Health Emergency Plan
2014 – 2017
TABLE OF CONTENTS

INTRODUCTION ..........................................................................................................................2
   This Document .......................................................................................................................2
   Rationale ...............................................................................................................................2
   Definition ..............................................................................................................................3
   Purpose .................................................................................................................................3
   Structure of the Document ..................................................................................................3
   National Health Emergency Plan – Relationships .................................................................4
   Reference Documents and Legislative Requirements ..........................................................4
   Scope ...................................................................................................................................5
   Key Objectives ......................................................................................................................5
   Civil Defence Emergency Management Framework ............................................................5
   Leading the Response to a Health Emergency .....................................................................6
   Population Characteristics .................................................................................................7

REDUCTION ..............................................................................................................................9
   Key Stakeholders ..................................................................................................................9
   Health Coordinating Executive Group (Health CEG) ...........................................................10
   Primary Health Organisations (PHOs) ..................................................................................11
   Wider Auckland DHB Funded Services ...............................................................................12

READINESS ............................................................................................................................14
   Comprehensive Risk Assessment .........................................................................................14
   Health Emergencies ............................................................................................................16
   Major Incident Plan (MIP) & Emergency Preparedness and Response Manual (EPARM) ....16
   Capability and Capacity .......................................................................................................17
   Auckland DHB Participation in the CDEM National Exercise Programme .......................17
   Training .................................................................................................................................18
   Exercises ...............................................................................................................................18
   Coordinated Incident Management System (CIMS) ............................................................19
   Auckland DHB Emergency Operations Centre (EOC) .........................................................20

RESPONSE ..............................................................................................................................22
   Response – Planning for Recovery .......................................................................................22
   Major Incident – alignment with HEP ..................................................................................22
   Threshold for Response ........................................................................................................22
   Northern Region Response ..................................................................................................23
   Communications ..................................................................................................................24
   Single Point of Contact ........................................................................................................24
   Health Sector Emergency Communications Structure .......................................................25
   Health Emergency Management Information System (EMIS) ..............................................25
   HEP Response in the Northern Region ................................................................................25
   Auckland DHB HEP ..............................................................................................................25
   Auckland DHB Response .....................................................................................................25
   Northern Health Region Emergency Management Structure .............................................26
   Activating the Northern Region HEP ..................................................................................26
   Resources .............................................................................................................................26
   Health-related Roles and Resources ...................................................................................27
   Standing-down the response ...............................................................................................27
RECOVERY ................................................................. 29
Auckland DHB – A Whole Systems Approach ................................................................. 29
Psychosocial Recovery .................................................................................. 30
APPENDICES ................................................................................. 32
Glossary .......................................................................................... 32
Reference Documents ........................................................................... 34
Auckland Hazard Register including Implications for the Health Sector .................. 35

List of Tables
Table 1: High and very high hazard priority risk rating analysis as determined by assessing residual risk ................................................. 14
Table 2: Health Sector Alert Codes .............................................................................. 24

List of Figures
Figure 1: The relationship between Auckland DHB plans and their management levels ................................................................. 2
Figure 2: 4R’s Cycle of Comprehensive Emergency Management .................................................................................................. 3
Figure 3: Diagram showing the relationship between the Plan and Regional and National HEPs ............................................................. 4
Figure 4: MCDEM – Lead Agency ............................................................................. 6
Figure 5: Ministry of Health – Lead Agency ................................................................. 7
Figure 6: The four Primary Health Organisations in Auckland DHB’s locale ................................................................. 11
Figure 7: AS/NZS ISO 3100:2009: Risk Management Process, HEP Plan Development for Auckland DHB. ............................................. 15
Figure 8: CIMS Structure adopted within Auckland DHB CIMS Training .................................................................................. 20
Figure 9: Layout of Auckland DHB Emergency Operations Centre (EOC) .................................................................................. 20
Figure 10: Examples of Activation Thresholds ................................................................................................. 23
Figure 11: Northern Health Region Emergency Management Structure .................................................................................. 26
Figure 12: An integrated whole systems approach to recovery ............................................................................. 29

DOCUMENT HISTORY

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<th>DATE</th>
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<td>First edition</td>
<td>D. E. Ellis</td>
<td>July 2008</td>
</tr>
<tr>
<td>1.1</td>
<td>Internal review pre Rugby World Cup</td>
<td>D. E. Ellis</td>
<td>July 2011</td>
</tr>
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<td>2</td>
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Emergencies can happen anywhere and at any time. They can be caused by severe weather, infectious diseases and industrial accidents or by intentional acts. The very nature of an emergency is unpredictable and can change in scope and impact. When an emergency happens it can threaten public safety, the environment, the economy, critical infrastructure and the health of the public\(^1\).

Emergency preparedness is progressive, continuously moving the public and agencies toward greater resilience. This ongoing process involves careful planning, designing of response actions, testing and evaluating the processes and updating plans. For the health sector, careful planning is critical to protecting the public and healthcare providers and safe-guarding the public’s investment in the healthcare system.

### This Document

The Auckland District Health Board (Auckland DHB) Health Emergency Plan (HEP) (the Plan) is a strategic document that establishes the link with specific national, regional and local Health Emergency Plans and procedures.

The term ‘Health Emergency Plan’ supersedes the earlier term, and embraces the ‘plan for significant incidents and emergencies’ referred to in paragraph 30 (s1) of the National Civil Defence Emergency Management Plan Order (2005).

Major issues are covered for essential primary, secondary, tertiary, mental health, disability support and public health services.

A Glossary of Terms is on page 31.

The Plan provides the strategic link to the tactical level Auckland DHB Major Incident Plan (MIP) and the operational level Auckland DHB Emergency Preparedness and Response Manual (EPARM) to provide a coordinated response across levels within Auckland DHB; the relationship between these plans is shown at Figure 1.

### Rationale

Auckland DHB’s HEP has been developed as a requirement of the Ministry of Health (MOH) Operational Policy Framework (OPF) for District Health Boards 2013-2014. The OPF is one of a group of documents, collectively known as the ‘Policy Component of the District Health Board Planning Package’, that sets out the accountabilities of District Health Boards (DHBs).

Under the National Civil Defence Emergency Management Plan Order (2005) (National CDEM Plan) and the Crown Funding Agreement, all DHBs and their respective Public Health Units (PHUs) are tasked with developing their own emergency response plans. These plans apply the structures and processes identified in the National Health Emergency Plan (NHEP) by district and region.

DHBs are required by the National CDEM Plan to develop and maintain plans for significant incidents and emergencies. These plans are required to identify how services will be delivered in a civil defence or related emergency and acknowledge the role of DHBs as both funders and providers of health services. The National CDEM Plan requires DHBs to provide adequately for public, primary, secondary, tertiary, mental and disability health services. DHB HEPs must include integrated and regional response arrangements; they are aligned with plans of other agencies, for example ambulance, fire, police, local authorities and Civil Defence Emergency Management Groups (CDEMGs). In their response to an emergency incident DHBs must use the Coordinated Incident Management System (CIMS), which forms the basis of operational response in New Zealand.

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\(^1\) National Health Emergency Plan (2008)
Definition

Emergencies occur continually in health and the health and emergency services respond accordingly. The criteria used for activating a health emergency plan is when usual resources are overwhelmed or have the potential to be overwhelmed.

The concept of being overwhelmed will be used throughout the Plan without a detailed definition to allow flexibility in the assessment of a pending, developing or current emergency on an hour by hour or day by day basis (use of the term emergency is based upon Civil Defence Emergency Management Act (CDEM Act) definition, 2002, Pt1, s4).

A health emergency plan may be activated at the local, regional or national level when the incident controller, regional or national coordinator believes that a situation exists that is, or has the potential to overwhelm the resources available to respond to the emergency.

The term hazard refers to the CDEM Act (2002) definition: hazard – something that may cause, or contribute substantially to the cause of, an emergency (see above for reference).

Purpose

The purpose of the Plan is to illustrate the emergency management arrangements in place at national, regional and local levels to maintain a resilient and sustainable health sector during any potential or significant health or civil emergency.

The Plan has been developed as a requirement of the National Civil Defence Emergency management Plan Order (2005) and describes the consistent approach to coordination, cooperation and communication across the health sector when responding to an incident. Detail unique to a hazard, will be dealt with through specific plans and protocols which are referred to in the Plan. The Plan will incorporate generic Auckland DHB-wide information; it does not contain service specific plans but refers to them.

Structure of the Document

The document begins by describing the rationale and requirements for the Plan showing how the Plan is aligned with regional and national health emergency plans. The remainder of the document is devoted to describing how Auckland DHB is meeting these requirements through the four areas of emergency management which are reduction, readiness, response and recovery. These are commonly referred to as the 4R’s of comprehensive emergency management.

The 4 R’s of Comprehensive Emergency Management

The 4R’s are defined as:

Reduction – Identifying and analysing long-term risks to human life and property from natural or man-made hazards; taking steps to eliminate these risks where practicable and where not, reducing the likelihood and the magnitude of their impact.

Readiness – Developing operational systems and capabilities before an emergency happens. These include self-help and response programmes for the general public, as well as specific programmes for emergency services, utilities and other agencies.

Response – Actions taken immediately before, during or directly after an emergency, to save lives and property, prevent the spread of disease as well as help communities to recover.

Recovery – Activities beginning after initial impact has been stabilised in the Response phase, and extending until the community’s capacity for self-help has been restored.

Figure 2: 4R’s Cycle of Comprehensive Emergency Management

Greenlane Clinical Centre

Figure 3: Diagram showing the relationship between the Plan and Regional and National HEPs

Reference Documents and Legislative Requirements

The Plan meets the following requirements:

- The Health (Burial) Regulations 1946
- The Health Act 1956
- Health (Infectious and Notifiable Diseases) Regulations 1966
- Medicines Act 1981
- The Health (Quarantine) Regulations 1983
- The Public Health and Disability Act 2000
- The Civil Defence Emergency Management Act 2002
- The Health Practitioners Competence Assurance Act 2003
- The International Health Regulations 2005
- The Epidemic Preparedness Act 2006
- The Public Health Bill (proposed legislation)

Other documents:

- The ‘Health’ section of the National Civil Defence Emergency Management Plan Order (latest published version)
- The National Health Emergency Plan (NHEP)
- National Health Emergency Plan: Hazardous Substances Incident Hospital Guidelines, 2005
The Plan incorporates national and regional planning and information to ensure a consistent approach and to identify potential gaps in the planning; it encompasses all sectors across Auckland DHB including:

- Auckland DHB provider arm:
  - Auckland City Hospital
  - Ambulatory and Ophthalmic Services
  - Rehab Plus
  - Mental Health Services
- Auckland DHB community:
  - PHOs
  - NGOs
  - Rest homes
  - Private hospitals

The Plan emphasises the importance of an integrated effort – one of strategic alliances and partnerships, cooperation and working together to enable effective planning and response to all hazards that may result in an emergency requiring response by the health sector and provides for the coordination, direction and support of health-related community responses to a very large scale or extended emergency such as pandemic disease.

The Plan is version controlled through Auckland DHB’s Emergency Management Service.

**Key Objectives**

The National CDEM Plan requires DHBs to ensure that they are able to function to the fullest possible extent during and after an emergency by ensuring:

- The provision of continuity of care for existing patients, the management of increased demand for services, and assistance with the recovery of services; and
- Planning, that is integrated locally and regionally, and is aligned with the plans of the other emergency services and the regional group plan; and
- That planning and responses that are integrated with public health planning and responses.

The key objectives of this plan are to ensure that Auckland DHB has:

- An emergency management structure for the health sector that enables a consistent and effective response to emergencies at the local, regional and national level
- An emergency management structure that supports, to the greatest extent possible, the protection of the population at large, health service workers and health and disability service consumers
- Services that, as much as possible, meet the needs of patients/clients and their community during and after an emergency event, even when resources are limited
- Planning that adopts a hazardscape approach and considers all natural and man-made hazards and the risks they pose cumulatively. (*Hazardscape* – the natural process and events, and human actions that may cause harm or disruption to people’s lives and livelihoods, National CDEM Strategy, 2007)
- Plans by all health and disability providers for providing welfare to their own staff who are affected by the emergency, including those operating during it.

"Starship Hospital"

**Civil Defence Emergency Management Framework**

National Civil Defence Emergency Management (CDEM) planning in New Zealand is a requirement of the CDEM Act (2002).

The CDEM Act provides for (among other things):

- Planning for emergencies
• Declaration of a state of local or national emergency:
  - Local authority mayors (or delegated representatives) or the Civil Defence Minister can declare a state of local emergency
  - The Civil Defence Minister can declare a state of national emergency.

• Emergency powers that enable CDEMGs and CDEMG controllers to:
  - Close/restrict access to roads and public places
  - Provide rescue, first aid, food, shelter
  - Conserve essential supplies and regulate traffic
  - Dispose of dead persons and animals
  - Provide equipment
  - Enter into premises
  - Evacuate premises /places
  - Remove vehicles
  - Requisition equipment/materials/facilities and assistance.

National emergencies are managed by a lead agency, which may be assisted by support agencies. For a civil defence emergency the lead agency is the Ministry of Civil Defence & Emergency Management (MCDEM). MCDEM will use the arrangements in the National CDEM Plan to manage the adverse consequences of an event. For a civil defence emergency at the local level, the lead agency is a CDEMG.

A range of government agencies other than MCDEM may take the lead in an emergency. If MCDEM determined that an emergency was more appropriately managed by another government agency eg, the Ministry for Primary Industries (MPI) in the advent of a biological emergency, then it is likely that Government would ask MPI to become the lead agency and in these circumstances the MoH and DHBs would then assist the MPI. The lead agency is determined by Government. Determination occurs in discussion with MCDEM. When MCDEM is the lead agency all other government agencies, including Health, support MCDEM.

Figure 4 illustrates the national emergency management model used when MCDEM is the lead agency.

Leading the Response to a Health Emergency

If an emergency is primarily a health related emergency, for example a pandemic, then it is unlikely that MCDEM would coordinate the response. In this situation it is most likely that the Government would request that the MoH become the lead agency.

The Director-General of Health, on behalf of the Minister of Health, has overall responsibility for health and disability matters in all phases of emergency management. The role of the Ministry is to coordinate the operational emergency response. The MoH are responsible for initiating and coordinating any national emergency response from the health sector.

The structure used for when the MoH is the national lead agency at the operational level is outlined at Figure 5.
Population Characteristics

Auckland DHB’s population has over 468,000 people with a projected growth of 19% or more than 86,000 people by 2026.

Although Auckland DHB is the biggest DHB in New Zealand by turnover, population wise it is the fourth largest, covering the same boundaries and population as the old Auckland City Council. The formation of the Auckland Council in the 2010 local body elections allowed for a greater regional focus on health by creating the potential to link with local government on common priorities. Auckland City Hospital is New Zealand’s largest public hospital, with approximately one million patient contacts each year.

As well as providing health and disability support services for its area, Auckland DHB manages the flow of people into our area for treatment. Over half the work carried out in the provider arm (Auckland DHB hospital and related services) is for people living in other parts of New Zealand (most are from the other two DHBs in the Auckland city area). Long term health services planning at the national, regional and local level will make sure that there is a planned approach to population health need and especially the development and location of health services. This work is already underway for primary health care, as part of the locality planning for the Government strategy ‘Better, Sooner, More Convenient Primary Health Care.’

Auckland DHB provides services from its three facilities (Auckland City Hospital, Greenlane Clinical Centre and Buchanan Rehabilitation Centre) and community health services. A wide range of other health services are provided for the people of Auckland, most of which Auckland DHB has a direct funding and monitoring responsibility for.

Working collaboratively with others, both across the sector and with other health and social service providers is integral to the success of Auckland DHB in meeting the needs of its community in any emergency event.

Large population and high growth rates mean challenges to the preparedness for and response to emergencies.

Te Arataki “A Pathway Forward”, Te Toka Tumai Māori Health Action Plan

Auckland DHB is committed to Māori, Pacific, and new migrant health. The health needs of a changing community require working partnerships with agencies, organisations, iwi and community leaders, particularly in preparing for and responding to disasters and localised emergencies; this includes working partnerships both in the health and related sectors such as other emergency services and the Auckland CDEMG.

Entrance foyer at Auckland City Hospital

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3 Auckland DHB Board Annual Plan 2012-13
REDUCTION
REDUCTION

The principles of reduction are to identify and analyse risks that are significant because of their likelihood or consequences to human life and property from natural or man-made hazards. Having identified and analysed the risk, steps are then taken to eliminate these risks where practicable and where not, to reduce the likelihood and the magnitude of the impact.

Many events have the potential to become a health emergency. These may result in one or more providers being potentially or actually overwhelmed. Each emergency brings its own individual conditions. Emergency events can escalate to the point where they will impact on the health sector’s ability to provide health and disability services.

Key Stakeholders

The development, maintenance and exercising of the Plan ensures that essential primary, secondary, tertiary, mental health, disability support and public health services will continue to be delivered and prioritised during health emergencies, civil defence emergencies, large casualty-causing incidents, major weather events, or natural disasters. Major issues are covered; these are shown by reference to existing Auckland DHB plans and procedures. The Plan meets the relevant requirements outlined in paragraphs 28 to 32 of the National CDEM Plan. The Plan production process has shown that a key component of the Plan’s continued development is to ensure that it is aligned with the plans existing within and outside the health sector. Links to, and alignments with, Northern Region (Northland, Waitemata, Auckland, Counties Manukau) DHB/regional health plans and Auckland CDEMG Plans are shown.

Auckland Regional Public Health Service (ARPHS)

Relationships with the Auckland Regional Public Health Service (ARPHS) are well established. ARPHS have representation on the Northern Region Health Coordinating Executive Group (Health CEG) and its working sub-group. Ad-hoc meetings with the ARPHS Emergency Planners, ensures a consistent approach to emergency management issues and links to regional fora.

Northland DHB, Waitemata DHB, Counties Manukau DHB & St John

Auckland DHB’s Emergency Management Service (EMS) team has close day-to-day working relationships with its respective teams in the Northern Region DHBs and St John.

- Northland DHB – Health Emergency Planner
- Waitemata DHB – Waitemata Director of Nursing & Midwifery, Emergency Systems Planner
- Counties Manukau DHB – Emergency Response Coordinator
- St John – Emergency Planning Advisor.

The provision of a consistent approach to coordination, cooperation and communication across the Northern Region DHBs and St John is further enhanced through representation on the Health CEG (see page 10) and many strategic regional planning groups for example, the Auckland Region CDEMG CEG. In addition, St John regularly tests their system for alerting and notification of the Northern Region Health sector.

Auckland Council

Auckland Council came into being on 1 November 2010 with the disestablishment of the seven exiting city, district, and regional councils. It has 13 wards from Rodney in the north to Franklin in the south.

Auckland Region Civil Defence Emergency Management Group (CDEMG) & Coordinating Executive Group (CEG)

The Auckland CDEMG is a statutory committee of Council under Section 12 of the CDEM Act with overall responsibility for the provision of CDEM within Auckland. The CDEMG Group comprises of the Auckland Council working in partnership with a consortium of all agencies involved in delivering emergency management services. The CDEMG consists of emergency services, lifeline utilities, local and central government agencies and non-governmental organisations. Members work together to ensure that emergency management is well-planned and effective. Members have different levels of participation some being partners working closely and consistently with other members and others being stakeholders working together on an as required basis.

The CDEMG committee provides the political governance and has the overall legal responsibility for the provision of CDEM in the Auckland region. The CDEMG works in partnership with emergency services and other organisations to ensure the effective delivery of CDEM within its area. The functions of this committee are clearly laid out in Section 17 of the CDEM Act.
Supporting the CDEMG is the Coordinating Executive Group (CEG), a statutory group comprising senior representatives of the Auckland Council and Auckland CDEMG member organisations. It ensures a strategic overview of CDEM in Auckland and is able to commit the resources of the representative organisations to agreed projects and tasks. The CEG is responsible to the Auckland CDEMG. The Auckland region DHBs are represented on the CEG.

The functions of this committee are clearly laid out in Section 20 of the CDEM Act. The CEG has no prescribed operational role in CDEM.

A mandatory requirement of the CDEM Act (2002, s48) is that each regional CDEMG produce a group plan. The broad purpose of the CDEMG Plan is to enable the effective and efficient management of significant hazards and risks that may affect the Auckland. It provides for:

- Strengthening relationships between agencies involved in CDEM
- Cooperative planning and action between the various emergency management agencies and the community
- Commitment to deliver more effective civil defence emergency management through risk reduction, readiness, response and recovery.

The vision of the Auckland CDEM Group Plan 2011-2016 is ‘A resilient Auckland’ and serves to document hazards and risks, agreed actions and the principles of operation within which agencies involved in CDEM cooperate. Planning outcomes (such as agreed targets and actions or operational arrangements) are committed to by incorporating them within the existing processes of respective Group members.

Supporting the CDEMG Plan are functional and contingency plans; Auckland DHB continues to be part of the consultation process for this joint agency regional planning (via CEG representation).

Auckland DHB coordination and cooperation with the Auckland Region CDEMG was operationalised during the A(H1N1)pdm09 Pandemic Influenza outbreak. This event provided Auckland DHB an opportunity to look at its roles and responsibilities at all levels whilst activating planning arrangements embedded in its standard processes. It confirmed the connections between Auckland DHB and local, regional and national agencies (internal and external to health).

The Auckland CDEMGs jurisdiction matches three District Health Board (DHB) areas of responsibility. In order to maximise coordination within the Auckland CDEMG, the three DHBs have developed a Health Coordinating Executive Group (Health CEG) which allows them to work together on initiatives improving preparedness. The Health CEG is also the mechanism for operational coordination of the health sector during emergencies.

**Health Coordinating Executive Group (Health CEG)**

The Health CEG is responsible for coordinating emergency management planning activities across the Northern Region (as defined in the National Health Emergency Plan, 2008). The objective of this group is to:

Ensure the effective coordination of health sector emergency management reduction, readiness, response and recovery planning for the Northern Health Region.

The term Health CEG is used to parallel the functions of the regional health sector with that of the regional CDEMG CEG within the broader emergency management sector. The Health CEG is responsible to the DHB CEOs.

The Terms of Reference for the Health CEG mirrors those of the Auckland CDEMG and includes:

...identifying areas of health emergency management in the Northern Region in which planning coordination is necessary or desirable to optimise health sector reduction of, readiness for, response to and recovery from health emergencies.

The Health CEG is a strategic level group and provides a regional focus to emergency planning in the health sector.

Encompassing all health agencies within the Northern Region its membership consists of:
- Senior Manager from each DHB [4]
- District Health Board Emergency Managers [4]
- St John representative
- Auckland Regional Public Health Service (ARPHS) representative
- Northland Public Health representative
- Primary Health representative
- MoH representative
- Maori Health representative
- Pacific Health representative
- Ministry of Civil Defence Emergency Management (MCDEM) representative.
Health CEG Sub-Group

The HCEG has a permanently established Sub-Group group dedicated to the task of implementing the agreed HCEG work plan. Membership comprises:
- DHB Emergency Managers
- Auckland Regional Public Health Service (ARPHS) representative
- Ministry of Health representative
- Primary Health representative.
Reporting to the HCEG, the Sub-Group is resourced to complete the HCEG projects through collaborative working practices drawing on the expertise of Technical Advisors as required.

Primary Health Organisations (PHOs)

Primary care services reach people close to their homes and in the settings that work best for them. Primary health organisations (PHOs) are funded by district health boards to support the provision of essential primary health care services through general practices to those people who are enrolled with the PHO. PHOs are one vehicle through which the Government’s primary health care objectives articulated through ‘Better, Sooner, More Convenient Primary Health Care’ are implemented in local communities.

There are 141 general practices across Auckland DHB’s geographical area, these are spread over four PHO’s - ProCare, and Auckland PHO, the National Hauora Coalition and Alliance Health Plus (see Figure 6). ProCare has the role of lead PHO for Auckland DHB in terms of emergency response. They are equipped to run an Emergency Operations Centre from any one of their three sites and run a small Incident Management Team which would be augmented from other PHOs in the district.

General practices complete an online tool for emergency management as part of their Cornerstone quality accreditation process. As Auckland DHB moves towards locality planning in the primary sector, organisation of emergency management planning will follow at a locality and sub locality level.

Emergency management is a function that requires collaboration across many agencies including DHBs, PHOs, general practice teams and the MoH. Regional health emergency coordination issues are currently managed through the operation of the Health CEG, with a mandate from DHB CEOs. There is a great awareness that any sector response to emergencies that potentially affects hospital services must integrally link with primary care services. PHOs, community-based services and non government organisations are key players in helping Auckland DHB achieve Better, Sooner, More Convenient Primary Care for Auckland DHB’s population.

Figure 6: The four Primary Health Organisations in Auckland DHB’s locale
Wider Auckland DHB Funded Services

PHOs, community-based services and non government organisations are key players in helping Auckland DHB achieve the population health outcomes.

In relation to emergency management planning, the opportunities for engagement are continually being developed. A large amount of preparation and Pandemic Influenza planning was undertaken across the Planning and Funding provider arm; for example, service provider engagement in the development of hub and spoke communication links in the Mental Health and Health of Older People and Disability Support portfolios. This planning was tested during the A(H1N1)pdm09 pandemic in 2009 and in the 2011 measles outbreak. Such planning has not only strengthened Auckland DHB links to its service providers but has produced systems and procedures which can be used generically for an all hazards approach to emergency management. It is evident from this process that service providers are keen to continue engagement with Auckland DHB to further align their HEPs; subsequently participation in future exercises is to be encouraged across the sector.

Auckland City Hospital
READINESS

Readiness involves planning and developing operational arrangements before an emergency happens. It includes consideration of Response and Recovery. It involves the need to equip, train and exercise for all types of emergencies as identified in the risk analysis. All systems need to be developed, tested, and refined in readiness for an efficient and effective health sector response to a potential emergency.

This section addresses key considerations for planning such as human resource issues and volunteers.

Comprehensive Risk Assessment

The Plan provides for both immediate, short duration events and extended emergencies, on both small and large scales as relevant to Auckland DHB’s population. Auckland’s physical setting and large metropolitan area mean that it is exposed to a wide range of natural and technological (human made) hazards which directly or indirectly impact on the health sector. Many hazards originate from within the Auckland region, but there is also the potential for Auckland to be affected by hazards generated from outside the region. For example, ash from distant volcanic sources such as Mt Ruapehu or Mt Taranaki could have disruptive consequences for the Auckland region.

Risk results when hazards negatively interact, or have the potential to negatively interact, with communities. Risk is therefore the sum of a hazard and the elements of the community that are vulnerable to that hazard.

For example, an earthquake is a hazard but is only a risk if it affects people, buildings etc (vulnerable elements).

Risk can also be considered as the likelihood of harmful consequences arising from the interaction of hazards with the community and the environment.

Table 1 shows High and very high hazard priority risk rating analysis as determined by assessing residual risk. *Hazard priorities for the Auckland Region*, have been taken from the Auckland Region CDEMG Plan (2011). Specific threats not impacting on healthcare services or involving a health sector response have been omitted.

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Table 1: High and very high hazard priority risk rating analysis as determined by assessing residual risk.

The risks identified will have implications for the health sector. These may include the following:

- Stretched medical services
- Widespread social and psychological disruption and isolation
- Staff issues
- Strain on public health resources
- Reliance on primary care providers to undertake initial treatment and triage of injured or affected groups
- Requests made from the NGO sector for hospital staff assistance
- Medical supplies not readily available (demand exceeds supply).

Mass casualty events will require significant planning both locally and regionally.

These risks are generically addressed across the emergency management planning process at Auckland DHB and include actions to ensure a state of readiness for health emergencies. Taking a multi hazard approach which incorporates the Auckland Region CDEM risk register formed the basis for Auckland DHB’s risk analysis.

An all hazards risk matrix which is tailored to Auckland DHB aligns the Plan with the Auckland Region CDEM Plan (see page 35).

The Plan identifies a wide range of regional hazards that have the potential to affect healthcare services or involve a health sector response. The Australian New Zealand Risk Management Standard AS/NZS ISO 31000:2009 provides a framework for identifying, prioritising and treating risk. This process is shown in relation to the Plan at Figure 7.

![Figure 7: AS/NZS ISO 3100:2009: Risk Management Process, HEP Plan Development for Auckland DHB](image-url)
Safer Hospitals Project

In 2010 Auckland City Hospital was one of six hospitals which participated in the MoH Safe Hospital Evaluation Project to assess the Hospital Safety Index tool for New Zealand hospitals. Auckland DHB participation was facilitated by the EMS.

The index was developed by the Pan American Health Organisation (PAHO) and the World Health Organisation (WHO) to assess whether a hospital will remain safe and operational in emergency situations. It enables an assessment of:

- Location (geology, hydro-metrology, environment etc)
- Structural safety (history of buildings, construction of buildings etc)
- Non-structural safety (electrical, communications, water supply etc; and
- Functional (organisation and management)

The final rating for Auckland City Hospital placed it in the top category of the index, indicating that it is likely the hospital will function in a disaster. The project report recommended that the tool be implemented in all DHBs.

Health Emergencies

Health Emergencies will be addressed with the generic planning processes and linkages described in the Reduction section. Emergency activation procedures are contained in specific plans and procedures for example, those that are in place in respect of pandemic. The associated risks for Auckland DHB in respect of an all hazards approach will continue to be analysed and monitored and plans adapted where necessary as per the process for comprehensive risk assessment.

Plans are being implemented across Auckland DHB’s provider network to ensure the resilience of healthcare services in the event of a major incident. An illustration of this is the Auckland City Hospital Winter Plan (2013) (updated annually), although specifically designed to assist with the issues arising from the increase or decrease in patient levels and services which alter the configuration of beds; this plan can be used as generic tool to assist with any emergency.

Major incident management and mitigation measures are embedded within many procedures at Auckland DHB. These are integrated into daily work processes which can be utilised in an emergency and as such, staff are familiar with their operation for example, the CMS Hospital Integrated Patient System (acronym CHiPS) is an application currently used for patient registration and triage and has the ability to handle an unexpected surge of patients during a major crisis. Another illustration of this is the partial activation of the Emergency Operations Centre (EOC) during Strike Contingency Measures.

Civil Defence Emergencies, Large Casualty-Causing Incidents, Major Weather Events and Natural Disasters

The all hazard approach adopted by Auckland DHB (see Comprehensive Risk Assessment) links to the Auckland CDEMG Plan risk analysis, other alignments includes industrial actions and lifelines utilities failures via the Auckland Region CDEMG Lifeline Utilities Group. Procedures for responding to major weather events and natural disasters such as earthquakes and volcanic eruptions are documented in Auckland DHB’s EPARM.

Reprioritisation and rapid discharge procedures are in place and regularly tested by exercising and through actual events; for example, the Albany tornadoes of 2011 and 2012. Planning around large casualty-causing incidents is on-going as learning from emergency activations influences planning and enhances readiness. The Incident Management Team (IMT) is convened to the level of activity best suited to the nature of the incident examples from 2011 include: the Maui Gas pipeline outage and the Auckland Measles outbreak. Auckland DHB’s Adult Emergency Department manages a Mass Casualty Plan which has links to other Northern Region and St John. Auckland DHB’s Mass Casualty Plan was fully tested and audited during Exercise Eden (a Rugby World Cup mass casualty exercise) in December 2010.

The A(H1N1)pdm09 pandemic in 2009 tested how DHB funded ambulance, primary, secondary, tertiary, mental health, disability support and public health services are prioritised, structured and delivered during the response phase of an emergency. Learning from this event continues to guide planning across the region.

Major Incident Plan (MIP) & Emergency Preparedness and Response Manual (EPARM)

Auckland DHB is responsible for the health and well-being of its community. To achieve this aim, it must actively prepare for all events so that it can continue to deliver services to adequate standards within appropriate timeframes.

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Major Incident Plan (MIP)

The Major Incident Plan (MIP) provides a framework to assist Auckland DHB’s Incident Management Team (IMT) in its management, coordination and control of major incidents. The MIP provides the procedures to deal with major incidents and supplies the tactical link with the strategic level Auckland DHB HEP and the operational level Auckland DHB EPARM to provide a coordinated response across levels within Auckland DHB. Detail unique to a hazard, is dealt with through specific plans and protocols which are referred to.

The thresholds for activation/escalation will be determined by the level of impact (actual or potential) an emergency has on Auckland DHB’s ability to meet it’s obligations to the community, and the length of time the organisation must sustain that level of impact. The MIP’s flexibility allows for the level of implementation to vary according to the nature and needs of the incident. This is show in graph form at Figure 10 which shows activation/escalation thresholds.

The CDEM Act (2002) requires that DHBs prepare and maintain major incident plans that have a local and regional/national application. As a consequence, the MIP incorporates the principles of the Coordinated Incident Management System (CIMS) model adopted by the other emergency services and lifeline organisations (see page 19).

Emergency Preparedness and Response Manual (EPARM)

The Emergency Preparedness and Response Manual (EPARM) summarises emergency preparedness and response procedures for Auckland DHB. The EPARM is the operational component of the HEP. The aim of the EPARM is to provide general guidance for all staff to assist them in preparing for, and responding to, emergency situations. The EPARM is intended to be read in conjunction with the Emergency Response Flipchart and Unit Specific Emergency Plans. It provides guidance associated with the immediate response actions to an emergency situation.

The EPARM is divided into various parts which mirror the hazards identified in the process described in Figure 7; for example, earthquake, volcanic eruption, utility failure and bomb threat. It includes the roles and responsibilities of individuals or groups during these specific events.

Capability and Capacity

New Zealand’s overall capacity and capability is made up of combined national and local resources that, in some circumstances, may be augmented by international assistance. Central and local government both have roles in terms of providing capacity and capability. Certain situations are clearly the responsibility of central government – MoH, MCDEM; while others involve central government working with local government agencies - Northern Region DHBs, Auckland and Northland local authorities. The exact boundaries are a reflection of scale and scope and may develop over time. Central government has a significant role in providing resources to support CDEMGs in the management of emergencies.

Auckland DHB Participation in the CDEM National Exercise Programme

To monitor, assess and provide capacity and capability the national CDEM exercise programme provides a mechanism by which the operational capacity and capability of government agencies - including the health sector, lifeline utilities, Non Governmental Organisations (NGOs) and CDEMGs can be assessed. Other mechanisms such as debriefs and reviews also contribute to this understanding. Auckland DHB’s participation in the national exercise programme is described on page 18. When undertaking these exercises all participating agencies consider the following:

- What are the capacities and capabilities required and available to manage the event?
- How may the allocation of resources vary over different phases of the event?
- Can issues of capacity and capability be managed and communicated across all stakeholders?
- What risks or gaps exist concerning capacity or capability?

Core Performance Indicators

Participating in local, regional and national exercises helps Auckland DHB to ensure that it delivers on its commitments and is able to identify opportunities for improvement. Therefore, it is essential to monitor the performance of its emergency management procedures and key processes.

Core performance indicators for assessing capacity and capability are that:

- Effective communications are maintained at all times
- Emergency plans are maintained and exercised
- Work is prioritised effectively
- Response and recovery objectives are achieved without unexpected delay
- Logistics, transport, contract, and supply requirements are addressed
- Resources are used efficiently, and conflicts over deployment are avoided
- Gaps in capacity or capability are identified and resolved
- All functions are sufficiently resourced with appropriately trained staff
- There is clarity among agencies about roles, responsibilities or actions
- The testing and exercising of the plans and the implementation of lessons identified provides for continuous improvement.

A more in-depth presentation is given by the Emergency Management Service at monthly Clinical Mandatory Induction Days this lecture gives staff a comprehensive overview of the equipment, resources and procedures of emergency management in the organisation – evaluation feedback of this session shows that participants strongly identify that this subject is relevant to their roles.

All Auckland DHB staff must complete annual on-line EMS training and the use of the E-learning platform is being increased to deliver a range of EMS training programmes.

Training at local departmental level across Auckland DHB is well established for example, Operating Rooms, Anaesthesia and CSSD; and Emergency Departments regularly train, exercise and audit their response plans.

All members of Auckland DHB’s Incident Management Team (IMT) are trained to CIMS Level 4 with the Incident Controllers being trained to Incident Controller level. Information regarding Auckland DHB Coordinated Incident Management (CIMS) training is explained on page 19.

**Exercises**

Auckland DHB is committed to exercising its emergency preparedness and response procedures to the fullest extent possible at every available opportunity. On occasions the timing of exercises might not be ideally suited to link with routine work requirements of the DHB but participation in all exercises receives high priority. Emergency events can occur at any time without warning; therefore this is a realistic ethos for Auckland DHB to impart to its staff.

The extra workload that is integral to exercise participation has positive outcomes at an individual, team, organisational and inter-agency level.

Auckland DHB has fully participated in national-level (Tier 4) disaster preparedness exercises to test New Zealand’s all-of-nation arrangements for responding to a major disaster such as Exercise Ruamoko (2008), the largest Civil Defence exercise ever undertaken in New Zealand. Participation in Exercises Makgill (2006) and Cruickshank (2007) (all-of-government exercises) which were designed to test the New Zealand Influenza Pandemic Action Plan and led by the MoH and Pacific Wave (international Tsunami exercise) (2006/2011) provided a wealth of learning in respect of internal and inter-agency collaboration and cooperation. Implementation of exercises findings are and will be an integral and on-going part of the current and future EMS Department Business Plans.

The EMS conducts regular evaluations of Auckland DHB’s exercise programme to further develop and test all aspects of the Plan. Auckland DHB’s commitment to exercising the 4R’s will continue with the intention...
to exercise all or part of the plan at least annually for example, the 2011 Rugby World Cup identified the need for Auckland DHB to focus on the impacts of an incident involving large numbers of casualties.

To ensure Auckland DHB was ready to respond to a mass casualty incident the Emergency Management Service facilitated the review and revision of Auckland DHB’s Mass Casualty Management Plan and associated documents. The scope of the process included widespread work across service areas at an operational level to review Unit Specific Emergency Plans. To monitor, assess and provide capacity and capability information plans need to be exercised to validate their content for audit; this was facilitated by an operational/tactical level exercise (Exercise Eden) held in December 2010.


The MoH (Risk and Assurance) will be advised of the Plan section/s to be exercised, including the exercise dates and times, and any assistance for cooperation from the Ministry will be requested at this time. Consultation and full engagement with exercise programmes designed to further develop and test all aspects of regional and national planning will continue to be the priority for Auckland DHB.

Coordinated Incident Management System (CIMS)

The Coordinated Incident Management System (CIMS) structure is the model adopted in New Zealand for the coordination of an emergency; it forms the basis of operational response. All emergency services use a CIMS structure to staff their Emergency Operations Centres (EOCs).

The health and disability sector’s response during a national health-related emergency is based on the use of the CIMS structure. CIMS is consistent at all operational levels operating within the health and disability sector during an emergency. A nationally adopted tool, CIMS has been implemented by Auckland DHB. The CIMS structure adopted is illustrated in Figure 8. It is intended to provide a structure allowing the multiple agencies or units involved in an emergency to work together as a team.

The CIMS structure does not affect the normal day to day vertical operation of command within Auckland DHB and other health agencies. Normal clinical, managerial and other relationships are maintained within units and agencies involved in a response.

The Incident Management Team (IMT) uses the CIMS structure to manage an emergency response within Auckland DHB. Such a response may be required over an extended period of time and for 24 hours a day, seven days a week. To facilitate this each CIMS role within Auckland DHB has a minimum of three people allocated to it. Role and responsibility cards (task duties) for each CIMS team member are part of the MIP and copies of these are stored in the CIMS team equipment drawers in the EOC.

Recruitment of staff to increase the number of shifts available within the EOC is a continual, yet positive process for the EMS team. Once part of the IMT, staff are keen to remain part of it, generally only leaving the IMT when they leave Auckland DHB. An important feature of the IMT is that the Incident Controllers are General Managers and thus have direct line accountability which enables strategic decisions to be implemented without delay; this is a critical component of any emergency response.
The on-going training programmes that provide a pool of appropriately trained people with CIMS roles competencies are not restricted to members of the IMT. CIMS Level 4 Auckland DHB staff includes the Chief Medical Officer, Provider Arm Services Managers and Clinical Nurse Advisors.

### Auckland DHB Emergency Operations Centre (EOC)

Auckland DHB’s Emergency Operations Centre (EOC) is situated in the administration suite on Level 5 at Auckland City Hospital. Figure 9 shows the suggested locations of the CIMS teams. This facility is suitably equipped, has been well tested and is continually improved upon after each exercise and incident. These rooms are used daily for other purposes (dual usage) but are available immediately for activation. This facility was used extensively during the A(H1N1)pdm09 Pandemic Influenza outbreak when Auckland DHB’s EOC was located alongside the Northern Region health Coordination Centre (NRHCC) which was activated in support of the Northern Health Region response.

In the event that the EOC is compromised, an alternate EOC can be established at the Greenlane Clinical Centre site.

![Figure 8: CIMS Structure adopted within Auckland DHB CIMS Training](image)

![Figure 9: Layout of Auckland DHB Emergency Operations Centre (EOC)](image)
RESPONSE

Response involves those actions taken immediately before, during and after an emergency to save lives. It also involves helping communities to recover. It involves mobilising and deploying health resources immediately prior to, or during an emergency, in collaboration with other services and agencies, to ensure as far as practicable:

- The continuation of essential health services
- The relief and treatment of people injured or in distress as a result of the emergency
- The avoidance or reduction of ongoing public or personal health risks to all those affected by the event.

This section describes how essential primary, secondary, tertiary, mental health, disability support and public health services will be prioritised, structured and delivered during the response phase – it outlines how the Plan is utilised and the thresholds for activation/escalation; followed by the actions taken at local and regional levels.

Response – Planning for Recovery

Consideration of recovery spans all four phases of emergency planning. Recovery activities commence while response activities are still in progress. The priority actions for each are different; however, decisions made during the response phase will have a direct influence on recovery action planning.

Major Incident – alignment with HEP

Auckland DHB’s MIP defines a Major Incident as:

“Any actual or impending event, either internal or external, that may significantly impact and/or compromise Auckland DHB services and/or patient care.”

Examples of a major incident may include, but are not limited to the following:

- Major epidemic or pandemic
- An event involving mass casualties
- Terrorist threat (includes bomb threat requiring evacuation)
- Loss of essential services (includes communications failure or blackouts)
- Critical staff shortage (includes strikes)
- Reduced operational capability of a neighbouring DHB
- Natural disaster eg, volcanic eruption.

The MIP provides a framework to assist Auckland DHB’s Incident Management Team (IMT) in its management, coordination and control of major incidents. The MIP is used as a tool to assist the IMT in its assessment and management of an incident. For those Auckland DHB ‘hospital’ initiated events that have been escalated to MIP status, a formal hand-over of responsibility including debrief is to occur between the Duty Manager and designated Incident Controller. Some events will be initiated from ‘outside’ the hospital environment and may be managed, from the outset, by the designated Incident Controller. Notification is an essential element in the activation process and will depend on established channels of communication.

Any emergency incident or potential crisis that may overwhelm ‘normal’ resources is to be escalated by staff using the process described in the MIP. These processes should be conducted with reference to Auckland DHB’s HEP.

The capability and capacity issues described on page 17 will ascertain the extent to which an event is deemed an emergency; this will vary depending upon the nature of the event and the resources available at the time.

Threshold for Response

An event that requires the activation of a local, regional, or national response goes beyond the ‘normal’ day-to-day management of emergencies within the DHB. Such response measures include activation of IMTs and setting up of EOCs. These actions occur when usual resources are overwhelmed, or have the potential to be overwhelmed.

All service providers can activate a response. Auckland DHB can activate a response and initiate the Northern Region response (see Northern Region Response, p23), whilst the MoH can activate responses outlined in the NHEP. The MoH can also require DHBs to activate their local and regional plans once the NHEP has been activated.
**Figure 10: Examples of Activation Thresholds**

**Northern Region Response**

The Northern Region response can be activated by notification from:

- A DHB(s) and/or Public Health Unit (PHU) – when responding to an incident that requires regional assistance, management and coordination where their resources are overwhelmed; or have the potential to be overwhelmed.
- The MoH - when the NHEP is activated requiring DHBs to activate their HEP. This may be in response to a national incident or in support to another health region.
- The Ambulance Communications Centre - when an incident or potential incident requires or is likely to require a regionally coordinated response from DHBs and other service providers.

The first HCEG member receiving notification from the health sector or other source will communicate with HCEG members to alert them of the incident and the possibility of an escalation or immediate activation.

All HCEG members must be alerted to the agreed Tier of Activation.

Regional Technical Advisory Groups (TAGs) can be established as required to provide expertise. Once the NRHCC is activated (Tier 3), situation reports (SitReps) will be provided to the health sector and other relevant agencies. Once the incident is reported and personnel activated, HealthEMIS will be used to manage the incident. The nature of the incident will determine the tier of response.

Auckland DHB exercises its preparedness for the Rugby World Cup: Exercise Eden, December 2010.
Communications

Health Sector Alert Codes

The MoH has developed alert codes to provide a system of communication for an emergency that is easily recognised within the sector. These alert codes are issued via the Single Point of Contact (SPOC) system.

<table>
<thead>
<tr>
<th>Phase</th>
<th>Example Situation</th>
<th>Alert Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>Information</td>
<td>Confirmation of a potential emergency situation that may impact in and/or on New Zealand eg, a new infectious disease with pandemic potential, early warning of volcanic activity or other threat.</td>
<td>White</td>
</tr>
<tr>
<td>Standby</td>
<td>Warning of imminent Code Red alert eg, a possible emergency in New Zealand such as an imported case of a new and highly infectious disease in New Zealand without local transmission or initial reports of a major mass casualty event within one area of New Zealand which may require assistance from unaffected DHBs.</td>
<td>Yellow</td>
</tr>
<tr>
<td>Activation</td>
<td>A major emergency exists in New Zealand requiring immediate activation of HEPs eg, a large-scale epidemic or pandemic or major mass casualty event requiring assistance from outside the affected region.</td>
<td>Red</td>
</tr>
<tr>
<td>Stand down</td>
<td>Deactivation of the emergency response eg, end of outbreak, epidemic or emergency. Recovery activities will continue.</td>
<td>Green</td>
</tr>
</tbody>
</table>

Table 2: Health Sector Alert Codes

Single Point of Contact

The Single Point of Contact (SPOC) system is a communication method that is used to provide an effective 24 hour, seven days a week system. The SPOC system ensures effective communications between DHBs, their public health units and the MoH. In line with the requirements of the MoH NHEP, the nominated Auckland DHB SPOC for any national health-related emergency is the Auckland City Hospital Adult Services Duty Manager, which includes Emerging Infectious Disease (EID) alerts.

The primary response for the management of an emergency lies with the affected local provider, Auckland DHB, or the Northern Region Health CEG if the Regional HEP is activated. In addition, St John has the capability to alert and notify the Northern Region Health sector, this system is tested regularly.
Health Sector Emergency Communications Structure

In an emergency response a formal communication structure is required for use by key health agencies such as DHBs and ambulance with the MoH so that critical information is captured and acted on quickly and effectively. This structure includes the mechanisms to develop and disseminate critical information, both within the health sector and to other organisations involved in the response.

The key areas that require a formal structure include:

- Logging information and tracking tasks
- Requesting information or action and tracking response
- Developing and disseminating reports on the current situation (Situation Reports)
- Summarising and communicating key intelligence on the incident.

This structure provides a consistent and agreed formal communication system for critical information. It complements the informal communication mechanisms that are used in a response e.g., phone conversations, briefings. Critical information that results from informal communications must be formally logged using the agreed structure, to stop multiple lines of communication forming and to minimise the risk that information is not captured and acted on.

Health Emergency Management Information System (EMIS)

E-Sponder is a web based Emergency Management Information System (EMIS) hosted by the MoH and provided to the New Zealand health sector to manage local, regional and national emergencies. It is the primary tool for the management of significant incidents and emergencies at a local, regional and national level within the New Zealand health sector. EMIS complements existing business as usual systems (such as EpiSurv and patient management systems).

Whilst the focus is on the health sector, it is also intended to facilitate structured information sharing with local, regional and national partners. The system also provides electronic links between emergency websites.

Health EMIS provides each DHB, PHU and other key health responders (such as ambulance) with a logging and task tracking system, in order to manage their local response to an incident.

HEP Response in the Northern Region

Regional and National HEPs

The National CDEM Plan requires DHBs to develop and manage a plan for significant incidents and emergencies, which must ensure an integrated regional response. Auckland DHB will continue to liaise with the other DHBs in the Northern Region to ensure they can provide an integrated emergency response at the local level. In this way Auckland DHB works with the MoH, local authorities and other agencies to ensure plans are integrated at a local and regional DHB level.

Service Provider HEPs

A service provider can utilise their HEP when they believe they are overwhelmed or have the potential to be overwhelmed. When a service provider activates their HEP they shall communicate to Auckland DHB that they have taken this action unless it is a whole of area situation and all local service providers are simultaneously activating their HEPs. At this point Auckland DHB will determine the level of activity required and will activate its HEP accordingly.

Auckland DHB HEP

When Auckland DHB responds to an incident which utilises its HEP this action shall be communicated to the MoH. Auckland DHB shall immediately notify the MoH of a potential or actual large-scale emergency through the MoH SPOC system and shall communicate with the MoH through the SPOC system for the duration of the emergency. If the Ministry has advised Auckland DHB of the need to activate their HEP this action is not required. EMIS will be used as the primary tool for the management of the emergency.

Auckland DHB Response

Auckland DHB’s response to local health emergencies and contributions to the response to a regional or national health emergency, or threat of an emergency, will be made using local (i.e. DHB), regional and national HEP structures, processes and communication networks as defined in Auckland DHB’s HEP, the Northern Region and National HEPs.
Northern Health Region Emergency Management Structure

Figure 11: Northern Health Region Emergency Management Structure

Activating the Northern Region HEP

The Northern Region HEP provides an agreed framework, guiding principles, and the roles and responsibilities to enable a coordinated respond to any emergency (actual or potential) which has overwhelmed (or the potential to overwhelm) local, regional, or national health capacity.

The NRHEP can be activated by notification from:
- A DHB(s) and/or PHU(s) – when responding to an incident that requires regional assistance, management and coordination where their resources are overwhelmed; or have the potential to be overwhelmed.
- The MoH – when the NHEP is activated requiring DHBs to activate their HEP. This may be in response to a national incident or in support to another health region.
- The Ambulance Communications Centre – when an incident or potential incident requires or is likely to require a regionally coordinated response from DHBs and other service providers.

Resources

Identification and management of local, regional and national resources necessary to respond to events and appropriate processes to coordinate and distribute those resources are a critical element of planning and response. Without having an understanding of the type of resources needed for different scale events it is impossible to be able to plan for their availability or acquisition. Resources in place and available to manage smaller events (eg, metro power crisis and flooding) will not be enough for the larger events.

Auckland DHB’s contribution to the response to a regional or national health emergency, or the threat of an emergency is evident through its coordination and consultation with the Northern Region DHBs in the production of the NRHEP.

The receipt and management of resources or supplies from other DHBs or from national stockpiles will be coordinated through the Regional or National Coordinator with National Reserve Supplies being distributed in accordance with MoH Policies and Guidelines.

Providing for the delivery of services to the populations of other DHBs as necessary and appropriate in the context of regional and national HEPs will be coordinated either locally, DHB to DHB or through the Regional or National Coordinator. However, these processes are routine for Auckland DHB with fifty-one percent of its inter-district flow being conducted for other DHBs.
Health–related Roles and Resources

Non-governmental Organisations

Broader links to Non-Governmental Organisations (NGOs) are via the Auckland Region CDEMG in their Welfare Group Plan and associated connections. It has been identified that linkage with NGOs is an area to be reinforced through the CDEMG, Auckland Council Emergency Management Team & Auckland DHB Volunteer Coordinators.

Volunteers

Site Ambassador volunteers (Blue Coats) at Auckland DHB can be described as ‘the eyes and ears of the organisation’ they are familiar with the layout of the Starship and Auckland City Hospitals and Greenlane Clinical Centre sites. Starship has a pool of approximately 120 volunteers, whilst the approximately 100 ‘Blue Coats’ operate in Auckland City Hospital and Greenlane Clinical Centre. Red Cross volunteers visit the ward areas with an amenity trolley to provide an important service for in-patients.

The ‘Friends of the Emergency Department’ are St John volunteers who work in the Adult Emergency Department. The programme started at Auckland DHB in 2002, now includes Counties Manukau and Waitemata DHBs.

Auckland DHB volunteers with their in-depth knowledge of the site lay-outs are a resource which could be utilised in an on-going emergency. The Manager – Emergency Management Service and Team Leader Volunteers have identified this potential resource and the need to evaluate its viability.

He Kamaka Oranga / Māori Health

Co-operative rangatiratanga and kawanatanga – in 2001, Auckland DHB signed a Memorandum of Understanding with Te Runanga o Ngati Whatua as manawhenua for the region which outlines key principles, processes and protocols for working together at both governance and operational levels. In addition, Auckland DHB’s Te Toka Tumai Māori Health Plan, 2011-2012 explains that Auckland and Waitemata DHB are currently working on the development of a cross DHB (regional) Māori health strategy.

It is identified that these established relationships need to be furthered and there is a need to work in partnership with Te Runanga o Ngati Whatua to develop emergency plans which align with those of Auckland DHB. Currently, within Māori Health key staff members are trained to CIMS Level 4.

Pacific Health

Links with Pacific Health organisations are well established. Auckland DHB has a representative on the GM–Pacific (a regional forum of DHB Pacific Managers) and has close links with the ARPHS Pacific Manager.

The Healthy Village Action Zone (HVAZ) programme engages primarily Pacific church communities. Currently, 42 churches are actively participating in the programme. The churches are located in five geographic zones: Grey-Lynn / Ponsonby, Avondale / Mt Roskill, Onehunga, Otahuhu and Glen Innes / Panmure. Auckland DHB Pacific team staff work closely with the PHOs, Pacific providers and churches.

Standing-down the response

The date and time of the official stand down or deactivation of an emergency response will be determined by either the local or regional agency in consultation with the MoH.

Deactivation of an emergency response is dependent on a wide range of variables that must be satisfied before the announcement occurs. Some basic principles that should be followed are:

- That the emergency response role has concluded
- That the immediate physical health and safety needs of the affected people have been met
- That essential health and disability services and facilities are re-established and operational
- That the immediate health concerns arising from the public have been satisfied
- That it is timely to enter the active recovery phase.

When the MoH is satisfied, it shall issue a Code Green (see Table 2) alert to signify the end of the response period. The time and date of deactivation may be used to determine arrangements implemented by the MoH in the recovery period.

After each activation or exercise of Auckland DHB’s HEP a review of response procedures and existing plans and procedures will be conducted based on debriefings and evaluation outcomes in order to clarify roles and responsibilities at all levels during local, regional and national activation.
**RECOVERY**

Recovery includes those activities that begin after the initial impact has been stabilised and extends until normal business has been restored. It considers all opportunities to reduce the risks from future emergencies. It may involve a local, regional, national health-related response or it may involve a whole-of-government response involving economic, social and legislative issues.

Recovery is a complex social process and is best achieved when the affected community exercises a high degree of self-determination. Recovery extends beyond restoring physical assets or providing welfare services. Successful recovery recognises that both communities and individuals have a wide and variable range of recovery needs and that recovery is only successful where all needs are addressed in a coordinated way.

**Auckland DHB – A Whole Systems Approach**

An integrated whole systems framework is needed to consider the multi-faceted aspects of recovery which, when combined, support the foundations of community sustainability. The framework used by MCDEM in its ‘Focus on Recovery: A Holistic Framework for Recovery in New Zealand’ document encompasses the community and the four environments: social, economic, natural and built as illustrated in Figure 12.

This whole systems concept is implicit throughout Auckland DHB frameworks (see Auckland DHB Annual Plan 2012-13, Auckland DHB Statement of Intent 2012-13).

Recovery encompasses the psychological and social dimensions that are part of the regeneration of a community. The process of psychosocial recovery from emergencies involves easing the physical and psychological difficulties for individuals, families / whānau and communities, as well as building and bolstering social and psychological wellbeing. This process of regeneration can be supported and promoted by projects like the Healthy Village Action Zone.

Psychosocial recovery is not limited to the recovery phase of an emergency event, and is not synonymous with the concepts of ‘recovery’ that feature in mental health service delivery. Psychosocial recovery in the field of emergency management begins at the level of prevention through risk reduction: an illustration of this within Auckland DHB is demonstrated in the hub and spoke models developed by the service providers in the Disability Support and Mental Health Planning and Funding sector.

![Figure 12: An integrated whole systems approach to recovery](image)

During the recovery phase established links and procedures which require collaboration and cooperation such as those which incorporate the Northern Region DHBs, the emergency services and the Auckland Region CDEM will be further enhanced (refer to Readiness Section).

Auckland DHB, other Northern Region DHBs (if affected) and the MoH shall begin implementing plans for recovery after the initial impact of the emergency has been stabilised. Provision for the appointment of a Recovery Manager and an alternative shall occur in the response phase. The Recovery Manager is responsible for ensuring that early planning occurs to ensure that essential health and disability services can be restored as soon as possible. Deployment of plans for recovery will be based on reliable data from impact assessments.

Structures already in place across all areas of Auckland DHB, especially those which engage with the community for example, the service provider hub and spoke models and the Pacific Health Healthy Village Action Zone (HVAZ) project will be assets to this phase of an emergency event and provide key opportunities for Auckland DHB EMS as these projects develop.

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The principles of the HVAZ project shows how such engagement with the community was developed and how this process can be adapted for proactive engagement to prepare for emergency events, in that it...

...is not so much of a new structure of service delivery, but rather ‘a process innovation’ in which many different elements are brought together in a collaborative partnership...Strengths identified is its cross-sectoral engagement at the strategic levels...the high level of planning and relationship building that was necessary is now starting to return dividends.

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Psychosocial Recovery

Psychosocial recovery spans the 4R’s of CDEM planning. It is just one element of wider social recovery, with most emphasis on the readiness, response and recovery phases. It also links to the other three components of recovery, namely of the economic, natural and built environments. The wide-ranging nature of psychosocial recovery means that Auckland DHB is committed to promoting health recovery measures, actions and operations not only during the recovery phase but across the 4R’s in its principles and organisational planning for all aspects of its emergency management planning (refer to Readiness and Response sections).

Wharenui at Point Chevalier Campus

7 Healthy Village Action Zones: A Partnership for Auckland’s Pacific People and Health Services, 2007, pp 30-33.
## Glossary

<table>
<thead>
<tr>
<th>TERM</th>
<th>MEANING IN THE HEP UNLESS OTHERWISE STATED</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACH</td>
<td>Auckland City Hospital.</td>
</tr>
<tr>
<td>Auckland DHB</td>
<td>Auckland District Health Board.</td>
</tr>
<tr>
<td>ARPHS</td>
<td>Auckland Region Public Health Service. (See PHU for further description).</td>
</tr>
<tr>
<td>CDEM</td>
<td>Civil Defence Emergency Management.</td>
</tr>
<tr>
<td>CDEMG</td>
<td>Civil Defence Emergency Management Group. The CDEM Group is a joint committee of local authorities with the functions, duties and powers to assist their region. For the Auckland region, this comprises of political representatives from each of the eight local authorities, including the regional council. Several other organisations are observers on the committee. The committee is the decision making body that has overall responsibility for the provision of civil defence and emergency management within the region.</td>
</tr>
<tr>
<td>CEG</td>
<td>Coordinating Executive Group. The CEG comprises Chief Executive Officers (or persons acting on their behalf) of local authorities and district health boards, and senior representatives of the NZ Police and Fire Service, and is responsible to the CDEM Group. The CEG has no operational role; it implements the decisions of the CDEM Group and provides them with strategic advice.</td>
</tr>
<tr>
<td>CEO</td>
<td>Chief Executive Officer.</td>
</tr>
<tr>
<td>CIMS</td>
<td>Coordinated Incident Management System. This is the organisational structure that is used for managing emergencies. It is a structure that allows multiple agencies or units involved in an emergency to work together to systematically manage emergency incidents.</td>
</tr>
<tr>
<td>DESC</td>
<td>Domestic and External Security Coordination. This is the system used by central government for the management of significant crises or security events where impacts of national significance warrant the coordination of national effort. DESC operates at a strategic level to coordinate whole-of-government planning and prioritising. It brings together information for ministers and assists decision making in Cabinet.</td>
</tr>
<tr>
<td>DHB</td>
<td>An organisation established as a District Health Board by or under section 19 of the NZ Public Health and Disability Services Act (2000). DHBs are funders and providers of publicly funded services for the population of specific geographical areas in New Zealand.</td>
</tr>
<tr>
<td>EOC</td>
<td>Emergency Operations Centre.</td>
</tr>
<tr>
<td>EMS</td>
<td>Emergency Management Service.</td>
</tr>
<tr>
<td>EMIS</td>
<td>Emergency Management Information System is a web based emergency management system hosted by the Ministry of Health and provided to the New Zealand health sector in order to manage local, regional and national emergencies.</td>
</tr>
<tr>
<td>EPARM</td>
<td>Emergency Preparedness and Response Manual (specific to Auckland DHB)</td>
</tr>
<tr>
<td>Health Emergency</td>
<td>A health emergency exists when the usual resources of the provider are overwhelmed, or have the potential to be overwhelmed.</td>
</tr>
<tr>
<td>Health CEG</td>
<td>Health Coordinating Executive Group. The Health CEG is responsible for coordinating emergency management planning activities across the Northern Region. The term Health CEG is used to draw a parallel between the functions of the regional health sector CEG within the health sector and the regional CDEMG CEG within the broader emergency management sector.</td>
</tr>
<tr>
<td>HEP</td>
<td>Health Emergency Plan.</td>
</tr>
</tbody>
</table>
HVAZ  Healthy Village Action Zone.
IC  Incident Controller. A member of a DHB emergency management team, with overall responsibility for coordinating emergency response.
IHR  International Health Regulations.
IMT  Incident Management Team. A group of senior managers from key services within Auckland DHB with responsibility to manage major incidents.
Liaison Officer  Liaison Officers improve the flow of information by acting as single points of contact between agencies.
MCDEM  Ministry of Civil Defence and Emergency Management.
MoH  Ministry of Health.
MIP  Major Incident Plan. A plan that each DHB is required to maintain in accordance with their Crown funding agreement.
NGO  Non-Governmental Organisation.
NHCC  National Health Coordination Centre.
NRHCC  Northern Region Health Coordination Centre.
NRHEP  Northern Region Health Emergency Plan
ODESC  Officials Committee for Domestic and External Security Coordination.
OPF  The Operational Policy Framework. Operational Policy Framework is a group of documents collectively known as the ‘Policy Component of the District Health Board Planning Package’ that sets out the operational level accountabilities for DHBs for each fiscal year. The OPF is executed through Crown Funding Agreements between the Minister of Health and each DHB. The OPF covers emergency obligations based on the 4R’s.
PHO  Primary Health Organisation. A grouping of primary health care providers; local structures through which DHBs implement the Primary Health Care Strategy.
PHU  Public Health Unit.
PPE  Personal Protective Equipment. Equipment that can be used by all clinical and non-clinical staff for example gloves, masks, eye protection, respirators, gowns and footwear.
Primary Care  Care/services provided by general practitioners, nurses, pharmacists, dentists, ambulance services, midwives and others in the community setting.
RHCC  Regional Health Coordination Centre.
Secondary/Tertiary Health care  The levels of care provided in a hospital.
SPOC  Single Point of Contact. Single point of contact system used to facilitate communications in the health sector.
The Plan  Auckland District Health Board Health Emergency Plan.
TAG  Technical Advisory Group. Advisory Groups convened to provide coordinated expert technical advice as required.
WHO  World Health Organisation.
Reference Documents

Legislation
- The Health (Burial) Regulations 1946
- The Health Act 1956
- Health (Infectious and Notifiable Diseases) Regulations 1966
- Medicines Act 1981
- The Health (Quarantine) Regulations 1983
- The Public Health and Disability Act 2000
- The Civil Defence Emergency Management Act 2002
- The Health Practitioners Competence Assurance Act 2003
- The International Health Regulations 2005
- The Epidemic Preparedness Act 2006
- The Public Health Bill (proposed legislation)

Other documents
- The ‘Health’ section of the National Civil Defence Emergency Management Plan Order (latest published version)
- The National Health Emergency Plan (NHEP) 2008
- National Health Emergency Plan: Hazardous Substances Incident Hospital Guidelines, 2005
- The New Zealand Influenza Pandemic Action Plan (2010)
- The Environmental Health Protection Manual
- Health and Disability Standards (2008) Part 4.7; ‘Essential emergency and security systems’ and
- Any further published National Health Emergency Plan documents or guidelines.

Related Documents
- Northern Region Health Coordinating Executive Group Terms of Reference
- Auckland CDEM Group Plan 2011. This is a strategic document and details operational plans, procedures and processes in the Standard Operating Procedures contained within it.
- Civil Defence Emergency Management Act, 2002
## Auckland Hazard Register including Implications for the Health Sector

<table>
<thead>
<tr>
<th>Hazard</th>
<th>Vulnerability and Potential Consequences</th>
<th>Implications for the Health Sector</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>BIOLOGICAL</strong></td>
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</table>
| Animal Disease/Epidemic    | There are a large range of biological hazards that could cause significant loss of life or severely affect New Zealand’s economy, agricultural and fishery industries, health (human & animal), infrastructure (eg, water supply and treatment networks). Plagues and epidemic can cause widespread loss of life, Foot and Mouth disease could seriously affect the agriculture industry, algal blooms can affect water supply. Some examples of severe scenarios are: Animal disease/epidemic                                                                 | - Stretched medical services;  
   - Widespread social and psychological disruption and isolation.  
   - Absence of staff - loss of production - economic losses.  
   - Strain on public health resources.  
   - Increased demand for primary care services  
   - Tertiary care limited by capacity, staffing and equipment.  
   - Medical supplies not readily available (demand exceeds supply). |
| Human epidemic             |                                                                                                                                                                                                                                           |                                                                                                                           |
| Introduced species/pests   |                                                                                                                                                                                                                                           |                                                                                                                           |
| **Tsunami**                | The most likely hazardous tsunami event for the region is a far-field tsunami. Incoming waves could reach up to 3.6 m above mean sea level (not including local amplification effects). The effects of such an event are expected to be: Injury or drowning of people in low-lying coastal areas due to inundation and impact by floating debris. Damage to moorings and coastal structures due to high wave velocities and scour. Sudden inundation of coastal infrastructure such as roads, airport and ports resulting in flotation of vehicles and accidents, temporary obstruction or failure of roads. Water networks out for up to 6 weeks. Short and long term economic losses due to clean-up, and construction of repair and remedial structures. Negative impacts on the tourism industry. Major social and psychological disruption. Near-field tsunamis from earthquakes along local faults are also possible. Wave heights around the region will not be uniform and will be dependent on local coastal geometry. The effects from a locally generated tsunami of this scale will be similar to the effects of a distantly generated tsunami, although less severe (see above). | - Public health role and responsibility increased.  
   - Medical services to isolated communities not readily available.  
   - Transportation of patients compromised. |
| Distantly generated        |                                                                                                                                                                                                                                           |                                                                                                                           |
| Locally generated          |                                                                                                                                                                                                                                           |                                                                                                                           |
| **Tropical Cyclones**      | Tropical cyclones, which intrude into the New Zealand area move south and east. The main hazards associated with tropical cyclones are wind gusts and heavy rainfall, but they can also generate significant storm surge and coastal erosion. Examples of the consequences expected with a severe cyclone event are provided below: | - Public health role and responsibility increased.  
   - Potential compromise of hospital services following disruption of utilities. |
<p>| (wind and rain)            |                                                                                                                                                                                                                                           |                                                                                                                           |</p>
<table>
<thead>
<tr>
<th>Hazard</th>
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</thead>
<tbody>
<tr>
<td>Cyclone</td>
<td>The effects of a 1:100 year cyclone, winds up to 170 km/hr, rainfall up to 85mm/hr include:</td>
<td>- Stretch medical services; widespread social and psychological disruption and isolation.</td>
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<tr>
<td></td>
<td>- Coastal flooding.</td>
<td>- Absence of staff: →loss of production →economic losses.</td>
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<td>- Due to building standards and land use planning, cyclones are a low risk to life.</td>
<td>- Public health role and responsibility increased.</td>
</tr>
<tr>
<td></td>
<td>- A 1:100 year cyclone is expected to disrupt land transport. Road transport disrupted by debris and flooding for several days, or up to a week or more for routes affected by landslips. Rail could take 2-7 days to recover, up to a several months if widespread slope failure occurs; Power outages for several hours.</td>
<td>- Mass casualties.</td>
</tr>
<tr>
<td></td>
<td>- Water supply, wastewater and storm water networks could be disrupted for up to 4-6 weeks to fully recover.</td>
<td>- Reliance on primary care providers to undertake initial treatment and triage of injured.</td>
</tr>
<tr>
<td></td>
<td>- Moderate - high social disruption, depending upon how many homes are made uninhabitable from damage.</td>
<td>- Potential closure of hospitals as a result of structural damage and utility failure</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Medical supplies and resources unavailable.</td>
</tr>
<tr>
<td>Earthquake</td>
<td>Earthquakes of varying magnitude are likely to occur in Auckland at some stage in the future. The effects of a damaging earthquake are likely to be widespread, and will depend on the ground conditions of a particular site (eg, liquefaction potential, ground shaking amplification, and instability), building and infrastructure condition, response and recovery plans, and the community awareness of what to do. Bridges are particularly vulnerable to earthquake damage.</td>
<td>- Stretched medical services; widespread social and psychological disruption and isolation.</td>
</tr>
<tr>
<td></td>
<td>Examples of the effects expected by a severe (1:2000 yr) earthquake are given below, the expected impacts of an earthquake of this magnitude include:</td>
<td>- Absence of staff: →loss of production →economic losses.</td>
</tr>
<tr>
<td></td>
<td>- 30-90% of liquefiable soils liquefy, causing very high probability of damage to structures founded in or on these soils. Also significant risk of slope failure.</td>
<td>- Public health role and responsibility increased.</td>
</tr>
<tr>
<td></td>
<td>- Loss of key engineering lifelines: Communications out for 1-7 days. Energy supplies at Ports of Auckland sites are vulnerable to liquefaction. Water supply, wastewater, and storm water out for up to 4-6 months.</td>
<td>- Mass casualties.</td>
</tr>
<tr>
<td></td>
<td>- High economic losses to all sectors.</td>
<td>- Reliance on primary care providers to undertake initial treatment and triage of injured.</td>
</tr>
<tr>
<td></td>
<td>- High social disruption – real or perceived need for relocation of communities.</td>
<td>- Potential closure of hospitals as a result of structural damage and utility failure</td>
</tr>
<tr>
<td></td>
<td>- High risk of loss of life and to human health.</td>
<td>- Medical supplies and resources unavailable.</td>
</tr>
<tr>
<td>Fire – Urban Fire</td>
<td>In any one year Auckland can expect:</td>
<td>- Potential for mass casualties</td>
</tr>
<tr>
<td></td>
<td>- 5000-6000 fires that require response by emergency services. 10-15 fatalities.</td>
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<tr>
<td>Fire – Wildfire</td>
<td>There is a risk of wildfire in the forested areas to the west (Waitakere Ranges), south (Hunua Ranges), northwest (Woodhill Forest), north (Mahurangi Forest) and east (Gulf Islands). Weather plays a significant factor - the risk of fire increases in prolonged drought conditions. Failure to control wildfires in these areas may result in:</td>
<td>- Potential for mass casualties</td>
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<tr>
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<td>- Evacuation.</td>
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<td></td>
<td>- Loss of residences.</td>
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<tr>
<td></td>
<td>- Loss of lives.</td>
<td></td>
</tr>
<tr>
<td>Fire – from</td>
<td>In Auckland a 1:2000 year earthquake has the potential to</td>
<td>- Stretched medical services; widespread social and psychological disruption and isolation.</td>
</tr>
<tr>
<td>Hazard</td>
<td>Vulnerability and Potential Consequences</td>
<td>Implications for the Health Sector</td>
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</tbody>
</table>
| Earthquake or Volcanic eruption| Earthquake or volcanic induced fire is likely to result in:  
- Multiple fire centres exceeding the capacity of existing fire services.  
- Loss of life.  
- Delay of rescue operations.  
- Damage to communications.  
- Delay in repair and recovery of engineering lifelines.  
- Economic losses through damage to residential property and businesses. | Services  
- Widespread social and psychological disruption and isolation.  
- Absence of staff  
- Public health role and responsibility increased.  
- Mass casualties.  
- Reliance on primary care providers to undertake initial treatment and triage of injured.  
- Medical supplies and resources unavailable. |
| Flooding                        | In the Auckland region, most flooding events are of short duration and affect relatively localised areas. Artificial drainage systems consisting of the primary piped system together with the overland flow path are designed to cope with a 1:100 year flood event. This may equate to different rainfall intensities depending on the catchment size. Social vulnerability is considered low-moderate. An example of the effects of a 1:100 year flood are given below:  
- Flooding of residential homes and consequent evacuation of a number of Pukekohe residents.  
- Evacuation required assistance from emergency services and created stress for residents.  
- Made many roads impassable.  
- Extensive damage to land and buildings from sediment deposition.  
- Contaminated water supply due to the infiltration of sewer overflows represented a potential health risk to local communities. This was a concern for weeks after the flood.  
- Low risk to loss of life. | Public health role and responsibility increased.  
- Potential compromise of hospital services following disruption of utilities. |
| Tornado                         | On average, 1-2 tornadoes and waterspouts (tornadoes over water) are reported in Auckland every year. In New Zealand they usually have a damage path 10-20 m wide and 1-5 km long, and usually only have a life of 15 minutes.  
In Auckland, damaging tornadoes have a return period in the order of 2-3 years, and have caused damage to:  
- Buildings and infrastructure eg, Albany, 2011 and Hobsonville 2012 (both of which resulted in loss of life)  
- Vehicles (overturned). | Potential for mass casualties  
- Disruption of patient transportation services.  
- Potential disruption of utility services.  
- Structural damage to healthcare facilities. |
| Volcanic Eruption – Auckland Volcanic Field | Auckland is located on a potentially active volcanic field. The variable size and location of the next eruption means the effects will also be variable. An eruption from the Auckland Volcanic Field could continue for many months. Expected effects of a local volcanic eruption include:  
- Complete devastation any buildings or infrastructure within 3 km of the eruptive vent, or in the path of lava flows up to 10 km from the vent. | Health risk to people and animals due to irritation of lungs and eyes and poor sanitation  
- Public health role and responsibility increased.  
- Potential compromise of hospital services |
<table>
<thead>
<tr>
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</tr>
</thead>
</table>
|        | - Risk of widespread fire from hot ash or disrupted gas supply pipelines.  
        | - Significant impacts on Auckland’s infrastructure, which may force a significant number of evacuations, and will have economic and social impacts.  
        | In more detail:  
        | - Locally, volcanic ash and dust will affect air-conditioning systems and some communication networks.  
        | - Electricity supply and gas may be restricted to some areas for up to several weeks with the potential for secondary impacts, such as the need for relocation of communities and temporary closure of businesses.  
        | - Damage or destruction of the Auckland city tank farm, Wiri oil terminal or Westfield Gate Station (which supplies 60% of Auckland’s gas) could result in explosion and serious fire and limit bulk supplies of oil and gas to the wider Auckland region.  
        | - Severe disruption of water supply, wastewater and storm water networks | following disruption of utilities. |
| Volcanic Eruption – Central North Island (Taupo, Ruapehu etc.) | May generate ash over entire region. The ash thickness will depend on the size of the eruption. | Demand on Auckland District Health Board to provide alternative care to affected area. |
| Volcanic Eruption – Taranaki | May generate ash over entire region. Ash thickness will depend on size of eruption. The likely consequences of aerosols and ash inundation are discussed below:  
        | - Limited physical risk to people, although ash on roads may be hazardous, and lungs and eyes may be irritated.  
        | - High social and psychological impacts, due to: the infrequent nature of severe ash inundation, and high potential for disruption to lifeline facilities, the real or perceived need for community relocation.  
        | - Specific effects upon lifeline utilities:  
        | Roads: 30-100% capacity within the first week.  
        | o Rail: Disrupted by ash fall. No estimate available of how long it would take to clear ash from entire regions rail network.  
        | o Ports: Small disruption due to ash infiltrating engines for up to 1 week.  
        | o Airport: Inoperable while airport is inundated by ash.  
        | o Electricity: minimal outages of low voltage systems, which may short if ash is wet.  
        | o Petroleum: < 1mm ash poses no threat to petroleum supplies in the Auckland region. 100mm of wet ash could sink floating petrol tank roofs and create a hazardous vapour cloud.  
        | o Gas: < 1mm ash will not directly affect Auckland facilities, but could cease supply to Auckland. 100 mm ash will affect gate stations, limiting supply, but demand is expected to be low at this time.  
        | o Water supply: ash will cause some disruption to water supply and cleanup will increase demand. | Health risk to people and animals due to irritation of lungs and eyes and poor sanitation.  
        | - Public health role and responsibility increased.  
<pre><code>    | - Potential compromise of hospital services following disruption of utilities. |
</code></pre>
<table>
<thead>
<tr>
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<tbody>
<tr>
<td></td>
<td>o Wastewater: long term widespread disruption of sewer network from ash fall. At least 4 months to full recovery.</td>
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</tr>
<tr>
<td></td>
<td>o Stormwater: long term, widespread disruption caused by ash fall. At least four months to full recovery.</td>
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<td>o Communication: could have limited service for up to 1 week.</td>
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<tr>
<td>TECHNOLOGICAL</td>
<td>Much of Auckland’s infrastructure and most businesses are reliant on effective operation of computer networks, and this dependency is increasing through time. Heavily relied upon systems have complex back-up systems, but backup systems can fail. Examples of the types of consequences of large scale computer systems failure are described below:</td>
<td>Potential compromise of hospital services following disruption of utilities.</td>
</tr>
<tr>
<td>Computer Systems</td>
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<tr>
<td>Failure</td>
<td>• Major network overload and disruption to communication services.</td>
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<td>• Failure of networks reliant on computer systems for operation, causing secondary hazards such as fire interference with water treatment and supply, interference with wastewater treatment, dam operation and power supply with further consequences such as risk to human health from disruption of the medical sector and potential sanitation problems, high risk of traffic confusion and accidents.</td>
<td></td>
</tr>
<tr>
<td>Hazardous Substances</td>
<td>Hazardous substances releases have the potential to impact the health and safety of any person or the environment. Large quantities are currently stored in the Penrose, Rosebank, Wiri and East Tamaki industrial areas and at the Freemans Bay tank farm. Hazardous substances release can be inaugurated by natural hazards (eg, volcanism, earthquake), transport accidents, lack of care during use, or as a result of inadequate storage or disposal. There is also potential for a release of a substance in transit. Hazardous substances releases can cause large explosions, toxic gas plumes and therefore affect a large area. Examples of consequences expected with a severe hazardous substances incident are given in the scenario below:</td>
<td>Fatalities and people requiring medical treatment or hospitalisation</td>
</tr>
<tr>
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<td>• Evacuation of large numbers of people (possibly 1,000s).</td>
<td>Hospital decontamination requiring New Zealand Fire Service assistance.</td>
</tr>
<tr>
<td></td>
<td>• Potential long term physical and psychological health concerns.</td>
<td>Public health role increased.</td>
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<td>Reliance on primary care providers to undertake initial treatment and triage of injured.</td>
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<tr>
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<td>Potential closure of hospitals in affected area.</td>
</tr>
<tr>
<td>Major Accident - Aircraft</td>
<td>A plausible worst case scenario would have consequences in the order of magnitude of those experienced as a result of a 747 and smaller aircraft colliding. For example consequences could be in the order of:</td>
<td>Mass casualties</td>
</tr>
<tr>
<td></td>
<td>• Passenger and crew fatalities: ~ 400 people (most crew &amp; passenger fatalities ever recorded 583 at Tenerife in 1977). Impact of various sections of the plane over a 4-5 km populated area and subsequent fires could cause:</td>
<td>Severe pressure upon our emergency and health services, and mortuary services.</td>
</tr>
<tr>
<td></td>
<td>• On ground fatalities: ~ 250 people.</td>
<td>Potential reliance on primary care providers to undertake initial treatment and triage of ‘walking wounded’.</td>
</tr>
<tr>
<td></td>
<td>• On ground injuries, some of them serious: ~300.</td>
<td>Potential for</td>
</tr>
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<td></td>
<td>• Structural and fire damage to 20-30 buildings. Fires</td>
<td></td>
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<td>would have to be put out quickly to prevent more buildings being damaged.</td>
<td>compromise of internal hospital procedures.</td>
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<td>- Damage and disruption to above ground infrastructure eg, power transmission lines, road blockages.</td>
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<td>- Car accidents: could be numerous (20-40 vehicles) if the aircraft accident occurred during peak hours.</td>
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<td>- Severe psychological impacts due to the large loss of life and random nature of the incident.</td>
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</tr>
<tr>
<td>Infrastructure Failure</td>
<td>Infrastructure failure can be caused by natural hazards eg, volcanism, earthquake, tsunami, poor maintenance, vandalism/terrorism, or infrastructure computer systems failure. The consequences of infrastructure failure are variable and depend upon the type of utility that has failed. Regionally disruptive infrastructure failure has occurred only once in Auckland. An assessment of the vulnerability of Auckland’s infrastructure to various natural hazard events has been completed <em>(Auckland Engineering Lifelines Project)</em> and summarised results of expected recovery profiles are presented below: Note the recovery periods stated below have been estimated using specific scenarios and assume unlimited resources and unrestricted access to affected areas:</td>
<td>Potential compromise of hospital services following disruption of utilities.</td>
</tr>
<tr>
<td></td>
<td>- Earthquake: Magnitude 6.0 earthquake at 10 km depth with an epicentre 20 km east of central Auckland.</td>
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<td>- Eruption: Volcanic eruption with vent located in on Auckland viaduct destroys all ground services within a 3 km radius.</td>
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<td>- Cyclone: 1:100 yr cyclone passes over Auckland metropolitan area with winds up to 170 km/hr and rainfall up to 85mm/hr.</td>
<td></td>
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<td></td>
<td>- Tsunami: Tsunami originating from South America with wave heights of up to 5 m in some locations.</td>
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