with this Act and legislative provisions relevant to the purpose of this Act.
- Section 37(1) – A CDEM Group must ensure that its actions in exercising or performing its functions, duties and powers under this Act are not inconsistent with any national CDEM strategy that is for the time being in force.

10.1.1 Principles

- The CDEMG Group's member activities are planned, monitored and effective in achieving its objectives.
- The CDEM Group takes a continuous improvement approach and encourages reviews, debriefs and corrective action plans.
- There is regular monitoring and reporting of compliance with the CDEM Act 2002.

10.1.2 Issues and Priorities

- Performance measures established in the previous CDEM plan were not monitored and reported, and need to be reviewed for appropriateness.
- The 2014 MCDEM capability assessment of the Northland CDEM Group highlighted a number of key achievements by the Group and a significant improvement in overall score. Several areas of focus and opportunities for improvement have been identified and incorporated into the Plan actions.

10.1.3 Objectives

1. Group and local work programmes will be aligned with this CDEM Plan and regularly monitored and reviewed.
2. CDEM performance outcomes will be established, monitored and reported.

10.2 Current Arrangements

10.2.1 CDEM Plan Monitoring

Annual Group and Local work programmes are developed to support the objectives of this Plan. The work programme is developed in consultation with CEG and is approved by the CDEM Group at the December/February meetings.

Quarterly reports to CEG and CDEMG are provided on progress against the Annual Work Programme. This provides Executive oversight for CEG members and ensures public accountability through the elected representatives.

CDEM Plan Targets

An annual report will be provided to CEG and CDEMG on progress of the actions set out in this plan. Work programmes may need to be adapted where outcomes are not being achieved or improvements have been identified.

Other Programme and Strategy Reviews

This Plan proposes the development of a number of supporting strategies and programmes, including for Professional Development, Public Education and a Group Risk Reduction Programme.

An annual report will be provided to CDEMG and CEG on progress against these detailed programmes. EMO staff will monitor progress monthly and provide additional reports to CEG if progress issues need to be addressed.

10.2.2 External Monitoring/Evaluation Processes

Under section 8 of the CDEM Act, the Director of Civil Defence Emergency Management has a function to "monitor the performance of CDEM Groups and persons who have responsibilities under this legislation". This will be undertaken primarily via the MCDEM Capability Assessment Tool. This Tool aims to create a standard assessment of emergency management capability in New Zealand. It consists of a set of key performance indicators and performance measures against which organisations can assess themselves or be externally assessed.

As well as providing an understanding of the organisational strengths, weaknesses and gaps, it also enables MCDEM to provide a nationwide picture of implementation of requirements of the CDEM Act and progress towards CDEM's high-level goals and objectives

The Northland CDEM Group have been externally assessed by the Ministry in 2015 as part of the three yearly cycle of external assessment. Outcomes identified through the assessment process have been incorporated into this plan. The CDEM Group may undertake the assessment before three years have ended to provide a measure of self-improvement.

10.3 Action Plan

Objectives	Actions	Lead Agency
Group and local work programmes will be aligned with this CDEM Plan and regularly monitored and reviewed.	Group and Local annual work programmes approved by CEG each year.	CDEM Group
CDEM performance outcomes will be established, monitored and reported.	Review and establish appropriate outcome based performance measures for the CDEM Group and report to CEG / CDEMG annually.	CDEM Group

Appendix A - Organisations With a Key CDEM Role

This Plan has primarily been developed for the CDEM sector and key stakeholders as defined below.

- Local authorities – to coordinate and integrate all aspects of their hazards and emergency management functions and activities under this Act and other legislation
- Emergency services and community support agencies – in support of their readiness, response and recovery planning and delivery
- Lifeline utilities (including local authority services) – to link with their strategic risk reduction and operational planning for emergency readiness, response and recovery of services
- Government departments- to integrate national planning and service delivery in support of local CDEM management.

Local Authorities

- Northland Regional Council
- Far North District Council
- Kaipara District Council
- Whangarei District Council

Including works and services providers which have a local authority emergency management role

Emergency Services and Community Support Agencies

- NZ Police
- NZ Fire Service
- St John
- Northland District Health Board
- Northland Public and Population Health Unit
- Department of Conservation
- Ministry of Social Development
- Northern Rural Fire Authority
- Coastguard Northern Region, Northland Operational Committee
- Surf Life Saving
- Emergency Services Coordinating Committees (ESCCs)
- Ngati Hine Health
- NZ Defence Force
- **Welfare and Community Services**
  - NZ Red Cross
  - The Salvation Army
- **Volunteer Groups**
  - Rural Support Trust
  - Citizens Advice Bureau
  - Royal NZ SPCA
  - Victim Support
  - Neighbourhood Support

Lifeline Utilities

The CDEM Act 2002 places specific duties on lifeline utilities to ensure it is 'able to function to the fullest possible extent' and participate in (and make information available for) CDEM planning. The Act describes those entities and classes of entities, which for the purposes of the CDEM Act 2002 constitute a Lifeline Utility.

For the purposes of S.60(c) above, the following provides a list of these entities that apply to the Northland region and for whom the term 'lifeline' or 'lifeline utility' in this Plan applies. It is noted that some of these organistions have now been sold or re-named.

The **Northland Lifelines Group (NLG)** plays a key role in coordinating the risk and emergency management activities of lifeline utilities across the region.

A Specific Entities (Part A, Schedule 1)

1. Radio New Zealand Ltd
2. Television New Zealand Ltd
3. Whangarei Airport Ltd
4. Northport Ltd
5. Far North Holdings Ltd

B Entities carrying on certain businesses (Part B, Schedule 1)

B1. Producer, Supplier, or Distributor of Manufactured or Natural Gas

6. Vector Gas

B2. Generator or Distributor of Electricity

7. North Power
8. Top Energy (includes Ngawha Generation)
9. Transpower

B3. Supplier or Distributor of Water

10. Far North District Council
11. Kaipara District Council
12. Whangarei District Council

B4. Provider of Wastewater (Sewage and/or Stormwater) Network

13. Far North District Council
14. Kaipara District Council
15. Whangarei District Council

B5. Provider of a Telecommunications Network

16. Telecom NZ Ltd
17. Vodafone NZ Ltd
18. TelstraClear Ltd
19. Kordia

B6. Provider of a Road Network

20. NZ Transport Agency
21. Far North District Council
22. Kaipara District Council
23. Whangarei District Council

B7. Producer, Processor, or Distributor of Petroleum Products

24. NZ Refining Co Ltd
25. BP Oil Ltd
26. Mobil Oil NZ Ltd
27. Shell NZ Ltd
28. Chevron Ltd
29. Gull

B8. Provider of a Rail Network

29. KiwiRail

Government Departments

- Ministry of Civil Defence &Emergency Management
- f Child Youth and Family Housing NZ Corporation
- Ministry of Social Development
- Ministry of Education
- Department of Corrections
-
- Ministry for Primary Industries (MPI)
- Maritime New Zealand (MNZ)Civil Aviation Authority (CAA)
- Land Transport Safety Authority (LTSA)
- Ministry of Business, Innovation and Employment (MBIE)Quotable Value New Zealand
- Te Puni Kokiri (Ministry of Maori Development)
- Ministry of Health
- Office of the Auditor-General
- Ministry of Transport
- Accident Compensation Corporation (ACC)
- Land Information NZ (LINZ)
- Inland Revenue

Other Stakeholders

- **Media Agencies**
  - TVNZ and Radio NZ (also Lifeline Utilities)
  - NZ Herald
  - Suburban newspapers
- **Insurance Sector**
  - EQC
  - Insurance Council
- **Neighbouring CDEM Groups**
  - Auckland and Waikato CDEM Groups
- **Business Sector**
  - Chamber of Commerce
- **Scientific/Technical Associations and Advisors**
  - GNS
  - NIWA
  - Met Service
  - NZ Association for EQ Engineering
  - HSTLC (Hazardous Substances Technical Liaison Committee)
- **Professional Associations**
  - Planning Institute
  - Institute of NZ Architects
  - Building Research Assoc of NZ (BRANZ)
  - NZ Security Association
  - (AA) Automobile Association
  - Contractors Federation
  - Register of Engineers for Disaster Relief (RedR NZ)
- **Private Hospitals and Healthcare**
- **Enterprise Northland**
- **Education Sector**
- **Residents Groups**
- **Community Boards**
- **Banking Sector**
- **Food Retail Sector**
  - Progressive Enterprises
  - Foodstuffs

Appendix B: Risk Assessment Process

Risk Analysis

Hazards have been assessed using the matrix in Figure 20. The 1-5 consequence rating is derived from the 'seriousness' rating process detailed further below.

	1	2	3	4	5
	Consequence of the risk occurring				
Likelihood (that the risk will occur in next ten years)	**Insignificant**	**Minor**	**Moderate**	**Major**	**Catastrophic**
A: Almost Certain (more than 1:10 year probability)	M	H	VH	E	E
B: Likely (probability between 10-90 year occurrence)	L	M	H	VH	E
C: Possible: (probability between 100-500 year occurrence)	L	M	M	H	VH
D: Unlikely: (probability between 500-2000 year occurrence)	VL	L	M	H	VH
E: Rare (> 2000 year event probability)	VL	VL	L	M	H

Figure 20: Risk Assessment Matrix

Level	Descriptor	Detail description
1	Insignificant	No injuries, little or no damage, low financial loss.
2	Minor	First aid treatment, minor building damage, medium financial loss.
3	Moderate	Medical treatment required, moderate building and infrastructure damage, high financial loss.
4	Major	Extensive injuries, high level of building and infrastructure damage, major financial loss.
5	Catastrophic	Deaths, most buildings extensively damaged and major infrastructural failure, huge financial loss.

Table 2: Consequence (Seriousness) Rating System)

Detailed Risk Analysis

The National CDEM Plan Review Guide recommends the use of the 'SMG' model for prioritising risks for CDEM Group action. The model takes into account:

- The 'seriousness' of the hazard consequence.
- The 'manageability' difficulty in relation to the hazard.
- The likelihood that there will be 'growth' in either the frequency of the hazard or the community exposure to the hazard.

Hazard Seriousness

A 1-5 consequence rating is evaluated for impact on each of the social, built, economic and natural environments (as detailed in Table 3). In calculating the overall seriousness score, a higher weighting is given to the social area (50%), with 25% weighting to built environment impact, 15% to economic and 10% to natural environment impact. This reflects the higher priority given by CDEM to human life and safety and community resilience. The weighted score is multiplied by 2 to give a total score out of 10.

Hazard Manageability

The manageability of the hazard is rated for each of the '4Rs' area. The manageability is a combination of how difficult it is to manage the hazard and the current level of effort applied (each category is scored as Low, Medium

or High). The highest score of 5 is given to those hazards that are most difficult to manage and have the least effort applied, and vice versa for the lowest score of 1.

Hazard Growth

The 'growth' rating is a combination of the likelihood that the frequency of the hazard will increase and the likelihood that the community exposure to that hazard will increase. Hazards that impact on wider communities and the economy are considered to have a moderate probability of increasing community exposure (because of the growing population increasing the number of people that will be potentially affected by hazards). Community exposure to infrastructure failure will increase even more significantly as society becomes increasingly dependent on technology. Climate change is also expected to increase the frequency and/or intensity of some hazards, such as storms and drought. Man-made risks (such as rural fire and marine accidents) may increase in frequency because of higher population.

	Risk Priority for Action											
	Seriousness					Manageability					Growth	Total
	Social	Built	Economic	Natural	*Sub-total*	Reduction	Readiness	Response	Recovery	*Sub-total*		
Local Tsunami	5.0	4.0	3.5	3.0	**8.7**	4.5	4.0	3.0	3.5	**3.8**	**2**	**14.4**
Human Pandemic	4.5	1.5	3.5	4.0	**7.1**	3.0	2.5	3.5	4.0	**3.3**	**3**	**13.4**
Severe Widespread Storm	3.5	3.5	3.0	3.0	**6.8**	3.0	3.0	2.5	3.5	**3.0**	**3.5**	**13.3**
Electricity failure	3.0	4.0	3.0	1.0	**6.1**	3.5	3.5	3.0	3.5	**3.4**	**3.5**	**13.0**
Local Volcano	3.5	3.5	3.0	3.0	**6.8**	5.0	3.5	3.0	3.5	**3.8**	**2**	**12.5**
Fuel supply disruption	2.5	4.0	3.0	1.0	**5.6**	3.5	3.0	3.0	3.5	**3.3**	**3.5**	**12.4**
Localised Heavy Rain/Flooding	3.0	3.0	2.0	2.0	**5.5**	3.0	2.5	2.5	3.5	**2.9**	**3.5**	**11.9**
Regional/Distal Tsunami	3.0	3.0	2.0	2.0	**5.5**	4.0	3.0	3.0	3.5	**3.4**	**2**	**10.9**
Major Industrial Accident	3.0	2.0	2.0	1.0	**4.8**	3.0	3.0	3.0	3.5	**3.1**	**1.5**	**9.4**
Telecommunications failure	2.5	2.0	3.0	1.0	**4.6**	3.5	3.0	3.0	3.5	**3.3**	**3.5**	**11.4**
Rural Fire	2.0	3.0	1.5	2.0	**4.4**	3.0	2.5	3.5	3.0	**3.0**	**3.5**	**10.9**
Distal Volcano	2.0	2.5	2.5	2.0	**4.4**	5.0	3.5	3.0	3.5	**3.8**	**2**	**10.2**
Animal Epidemic	2.0	1.0	3.5	2.0	**4.0**	3.0	3.0	4.0	4.0	**3.3**	**3**	**10.0**
Plant & Animal Pests	2.0	1.0	3.5	3.0	**4.2**	3.0	3.0	4.0	4.0	**3.3**	**3**	**10.0**
Criminal Act/Terrorism	3.5	1.0	2.0	1.0	**4.8**	5.0	3.0	2.0	3.5	**3.4**	**2**	**10.2**
Earthquake	2.0	2.5	2.0	1.5	**4.2**	3.5	4.5	3.0	4.0	**3.8**	**2**	**9.9**
Drought (Agricultural)	2.0	1.0	3.0	2.0	**3.8**	3.0	3.0	2.5	3.0	**2.9**	**3**	**9.7**
Space Debris / Meteorite	2.0	2.0	2.0	1.0	**3.8**	5.0	3.0	2.0	3.5	**3.4**	**2**	**9.2**
Drought (Water Supply)	2.0	1.5	2.0	1.0	**3.6**	3.0	3.0	2.5	3.0	**2.9**	**3**	**9.4**
Urban Fire	2.0	3.0	2.0	1.0	**4.3**	3.0	3.0	3.0	3.5	**3.1**	**1.5**	**8.9**
Major transport accident - marine	3.0	1.0	1.5	1.5	**4.3**	2.5	3.0	3.0	3.5	**3.0**	**1.5**	**8.8**
Tornado	2.0	2.0	2.0	1.0	**3.8**	3.0	3.0	3.0	3.5	**3.1**	**1.5**	**8.4**
Hazardous substances spill	2.0	1.0	1.5	2.5	**3.5**	3.0	3.0	3.0	3.5	**3.1**	**1.5**	**8.1**

Figure 21: Risk Priorities for Action

Appendix C – Hazard Summaries

River flooding arising from localised heavy rainfall

Overview	River flooding as a result of sustained or short duration, high intensity rainfall (typically thunderstorms) is the most frequent and widespread hazard throughout the region. Thunderstorms generally have their worst impact in a localised area less than 100sqkm. They are less predictable than larger weather fronts. The high flood risk in Northland arises from exposure to intense weather system and a topography which sees rapid run-off from a steep terrain draining to flat areas where flood waters recede slowly, exacerbated by tidal lower reaches. Flooding damage is often worsened by large amounts of silt and debris in the floodwaters and land slips are also a frequent consequence of rain in Northland.
Hazard Likelihood (A)	A storm with 12 hourly rainfalls in excess of 250 mm in a local area has an Annual Return Period of 100 years or more. Shorter duration, higher intensity rainfall can also cause major flooding, such as Pungaru in 1999 and Kerikeri in 1981. Regionally the likelihood is higher as there is a cumulative risk of storms in different areas.
Hazard Consequence (3)	Social: • Distress due to displacement of people (in a localised area, but possibly for extended periods) and loss of possessions. Extreme events may result in injury or loss of life. • Psychological problems for victims reliving or recalling events. • Public health risk from water/sewage contamination. • Loss of irreplaceable, significant Maori land holdings, taonga and waahi tapu sites. Built: • Significant loss of infrastructure, particularly roads and bridges due to landslips, flooding and bridge pier scouring. The road network damage can significantly impact the recovery efforts of other key response agencies. Power, water supplies and communication systems can also be affected if landslips or flooding impact on critical facilities, but generally are affected less than the road network unless the rain is accompanied by high winds. Economic: • Loss of crops (floodplains are a major contributor to primary production). • Cost of restoration (flood insurance increasingly difficult to obtain in some areas). • Temporary loss of access, or longer term disruption due to highway closure Natural: • Alterations to river channels; bank erosion, channel scour/build-up/diversion. • Sediment-debris deposition, and dispersal of chemicals, effluents (dairy farm ponds, septic tanks, town sewage networks) and rubbish (from tips) across floodplains.
How do we manage the risk?	• River Management Policy and agreements between the four councils. • Mapping the flood risk and making this information available to the public. • Land use planning for flood risk areas. • Development of flood management plans for high priority catchments. • River flood mitigation schemes and Whangarei, Kerikeri, Kaeo and Kaitaia Flood Control Schemes.

	• Flood forecasting systems and public alerts issued by NRC Hydrology team. • NIWA weather models and rain forecasting. • Evacuation / community plans in place for some high-risk areas.
What more should we be doing?	• Expanding the coverage of flood mapping for high priority catchments. • Developing and implementing flood risk reduction plans for catchments not already covered. • Development of community response plans for at-risk communities. • Making use of new weather radar systems to improve flood prediction.
What is the future risk?	• Expected to be increasing high intensity rainfall events with climate change. • Community exposure may decrease as land planning improves, but also increasing population density may counteract that.

Widespread Heavy Storms

Overview	Large storm systems can pass over Northland in both summer and winter months. In summer months, tropical cyclones track south from their origin in the tropics. They generally loose some of their ferocity and are down-graded to tropical depressions or mid-latitude storms by the time they reach New Zealand waters. Northland has been subjected to a number of ex-tropical systems which caused extreme weather (damaging wind/persistent rainfall) such as cyclone Bola (1988), Fergus and Drena (1996). More recently there have been significant storms in July 2014, January 2011, and March 2007. Longer duration sustained rainfall tends to produce larger floods in the regions bigger catchments. The hourly rainfall intensities associated with these events are generally lower than from localized thunderstorm events. These weather systems often cause flooding, land slips, wind damage to housing, orchards and forestry plantations, coastal erosion with elevated tides and storm surge and damage to Northlands infrastructure with widespread power and phone outages, road closures, bridge damage and water and sewage disruptions. Storms can be accompanied by temporary elevation in sea level of up to 1 m above the tide level which presents a significant risk to low lying coastal areas. Storm surges are particularly damaging when they combine with high tides (especially a high spring tide), storm waves and elevated river levels. Coastal storm surge has the potential to cause damage along most of Northlands east and west coasts, especially at coastal settlements, and in upper harbour townships such as Whangarei, Kaeo and Dargaville.
Hazard Likelihood (B/C)	Northland has, on average one ex-tropical cyclone pass nearby each year putting it more at risk from tropical cyclones than the rest of New Zealand. Indicatively, in recent years, the region has received large scale storms with extensive flood every four years. The return period of the flooding such storms generate can be highly variable between different catchments..
Hazard Consequence (3/4)	Social: • As for 'flooding' hazard (distress due to displacement and loss of possessions, public health risk from water/sewage contamination and loss of taonga) but more widespread. Built • Slip/flooding damage to roads. High winds cause additional problems, particularly for power supplies and, if the power outage is prolonged there will also be subsequent disruption to communication and water supplies.

	• Homes, businesses and agriculture land are also vulnerable to wind damage, such as the 1988 storm. Coastal structures are vulnerable to storm surge. Economic: • Loss of crops (floodplains are a major contributor to primary production) and production in the dairy, beef and sheep industries can have long term effects over months and years. • Cost of restoration (flood insurance increasingly difficult to obtain in some areas). Environmental: • Damage to native bush and forest and the habitats they provide. • Alterations to river channels. • Sediment-debris deposition, and dispersal of chemicals, effluents (dairy farm ponds, septic tanks, town sewage networks) and rubbish (from tips) across floodplains.
How do we manage this risk?	• As for flooding hazard, plus building standards for wind resistance. • Tree maintenance/clearance around overhead utility lines.
What more should we be doing?	• As for flooding hazard • Public education around awareness of need for tree clearance around utility lines.
What is the future risk?	• Intensity of passing ex-tropical cyclones are likely to increase. • Storm surges are likely to have higher impact with sea level rise.

Tsunami

Overview	Tsunami are typically generated as a result of displacement of ocean water due to landslides, earthquakes, volcanic eruptions and bolide impacts. Tsunami can be categorised as: • Distant source; > 3 hours travel time to NZ from sources such as South America and, to a lesser extent, Cascadia (North America) and the Aleutian islands. • Regional source; 1-3 hours travel time to NZ from sources such as the Solomon Islands, New Hebrides and the Tonga-Kermadec trench. • Local Source, < 60 minutes travel time to the nearest NZ coast. Activity on the southern end of the Tonga-Kermadec trench can cause tsunami to reach the Northland coast within 1 hour. Other sources can include submarine landslides or a slump in the continental shelf north of Northland.
Hazard Likelihood **E (local)** **B (distant)**	Distant / Regional Source: There have been four events which have produced moderate sized tsunami along the Northland coast as documented by historical observation (1868 northern Chile earthquake magnitude 8.5, 1877 northern Chile/ southern Peru earthquake magnitude 8.3, 1883 Krakatau eruption and 1960 Chile earthquake magnitude 9.5). The 1960 event caused fluctuations up to 4.5m above sea level with damage confined to immediate coastal area. Local Source: Local tsunami may be large, and are likely to be the most destructive for Northland. However the likelihood of a major local event is low, as this type of event is expected to have a return period of 2,000 – 3,000 years.
Hazard Consequence **3/4 (local)**	Social: • Distant tsunamis should give sufficient warning to avoid loss of life or serious injury but there are likely to be displaced people in immediate coastal fringe. • A large locally generated tsunami could cause loss of life and serious injury.

10-15m inundation **2/3 (distant)** *4-5m inundation*	• Public health issues with water and food supplies are contaminated by salt water and effluent. Built: • Destruction of coastal property, infrastructure and other structures (the refinery and key electricity substations supplying the region are at risk). • Erosion and inundation of coastal areas. Economic • Economic loss in affected areas. • Cost of restoration. • Following a large event there may be a problem repopulating some coastal areas. either through fear or imposed restrictions that could threaten recovery and the viability of an area. Environmental: • Loss of coastal land, beaches, sand dunes, coastal lagoons and wetlands. • Large-scale alteration of salinity and pH levels in such environments. • Deposition of sediment and debris over wide areas of coastal land. • Dispersal of effluent, chemicals and rubbish. • Potentially long-term or permanent effects on the coastal environment.
How do we manage this risk?	• Warning systems, tsunami evacuation mapping and sirens to assist with evacuation at risk populations prior to the arrival of a tsunami. • Community response plans being developed in high-risk areas. • NIWA have undertaken modelling for tsunami hazard for 13 coastal areas and 30 coastal settlements based on earthquakes on the South American coast and the Tonga-Kermadec trench. This modelling calculates wave arrival times and wave heights at the Northland coast.
What more should we be doing?	• Community response plans in all coastal areas. • Public Information including evacuation signage, community tsunami signage and increased community awareness of the impacts of the hazards and the risk. • Improved planning in respect of intensification of development in at risk areas, and vertical evacuation facilities.
What is the future risk?	• The risk of tsunami will be increased by the predicted sea-level rise (climate change), increasing the probability of exposure. • Increasing coastal development will increase community exposure.

Volcano

Overview	Most of New Zealand's volcanic activity is associated with the subduction of the Pacific Plate under the Australian Plate which produces many small volcanoes (0.1-1.0km3), which erupt only once, every hundreds to thousands of years apart. Although there are no currently active volcanoes in Northland, there has been volcanic activity in Northlands geological past with the most recent being at the Puhipuhi-Whangarei and Kaihohe-Bay of Islands volcanic fields. Northland could be affected by either local or distant volcanic activity: 1. Local activity is most likely to occur within the Kaikohe-Bay of Islands volcanic field, causing ejection of basalt scoria, lava flows, acid rain, gas emission, volcanic seismicity and lightning strikes.

	2. A volcanic eruption outside the region causing ashfall in Northland and potentially an indirect effect on the region if evacuees need to be accommodated. An Auckland volcano may also have other impacts such as disruption to electricity and fuel distribution in Northland.
Hazard Likelihood (E)	Determining recurrence intervals for renewed volcanic activity from the local fields is difficult. A local Bay of Islands eruption recurrence interval is expected to be >1000 years and Whangarei much less frequent (the most recent Whangarei eruption was estimated at over 250,000 years ago). The more likely event is ash from a central North Island eruption, potentially every 50-300 years. Ash volumes will depend on eruption size, duration and wind directions. A large scale eruption from Lake Taupo would have national consequences.
Hazard Consequence (3/4)	Social • Local eruption could cause loss of life/injury and displacement for prolonged periods. • Ash cover may damage infrastructure and cause road and airport closures. Transport route closures in a volcanic event may result in social impacts. Health impacts particularly for at-risk (elderly, asthmatic, etc). Built and Economic • Local eruption: Devastation of any buildings or infrastructure within a 1-3 km radius, or within 10km if in the path of lava flow. Volcanic activity in the higher developed tourist areas of the Bay of Islands would have a significant and long term impact on tourism in the area. • Distant eruptions can impact Northland with ash cover causing widespread loss of services and disruption to most commercial and farming activities. Road and air travel can be impacted, disrupting supply chains, and ash can also cause electrical tripping and water supply contamination. Environmental: • In a local eruption, a permanent alteration of the landscape may result. Ash may alter the chemistry of soils and water, having a long term effect on habitats.
How do we manage this risk?	• Most events have precursor activity (e.g. seismicity; ground deformation), however there is no warning system in place for local volcanism in Northland. • Generally low awareness of how to respond as not perceived as a high threat in Northland.
What more should we be doing?	• Determine the frequency of distal ash (e.g. from TVZ; Taranaki) and its impacts.Improve the age/dating of Northland volcanic fields. Uncertainty in this area makes recurrence intervals difficult to estimate and contentious. • Assess the extent/impact of explosive volcanism in Northland. • Develop civil defence response options to major events • Consideration of risk should be made prior to any intensification of land use zoning in potentially affected areas. • Raise awareness of potential risk and response actions.
What is the future risk?	• No known effects that might cause change, other than general increase in community size.

Earthquake

Overview	Earthquakes are described by both their magnitude and their intensity: • Earthquake magnitude is a measure of the energy released during an earthquake, or its 'size' and is measured using the Richter scale. • Earthquake intensity describes how much ground shaking occurred at a particular location; in NZ measured by the Modified Mercalli (MM) intensity scale which is a descriptive scale from 1 to 12 based on the effects of the earthquake on the ground, humans, objects of nature and man-made structures. As well as ground-shaking, earthquakes can result in fault rupture, liquefaction, landslides and tsunamis. Northland (along with South Otago) has the lowest earthquake risk in NZ – earthquakes are generally small in magnitude and are seldom felt. There have been 8 earthquakes felt in Northland with a magnitude greater than 3.5 since 1960 (the largest at 4.9), illustrated in Figure 21 on the following page. The most recent earthquake activity in Northland was measured near Tokau Bay in September 2006 with the largest of the small swarm of earthquakes measuring 3.4 in magnitude and felt by residents in Kerikeri and Russell. No damage was reported.
Hazard Likelihood (E)	Mean return period of 7000 years for MM VII.
Hazard Consequence (2)	For a MM VII earthquake (difficulty standing). Social: • Loose items in homes, work places and shops will cause most casualties. Earthquake induced landslides could isolate some communities. Built-Economic: • An MM VII event will cause furniture to move and some damage to tiles, water tanks, walls and some older buildings. Older buildings and infrastructure and those on poorly consolidated materials could experience a greater degree of damage. Likely to be some disruption to utility services. Natural Environment: • Large earthquakes have the potential to permanently alter the landscape: surface ruptures, landslides, etc) but unlikely in Northland. • Large earthquakes off-shore may generate tsunami. See preceding section.
How do we manage this risk?	• A national reporting system helps identify likely impact areas and response is covered by Civil Defence plans and procedures. • Land use planning to manage building in areas of liquefaction. • Building codes are enforced for all modern buildings.
What more should we be doing?	• Seismic microzoning would characterise the probable shaking response of materials such as those found in the Whangarei area. However given the return periods for significant shaking, this work would be a low priority.
What is the future risk?	• No known effects that might cause change, other than general increase in community size.

Figure 22: Historical Earthquake Locations

Rural Fire (Wildfires)

Overview	Rural fires are typically started by people either deliberately or unintentionally, such as by land clearing burn-off which gets out of control or open-fire cooking at camp sites. Fire is of higher risk in dry-condition summer months when there are also more people visiting the region and using traditional cooking methods such as hangi or open-fire barbeques. Some areas of Northland are more susceptible to rural fires because of low rainfall and an abundance of combustible vegetation. These areas include but are not limited to areas around Aupouri, Rangiputa, Ahipara and Poutu Peninsulas and coastal areas from Doubtless Bay to Mangawhai. The Department of Conservation had a large fire in its west coast native block at Waipaoua forest which started on the 1st Feb 2007, possibly from an open fire BBQ on the beach. It burnt approximately 223 hectares of mainly Crown and conservation forest land until it was officially declared over on 15 March 2007. Its cost DOC $760,000 to put out and used 2609 man hours.
Hazard Likelihood (C)	Very difficult to make an assessment. Even analysis of historical data is problematic as the factors affecting fire probability (such as land use) have changed over time.
Hazard Consequence (2)	Social: • Distress due to displacement and loss of possessions may be encountered in both rural and urban events. Toxic fumes and smoke plumes have the potential to cause respiratory problems. There should be sufficient warning to evacuate to avoid loss of life and injury. • The impact is likely to be worse in a scenario where the bush fire is in an area near developed townships (for example, bush behind coastal towns). Built-Economic: • Destruction of large commercial forestry blocks and rural residential developments. Farmland and horticultural activities could also be affected. • Tourism impacts if tourist areas affected. Environmental: • Large areas can be affected in rural fires, with bush and pastures destroyed. Habitats are affected and the incidence of air pollution increases. However, these effects are largely short to medium term.
How do we manage this risk?	• Fire risk signs and fire restrictions are used around Northland. • Fire breaks. • Regulations over water storage for fire fighting. • The Fire Service, Accident Compensation Corporation and the Ministry of Education are working in partnership and have introduced a number of fire safety initiatives targeting at risk communities (Maori and the elderly) in Northland.
What more should we be doing?	• Wild Fire Risk Analysis. • Improve 'defensible space' areas around houses, through public education/awareness and improved planning/consenting consideration to wildfire threat. • Land use planning, including the assessment of evacuation routes for new subdivisions.
What is the future risk?	• The effect of climate change with more frequent and more intense droughts is likely to increase the possibility and severity of fire in rural areas. • Increased human risk from rural fires due to residential development in fire prone areas.

Droughts

Overview	A drought can be defined as an: • 'agricultural drought' where there is soil moisture deficit which impacts on agricultural and horticultural industries, and/or • 'water supply' drought which results in a water supply shortage. Dry periods in Northland normally occur for 3-4 months from November/December to March/April and are influenced by El Nino cycles and the Interdecadal Pacific Oscillation (IPO). Northland experiences two types of drought, regional and localised drought, with droughts tending to be more severe at east coast locations and in sheltered inland areas. Northland has experienced a number of droughts in the last 100 years each with very different spatial and temporal characteristics with the worst drought being recorded in 1914-15 and the second most severe drought in 1982-1983. The drought in 1982 was assessed as 1:40 years and resulted in water restrictions in Whangarei, severe pasture damage and loss of dairy productivity.
Hazard Likelihood (B/C)	Northland experiences a minor regional drought on average once every three years at east coastal and inland locations and once every four years at west coastal and high altitude locations. Droughts can be forecast against the IPO and the El Nino-Southern Oscillation (ENSO) cycles.
Hazard Consequence (2)	Social: • Inadequate water supply is unlikely to result in loss of life directly, although health problems could result. Families in rural communities may need to buy in water to top up tanks. Communities on town supplies may have to ration water. Built-Economic: • Drought has the potential for large farming and crop losses in the district. Financial hardship for farmers required to reduce stock numbers, move stock to non-drought affected areas, buy in stock feed and water, or who face large crop losses. Back-to-back drought events may result in the abandonment of traditional agricultural activities that may no longer be sustainable in the region. • The worst case scenario would be failure of water supply to the Refinery (which cannot operate without mains water supply) but this is very unlikely. Natural: • Lower river levels can pose a hazard to river biota, increase chances of algal blooms, and increase the chance of toxic contamination due to the lack of dilution of pollutants. Low soil moisture can slow growth of crops and fruit.
How do we manage this risk?	• Planning of water storage (both rural and town supply). • Strategic water management study including assessing the demand for irrigation water around Northland, which is likely to highlight the areas which are most impacted by drought. • Development of a Rural Support Trust to specifically provide for the response and recovery activities in the rural sector. • Farm management practices.
What more should we be doing?	• Study of climate change effects would be useful for long-term water supply planning. • Identification of water storage sites and designation of these sites to reserve their intended future use.
What is the future risk?	• Climate change may exacerbate periods of drought.

Infrastructure Failure

Overview	The Northland Lifelines Group has carried a significant amount of work to improve the understanding of the likelihood of various types of infrastructure failure. Many of the potential causes of failure are natural hazards and in these cases the consequences of infrastructure failure are incorporated into those respective hazard assessments. However there is also the risk of some type of internal system failure, such as technology failure, fire at a critical facility, human operational error, etc. It is this type of internally-generated failure that is being assessed in this section. The electricity and fuel sectors are most vulnerable to single points of failure that could potentially affect the whole region. By contrast, the water supply networks are more dispersed and internal system failures are likely to have only localised impacts on individual town water supply systems.
Hazard Likelihood **Fuel/Electricty (B/C).** **Telecomms (C)**	Failures are likely to occur to significant parts of the infrastructure quite frequently, perhaps as often as once a year. However most can be restored quite quickly or there is redundancy in supply networks that enables services to continue. The type of catastrophic failure that are being assessed in this section – ie a prolonged, regional outage, is unlikely, but there is little hard data available to make an accurate assessment.
Hazard Consequence **(3)**	The most significant consequence arises from electricity, fuel and telecommunications failure as these will have a knock-on effect on most other lifeline utility services. Electricity: • Built: A prolonged outage would see severe disruption to water supply, fuel and telecommunications services. • Social: Worst-case scenario is a winter outage which may see a public health impact both in terms of lack of heating and lack of water supplies. • Economic: Severe disruption to all types of businesses that do not have standby generation. IT/Telecommunications Failure: • Built: Disruption to electricity, gas, air/sea transport, fuel, water supplies which rely on control systems. • Social: Inconvenience. Potential public health impact, particularly those in more remote areas who rely on telecommunications to seek help in emergencies. • Economic: Severe disruption to business, particularly commercial/retail. Fuel failure: • Built: Will impact on all other utility's ability to respond to network outages. • Social: Inconvenience. Disruption to emergency services response capability. • Economic: Severe disruption to business, particularly transportation sectors and those with perishable goods that require transport.
How do we manage this risk?	Generally there are procedures in place to ensure that lifeline utility and emergency service agencies have priority if one utility network fails (for example, the draft national fuel plan requires the fuel sector to give priority to 'CDEM-critical' customers and electricity companies have load shedding arrangements that minimise impacts on key agencies).
What more should	Ongoing Northland Lifelines Group work to improve the understanding of risks posed by

we be doing?	hazards to the region's infrastructure, and what can be done to mitigate that risk.
What is the future risk?	• Society is likely to becoming increasing dependant on technology and utilities. • Some sectors are increasing resilience in the networks – for example a major electricity transmission upgrade through Auckland will reduce the risk of region-wide outages in Northland (though it will not eliminate the risk). • Sea level rise would impact on transportation networks and utilities sited in low lying coastal areas.

Hazardous substance Spill

Overview	Many hazardous substances are stored, transported and to a lesser extent manufactured in Northland. This creates the potential for an unplanned or uncontrolled release of a hazardous substance resulting in large explosions or toxic gas plumes. In Northland there are three to four minor hazardous substance incidents a month usually related to fuel spills from vehicles and vessels. In recent years there have been more incidents related to the manufacture of methamphetamine in homes across Northland. Most incidents are dealt with by the Fire Service and Regional Council staff. Of potential relevance to CDEM would be a major hazardous substance release. The Marsden Refinery stores, refines and transports New Zealand's largest volumes of hazardous chemicals. A major marine oil spill is another potential incident.
Hazard Likelihood (D)	Very little data to make an assessment.
Hazard Consequence (2)	Social: • Depends on the individual substance and incident but could involve loss of life and injuries as a result of explosions, inhalation of toxic fumes, consumption of, or contact with poisons. Rapid evacuation of potentially affected areas may be necessary, potentially causing panic and distress. Built-Economic: • Short-term interruption to social, economic, emergency service activities due to compromised access to, and use of areas and facilities. Natural Environment: • Contamination of structures, soils, water (surface and ground), air (local or more widespread).
How do we manage this risk?	• Management of hazardous substances includes environmental and hazard audits. • Department of labour is responsible for the enforcement of the HSNO Act. • A Hazardous Substances Coordinating Committee exists.
What more should we be doing?	• There is information about the location of hazardous substance in Northland but the lists are incomplete and not consolidated for the region or mapped. • The Environmental Risk Management Authority has plans to develop an online database of hazardous substance locations across New Zealand.
What is the future risk?	• With the increase in the transportation of bulk fuel, the likelihood of a large incident will increase. The increased use of roads to transport substances will likely increase the exposure of communities along those roads to risks of an emergency event.

Major transport accident

Overview	Most transport accidents can be routinely dealt with by emergency services. The types of event requiring CDEM involvement could possibly be a major marine incident involving a cruise ship. There are a large number of tourist ships through the Bay of Islands area as well as car ferries, oil tankers, etc. Northlands rocky coastline, windy and changeable weather and narrow, hazardous harbour entrances make it a marine navigation challenge.
Hazard Likelihood (D)	Very little data to make an assessment.
Hazard Consequence (2)	**Social:** Potential fatalities/injuries. Displaced tourists requiring welfare support. Distress. **Economic:** Possible impact on tourism if high profile event, however the cruise company is more likely to be seen as the source of risk rather than the region. **Natural Environment:** Possible hazardous substance release (fuel spill from ship).
How do we manage this risk?	• Generally dealt with by emergency services and coastguard/marine rules.
What more should we be doing?	• No action recommended.
What is the future risk?	• Likely to be increasing risks as tourist numbers and visiting cruise ships increase.

Criminal Act/terrorism

Overview	There has been increased focus on terrorism since the September 11th attacks on the United States and bombings in locations such as Bali and London. The most significant act of terrorism in New Zealand was the bombing of the Rainbow Warrior in 1985. In Northland, the most significant act of terrorism would be an attack on a key infrastructure asset such as the Marsden Refinery. However a more probable event is a mass shooting at a key community facility (school/tech institute/hospital).
Hazard Likelihood (C)	Very little data to make an assessment.
Hazard Consequence (2)	Fatalities/injuries. Community distress. Also refer Infrastructure Failure - potential widespread loss of electricity or fuel if these were the targets.
How do we manage this risk?	• Not a current CDEM focus. Individual key sites such as the Refinery and key agencies such as the police have plans in place.
What more should	• No further action recommended.

we be doing?	
What is the future risk?	• Will depend on political climate nationally and internationally.

Human disease

Overview	Infectious disease pandemics are characterised by the global spread of a new type of virus that can cause unusually high rates of illness and mortality for an extended period of time. The 2009 influenza A (H1N1) demonstrated how quickly modern transportation can facilitate the spread of a disease. Pandemics have the potential to manifest as a loss of human capability. They affect the ability of society and the economy to function normally, and can indirectly lead to a subsequent deterioration of infrastructure services. The impacts would occur at a local, regional, national and international level with assistance unlikely to be available outside affected areas. An epidemic has the ability to severely affect one or more region but would possibly not require a whole of government response but could require the assistance of the CDEM Group. Some diseases, other than influenza which would require a whole of government response include zoonotic diseases (those that are transmissible from animals to humans) such as BSE (mad cow disease) and rabies.
Hazard Likelihood (B)	Not known, but a pandemic of the scale described below is rated as 'likely'.
Hazard Consequence (3)	**Social:** Large scale illness and fatalities. Pandemic model used as basis for this risk assessment is 40% ill over 8 weeks with 2% of those illnesses fatal. A second wave will have further impacts. **Economic:** Major economic disruption to all sectors due to loss of staff. **Built:** Some diisruption may occur to infrastructure services – limited staff to respond to outages and operate critical facilities such as the Refinery.
How do we manage this risk?	Risk of human epidemic is primarily managed by the Ministry of Health. In response to the 2009 influenza A (H1N1) influenza the Group revised its Pandemic Plan to ensure it captured the research, planning and preparation undertaken in the Health sector which is based on the World Health Organisation (WHO) guidelines and previous pandemic experiences in New Zealand.
What more should we be doing?	• Continued public education programmes
What is the future risk?	• Increasing globalisation and travel likely to increase risks of global pandemic spread.

Animal / Plant disease and Pests

Overview	Animal and plant diseases and pests pose a number of threats to New Zealand as they can lead to a reduction in primary economic productivity, an increase in pest control cost and exposure for animal handlers. Northland is particularly vulnerable because of its dependence on agriculture. **Animal diseases** include foot-and-mouth disease (FMD), bovine encephalitis and other encephalopathies such as scarpie in sheep. An outbreak of any of these diseases would require a whole of government response supported by CDEM Groups. Examples of introduced **plant and insect diseases and pests** affecting Northland are: • Tropical grass webworm, found in the Far North, which can devastate pastoral land • Guava moth which infests a wide variety of fruit all year round • Argentine ants, found in most locations around Northland, can form super-colonies of immense size and threaten the region's environment, economy and lifestyle. • Kauri dieback threatens a major Kiwi icon. • The tomato psyllid is a major threat to tomato and potato growers. Aquatic pests are a threat to Northlands aquaculture industry and to Northlands waterways. Aquatic pests and diseases are very difficult to treat or eradicate as they are usually widespread before they are detected. Some aquatic pests affecting Northland are: • The Asian Paddle Crab has the potential to compete with native crabs for space and food, including the commercially fished native paddle crab, and transmit disease. • The marine sea squirt *Styela Clava* detected in three harbours could impact aquaculture through fouling behaviour and can also cause asthmatic conditions in oyster workers exposed to Styela when shucking oysters.
Hazard Likelihood (C)	Very little data to make an assessment.
Hazard Consequence (2)	**Social:** Social disruption ("panic"/media role). Risk communication issues also over the method of eradication (e.g. aerial spray of insecticides). **Economic:** Export markets closed. Increase in unemployment. If total eradication of the pest can't be achieved then some sectors may never recover. Loss of rural community fabric due to devastation of rural economy. **Built:** Demands on water for decontamination and cleaning; demands on municipal landfill or for mass burial sites for disposal of carcasses. **Natural Environment:** Environmental and cultural damage.
How do we manage this risk?	Risk is managed by the Ministry of Agriculture and Forestry through import health standards and stringent border control. Risk assessments are reviewed with other central government biosecurity agencies including the Ministry of Health, Department of Conservation and Ministry for the Environment.
What more should we be doing?	There is limited integration with other agencies. One improvement could be for Northland to join the national biosecurity strategy.
What is the future risk?	If temperature rises another 5 degrees then the salt marsh mosquito in the far north will be able to infect the population with malaria (huge implications for tourism).