CHAPTER 7

AUCKLAND'S ENVIRONMENT

UPOKO 7 – TE TAIAO O TĀMAKI MAKAURAU

STRATEGIC DIRECTION 7

ACKNOWLEDGE THAT NATURE AND PEOPLE ARE INSEPARABLE

TARGETS

Reduce gross per capita water consumption from 2004 levels by 15% by 2025	Ensure no loss in the area of significant landscape, natural character and natural features	Reduce the overall yield of suspended sediment to priority marine receiving environments from 2012 levels by 15% by 2040	Achieve approval from UNESCO for World Heritage status for the Auckland volcanic field by 2020	Achieve zero waste to landfill by 2040
Reduce air pollutant emissions (PM_{10}) by 5% by 2016 (based on 2006 levels) in order to meet national and international ambient air quality standards and guidelines, and achieve a further 20% reduction by 2040	Ensure no regional extinctions of indigenous species and a reduction in the number of 'threatened' or 'at risk' species from 2010 levels by 50% by 2040	Increase the proportion of residents who understand their risk from natural hazards and are undertaking measures to mitigate or reduce their risk from 2011 levels to 80% by 2040	Establish by 2018, through the relevant statutory process, future marine-protected areas, including marine reserves identified by the Hauraki Gulf, Kaipara Harbour, Manukau Harbour and West Coast marine spatial plans	Reduce the vulnerability of identified ecosystems by ensuring a 95% probability of each ecosystem type being in a viable state by 2040

PRIORITIES

1	2	3	4
Value our natural heritage	Sustainably manage natural resources	Treasure our coastline, harbours, islands and marine areas	Build resilience to natural hazards

AUCKLAND EXPECTS THAT WE WILL ALL HAVE A SENSE OF PRIDE IN OUR NATURAL HERITAGE, AND SHARE THE RESPONSIBILITY FOR LIVING SUSTAINABLY AND LOOKING AFTER OUR ENVIRONMENT.

KO TE ARO WHAKAARO O TĀMAKI MAKAURAU, KIA HIHIRI TE ARONGA O TĀTOU KATOA KI NGĀ TAONGA TUKU IHO, KIA TUARI TE KAWENGA O TE NOHO MATATŪ ME TE TIAKI I TŌ TĀTOU TAIAO.

429_ Aucklanders are the guardians of a precious environment. Our natural surroundings are unique: our harbours, volcanoes, productive soils, ranges, islands, lakes and streams provide a magnificent setting for the diversity that is Auckland. It is home to special wildlife in marine, freshwater and terrestrial ecosystems. The environment has intrinsic values which are values in their own right, as distinct from the benefits people obtain from them.

430_ Auckland's environment and its people are intertwined. People depend on the life-supporting services it provides (see **Box 7.1**). Since the first Māori settlers, people have been drawn here because of the natural environment. It is beautiful; from rugged, wild, black-sand west coast beaches to sheltered, golden coves and islands. Auckland is spacious with its 'low land, high sky and wide water' – an open green and blue landscape. **Map 7.1** shows places with high concentrations of native plants and animals, the network of streams, and the connections between environmental features throughout Auckland.

BOX 7.1

ENVIRONMENTAL PRINCIPLES (ALSO SEE BOX 10.2)

Auckland's environment must be healthy and resilient in order to support life and lifestyles. To ensure this we must recognise that:

1. The environment supports us - the natural resources provided by our environment have limits, and must be protected and restored to ensure our future well-being.
2. We need to consider environmental values in all that we do – the interaction between the environment and people is understood and considered in our everyday behaviour and choices.
3. Everything is connected – human activities affect the air, sea, land and freshwater systems. Understanding the connections between environments in the way we manage them is critical.
4. Biodiversity is everywhere – our flora and fauna, and their habitats, occur on both public and private spaces, and in urban, rural, freshwater and coastal areas. To maintain biodiversity values we must all work together.
5. Natural hazards can affect our well-being – we need to ensure that Auckland and its people are resilient to the effects of natural hazards.
6. We are environmental stewards – future generations will depend on how well we manage the natural environment.

431_ Over generations, waves of settlers have left their mark on the landscape. We have progressively reshaped and modified the environment to suit our needs. Despite regulation and considerable effort, many negative environmental trends continue. The State of the Auckland Region Report (2010)[41] noted that:

- air pollution health costs are at least $547 million each year
- soils are degraded by compaction, chemical fertilisers, and erosion
- fresh water quality is poor in streams, wetlands, vulnerable aquifers and lakes
- sheltered marine areas receive high levels of contaminants and sediment from adjoining catchments
- half of our indigenous areas are in poor or very poor condition
- natural hazards cost Auckland millions of dollars each year, and with the effects of climate change these costs may rise
- resource consumption and waste production is increasing
- the extent and condition of Auckland's heritage resources are not adequately recorded.

432_ The report declares that 'looking ahead, it is clear that some environmental gains will be seen within an overall gradual decline.' We need to respond to emerging threats which pose risk to our natural heritage, such as Kauri dieback. Unless a stronger focus is given to controlling at source those activities and elements that cause environmental harm, Auckland will not achieve its vision.

433_ Similarly, the Hauraki Gulf State of Environment Report 2011[42] identified that our marine environment is also under stress. Fish stocks are at low levels and there has been an incremental decline in water quality. The report noted that: 'it is inevitable that further loss of the Gulf's natural assets will occur unless bold, sustained and innovative steps are taken to better manage the utilisation of its resources and halt progressive environmental degradation.'

434_ The physical attributes and quality of living associated with our environment are a large part of Auckland's appeal to residents, visitors and migrants. The environment is an essential part of our identity, our economy, and the way we live. We will safeguard what we have, and strive to radically improve our environment where it has become degraded. We will become a 'green Auckland', through the directions and actions in the Plan, and live up to that name. Our own well-being depends on this, and as guardians of the environment, we have a responsibility to leave it in a better state for future generations.

MAP 7.1 AUCKLAND'S ENVIRONMENT

PRIORITY 1 VALUE OUR NATURAL HERITAGE

435_ Auckland is defined by its natural heritage on land and in water. The concept of natural heritage refers to biodiversity, landscapes, geological features, natural character, and relationship with public space and private land; these all contribute to Auckland's identity, character and amenity. Rangitoto, Hauturu (Little Barrier), Maungakiekie (One Tree Hill), Maungawhau (Mt Eden), the Ōtuataua Stonefields, Puketūtū Island, the Waitākere Ranges and our many harbours are some examples of natural heritage. Auckland's volcanic cones are among the most treasured and easily identified landscape features, and these maunga are of particular significance to Auckland's iwi.

DIRECTIVE 7.1

Acknowledge and account for ecosystem services when making decisions for Auckland.

436_ The ancestral association of tangata whenua with the natural environment and their identification with important landmarks, contribute to tribal identity and tūrangawaewae (standing place). Many of our landscapes have particular physical, cultural and spiritual significance to tangata whenua. These landscapes and natural features provide opportunities for all Aucklanders for recreation and enjoyment, and are part of our collective identity.

437_ Our natural heritage contributes to our sense of place, and it benefits us in our daily lives. These benefits, termed ecosystem services,*[43,44] include resources (such as soils for food production) and processes (such as filtering pollution). Ecosystem services provided by indigenous species underpin many recreational and eco-tourism opportunities. The challenge in managing ecosystem services is that we cannot manage well what we do not measure. Future decisions must account for the true value of nature and its benefits.

* "Ecosystem services" are the benefits people obtain from the environment, including goods (soil, food, animals, water, scenery) and services (functions such as water filtration, flood protection, pollination).

MAP 7.2 SIGNIFICANT RECREATIONAL AND PUBLIC OPEN SPACE AREAS

DIRECTIVE 7.2

Recognise and promote:

- the contribution of natural heritage to urban character, quality, amenity and sense of place
- natural heritage as part of sustainable rural land management
- opportunities for conservation of natural heritage on public open space and private land.

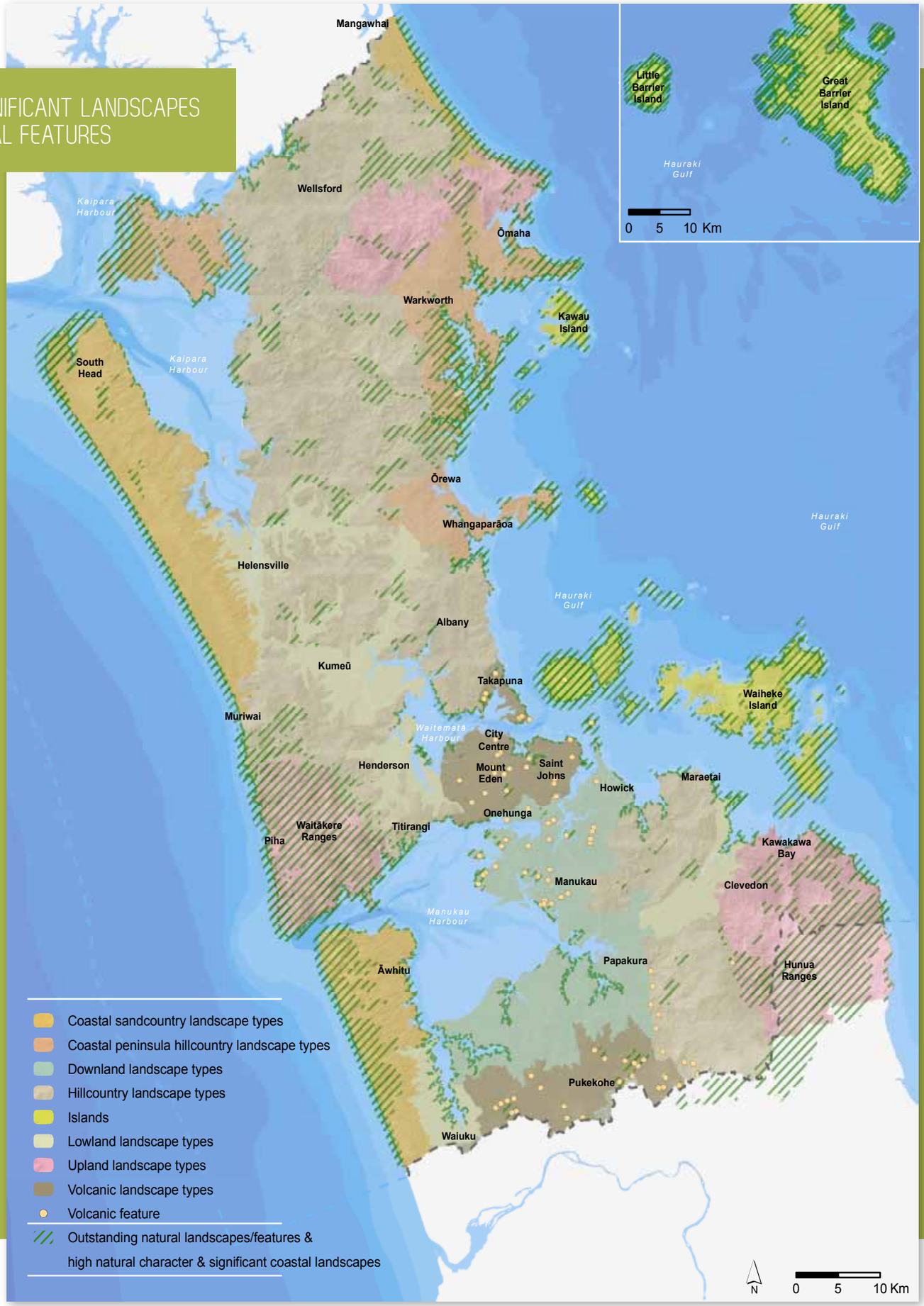
438_ Auckland has an outstanding network of parks and open spaces that protect natural values and are enjoyed by Aucklanders and visitors alike (see **Map 7.2**). They include the regional parks, local parks and island reserves managed by the Department of Conservation. The 26 Regional Parks (established from 1965) cover more than 40,000 hectares with a diversity of landscapes and ecological values. From Ambury Farm Park in Māngere to coastal parks such as Tāwharanui to the north and Tāpapakanga to the south, and native bush in the Waitākere Ranges, these areas provide opportunity for recreation and enjoyment. Access to all our parks is free of charge, but maintaining and enhancing them requires ongoing investment.

439_ Protecting Auckland's irreplaceable natural areas against poorly located or designed development is essential to maintaining and improving the quality of the environment. In particular, development should be carefully managed or avoided in significant landscapes as shown in **Map 7.3** and significant ecological areas as shown in **Map 7.4**. As Auckland continues to develop, our challenge is to do so in sympathy with the scale and character of existing landscapes. We must manage the increased pressure on ecosystem services to ensure our natural heritage is protected for future generations.

DIRECTIVE 7.3

Identify significant landscapes, landscape character, natural character and natural features, and appropriately manage these to protect and enhance their biophysical and sensory qualities, and associated values.

MAP 7.3 SIGNIFICANT LANDSCAPES AND NATURAL FEATURES



DIRECTIVE 7.4

Identify places of high natural heritage value, and where appropriate, protect, manage and expand public open space areas so they can be enjoyed by everyone.

440_ Auckland is home to over one third of New Zealand's native plant species and more than half of its native bird species, some of which are only found here. We have one of the richest endemic seabird breeding areas in the world, and the islands of the Hauraki Gulf are internationally significant. Our freshwater and marine environments are unique due to our latitude, climate and geography. We have many threatened birds (including the black petrel, fairy tern and the New Zealand storm petrel), rare plants (such as Cook's scurvy grass) and lizards (such as the Chevron skink). Our waters have fragile populations of marine mammals, including Maui's Dolphin, and freshwater fish such as the black mudfish and shortjaw kokopu.

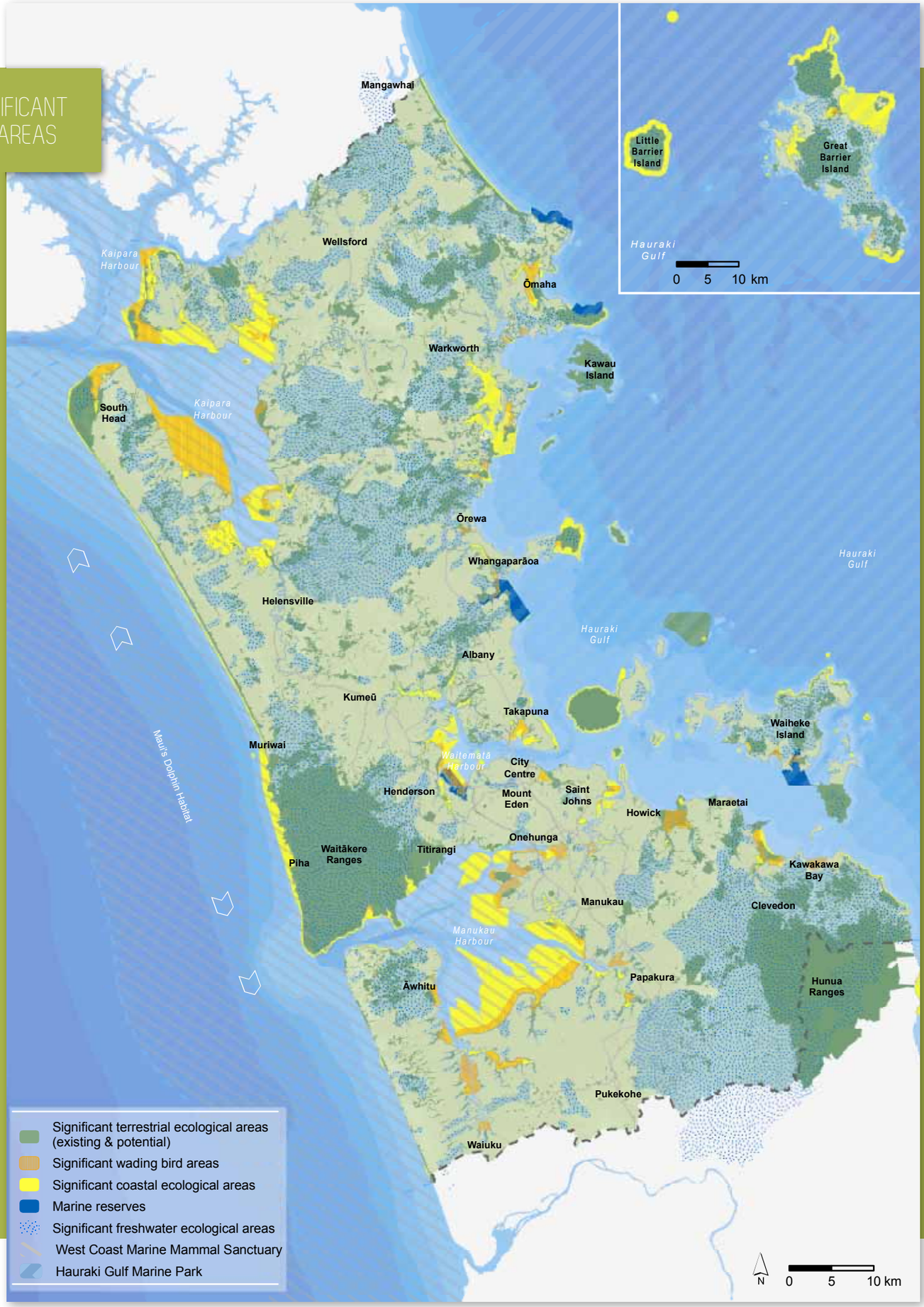
441_ Development has resulted in a loss of habitats and a reduction in biodiversity; we must protect and restore habitats and ecosystems. Moves to protect and improve Auckland's natural heritage have begun. Notable successes include the Leigh Marine Reserve, Ark in the Park and the restoration of Tiritiri Mātangi Island. These and other conservation efforts have already increased the number of native birds, plants, fish and animals in rural and urban areas. Continuing this work will help to revive the dawn chorus and bring nature back. There is scope to further enhance the biodiversity of both rural and urban landscapes to complement and improve our land use and lifestyles.

442_ Maintaining biodiversity means continuing to control pest plants, fish and animals; managing development on both public and private land; and ensuring that this development is located away from ecological areas of high value.

DIRECTIVE 7.5

Protect ecological areas, ecosystems and areas of significant indigenous biodiversity from inappropriate use and development, and ensure ecosystems and indigenous biodiversity on public and private land are protected and restored.

MAP 7.4 SIGNIFICANT ECOLOGICAL AREAS



PRIORITY 2 SUSTAINABLY MANAGE NATURAL RESOURCES

443_ Development puts pressure on land and water resources and impacts on air quality. It results in additional waste that must be managed and minimized. We must manage and maintain the quality of our natural resources for the long-term health, well-being and prosperity of Aucklanders. In everything we do we must consider the environment (also see **Figure 7.1**).

Clean Air

444_ Clean air is fundamental to health. Emissions to air result in levels of particulate matter and nitrogen oxides that regularly exceed standards and guidelines (see Chapter 1: Auckland's People). The resulting health impacts on Auckland's population include 1.16 million working days lost due to illness or poor health, and approximately 730 premature deaths each year.

DIRECTIVE 7.6

Reduce emissions from home heating, transport and other sources to improve air quality.

DIRECTIVE 7.7

Minimise reverse sensitivity and exposure associated with emissions.

445_ Transport is the main contributor to total air pollution (see Chapter 8: Auckland's Response to Climate Change). Improved fuels and new vehicle technologies have lowered emissions from late model vehicles, but these gains have been offset by increasing vehicle numbers, longer travelling distances and an ageing vehicle fleet. The quality compact urban form and improvements to alternative forms of transport encouraged in this Plan (see Section D: Auckland's High Level Development Strategy, Chapter 10: Urban Auckland and Chapter 13: Auckland's Transport) will contribute to lower emissions and improved air quality.

446_ Auckland Council is responsible for managing air quality in the region under the Resource Management Act (1991) and the National Environmental Standards for Air Quality. Domestic home heating, transport and industry are the three main sources of air pollution in Auckland. Fine particle emissions from domestic (wood-burning) fires are of particular concern as a health risk. A reduction in these emissions and improved home insulation (see Chapter 11: Auckland's Housing) will ameliorate people's health, but the potential cost impactneeds to be considered.

447_ The location of pollutant activities determines the level of community exposure to pollution. Where sensitive land uses (for example housing, schools and hospitals) are not sufficiently separated from air discharges, conflicts may occur. If a new sensitive land use locates close to an incompatible existing land use (for example industry), then the operation of the existing land use may be compromised. This is known as reverse sensitivity, and it can be prevented by effective zoning.

Water quality and demand

448_ Preserving marine and fresh water quality is fundamental to Auckland's future. The recreational opportunities water provides are of immense importance to Auckland's economy and liveability. Many people enjoy beaches, coastlines, lakes, wetlands and streams for swimming, boating, diving, surfing, fishing and other activities. Our water features have significant natural and cultural values, and contribute to our sense of place. However, clean, accessible water is a finite resource. We must know how much we have, and manage its use to safeguard sustainable flow levels in waterways. Any water shortages will affect both urban and rural users, and pose a risk to natural values.

449_ Water is of high cultural significance and interest to Māori, who have strong historic links to many waterways as life-giving sources of food and transport. Māori also attach a spiritual significance to water, with each water body having its own spirit or mauri. Freshwater ecosystems supported early Māori settlement and although degraded, are still highly valued. Auckland will provide for the involvement of Māori to ensure tangata whenua values are identified and reflected in the management of water.

450_ The National Policy Statement for Freshwater Management 2011 requires local governments to safeguard water's life-supporting capacity and ecosystem values. This will take time and involve new approaches. It will involve iwi, communities and water users working together to identify the use and non-use values of freshwater bodies, then defining actions to enhance these values.

DIRECTIVE 7.8

Establish freshwater values and aspirations with communities and make freshwater an identifying feature of Auckland.

451_ Auckland's development has put pressure on water resources and resulted in major hydrological changes. Over the last century, stormwater management in urban areas and drainage and diversion for rural production have lowered water quality and ecological function within catchments and degraded coastal receiving environments. By understanding what was done, we know how to do things better. Still, integrating management of freshwater across whole catchments is a significant challenge.

452_ People are attracted to water. The blue network of streams runs across both public and private land. Connectivity is a key part of the network's function, and freshwater not only maintains life in catchments, but feeds marine life in river mouths and estuaries. However, water quality, aquatic life, amenities and access can be improved. Riparian rehabilitation is needed to improve environmental, social, and economic outcomes. Revegetation along streams and in catchments can provide a carbon sink and reduce our net carbon emissions (see Chapter 8: Auckland's Response to Climate Change).

453_ Although Auckland is relatively water-rich, water is not limitless nor is it always at the right place at the right time. As Auckland continues to grow, managing our freshwater resources and maintaining the health of aquatic ecosystems will become even more critical. This challenge affects households, businesses, and the urban and rural environments, and has implications for our remaining natural areas. We will limit the minimum acceptable water quality, and maximum water quantity taken. We need to further develop a coordinated strategy addressing all matters relative to water, including reducing the amount of water we use (see Chapter 12: Auckland's Physical and Social Infrastructure).

DIRECTIVE 7.9

Set limits for minimum water quality and for maximum water take, to support iwi, community, and water users' aspirations.

DIRECTIVE 7.10

Manage land to support the values of waterbodies by protecting them where they are high and reviving them where they are degraded.

Waste minimisation and management

454_ Rising consumption and the resulting waste generated by a growing population presents a critical problem for modern society; the volume and nature of the waste we generate currently is unsustainable. To manage waste effectively we must reduce the volumes generated, and recycle or re-use to reduce what goes to landfill.

455_ Auckland has adopted an aspirational target of achieving zero waste to landfill by 2040. Planning for waste minimisation and management in Auckland will identify more specific short- to medium-term targets for domestic, industrial and commercial waste. The anticipated population growth, and mana whenua values and concerns regarding waste, will be considered during this process.

DIRECTIVE 7.11

Manage Auckland's waste in the priority of reduce, reuse, recycle, recover, treat and dispose.

FIGURE 7.1

ADDITIONAL ENVIRONMENTAL CONSIDERATIONS

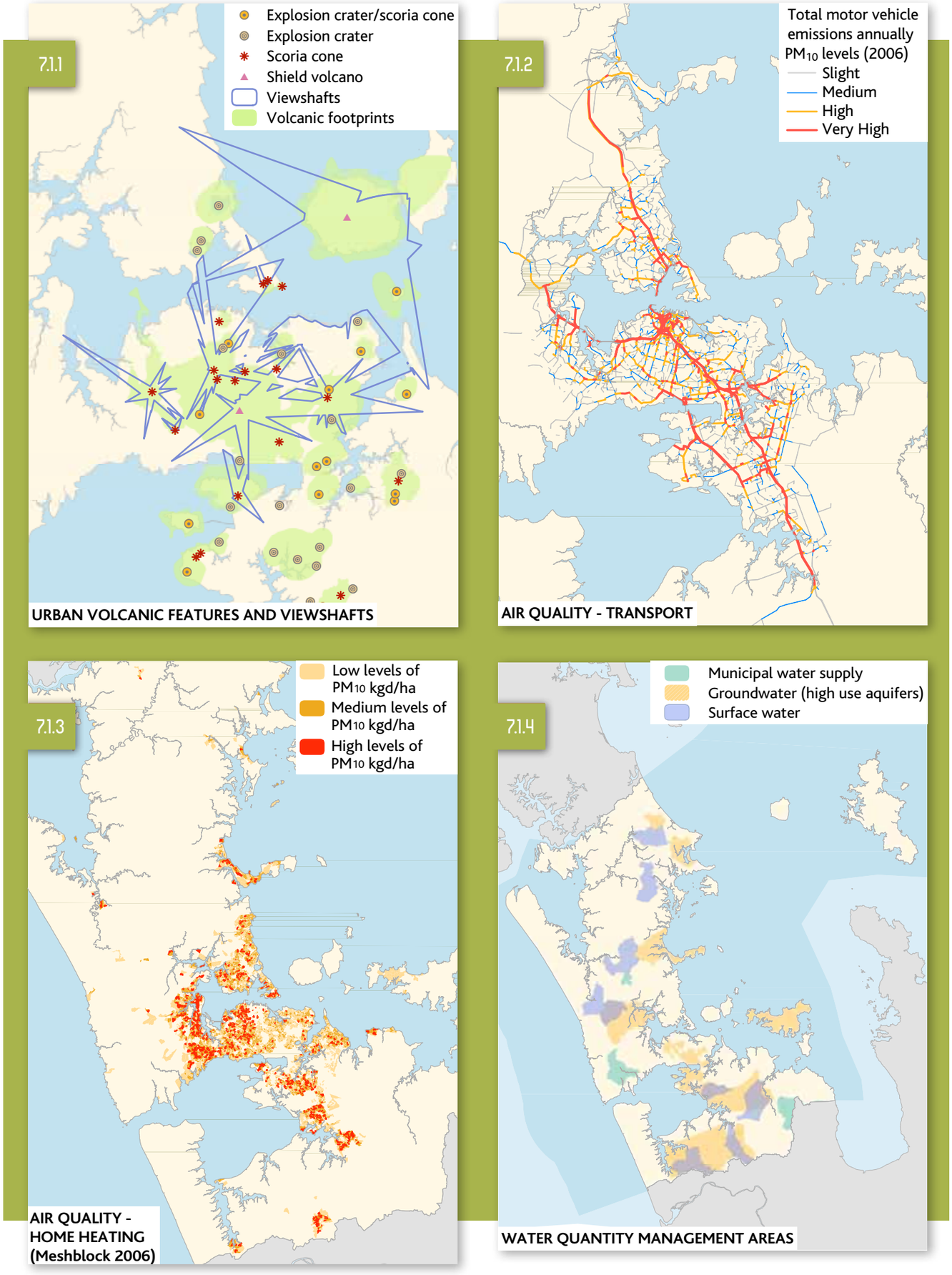


FIGURE 7.1
ADDITIONAL ENVIRONMENTAL CONSIDERATIONS

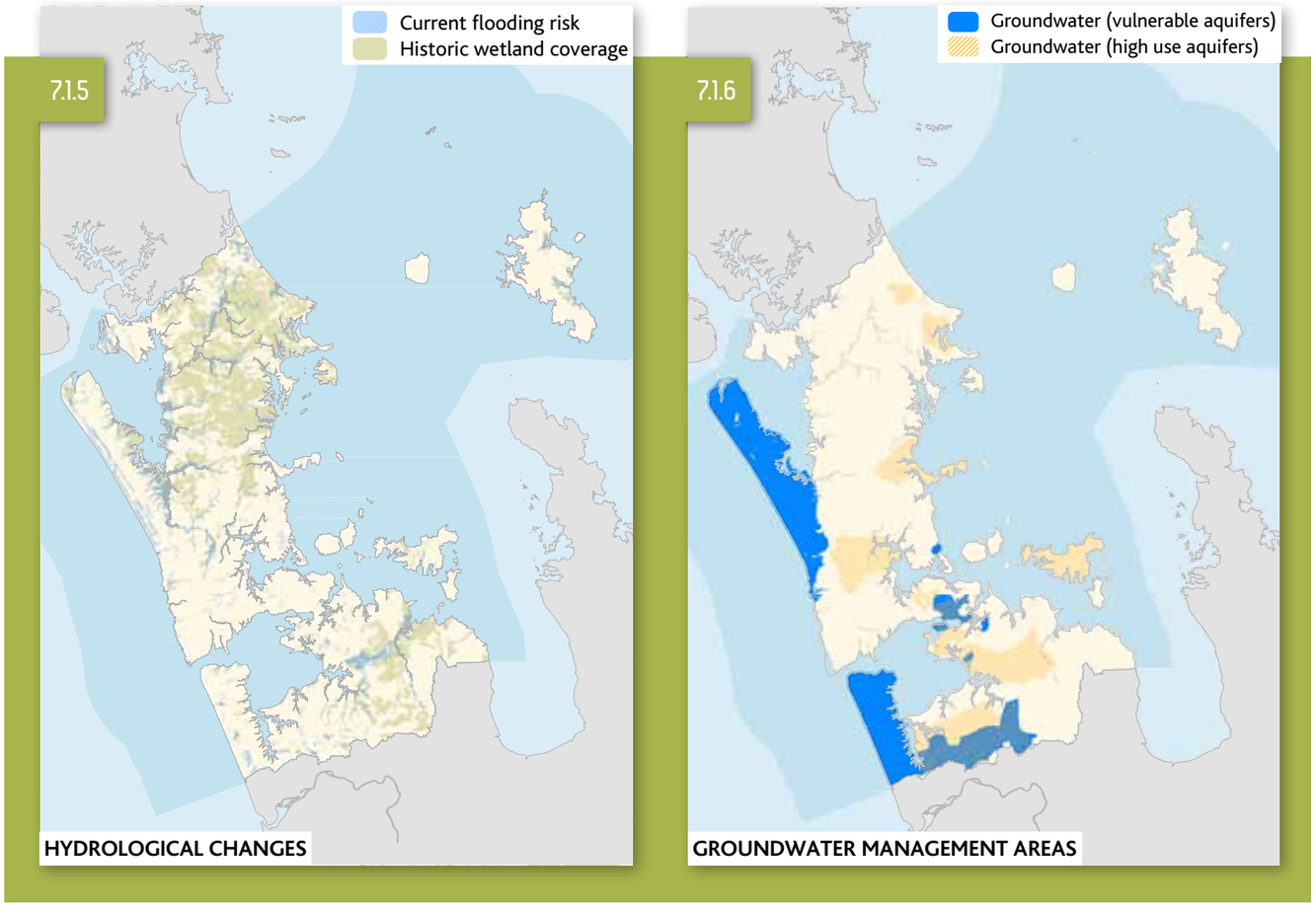
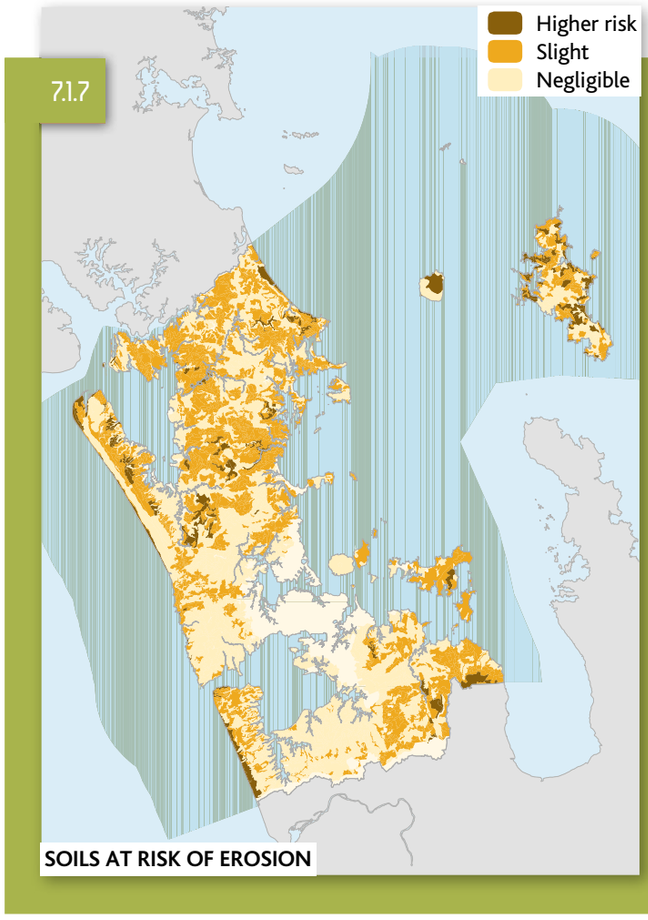
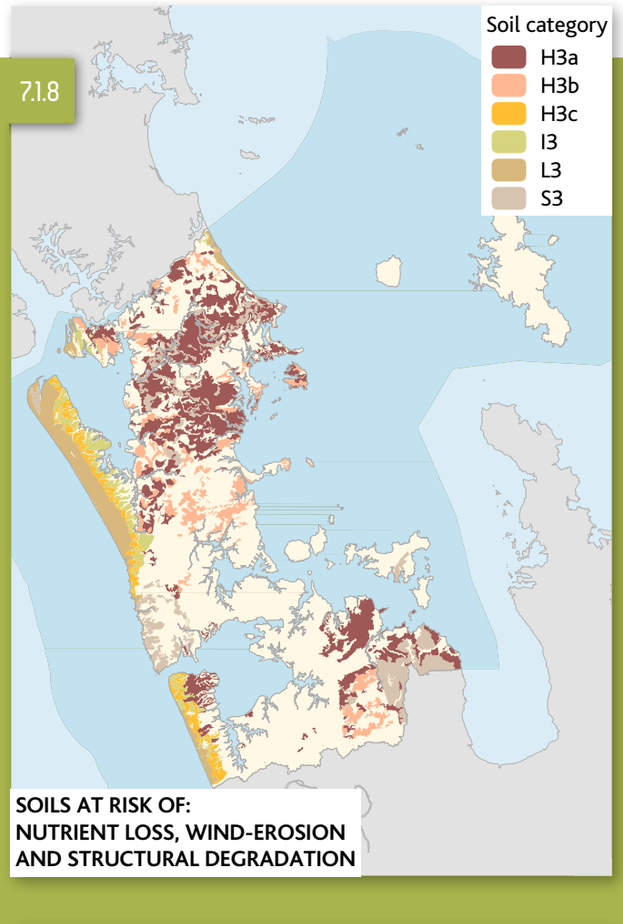
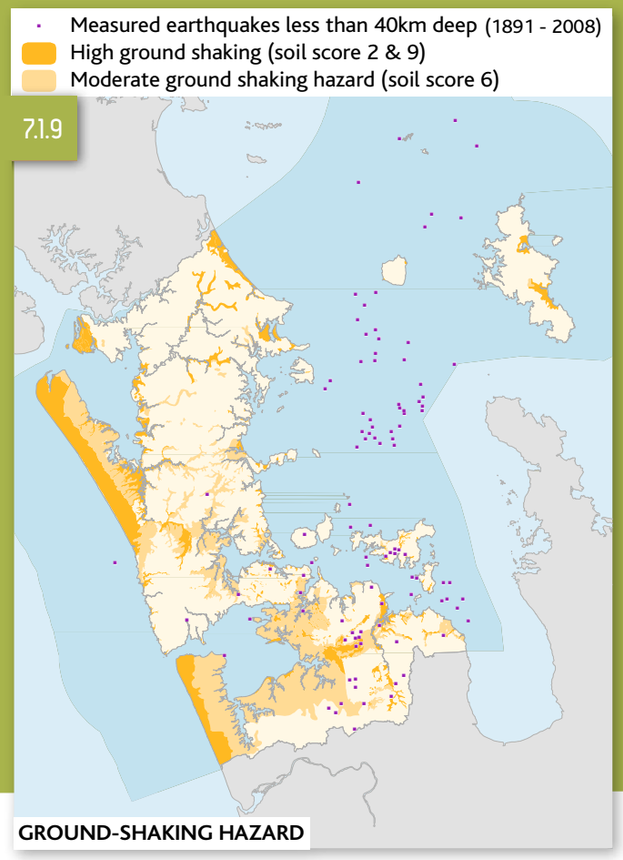


FIGURE 7.1
ADDITIONAL ENVIRONMENTAL CONSIDERATIONS







PRIORITY 3 TREASURE OUR COASTLINE, HARBOURS, ISLANDS AND MARINE AREAS

456_ Around 70% of the Auckland region consists of coastal waters. The coast and sea have shaped Auckland's history and are central to our culture, both for tangata whenua and more recent arrivals. No one in Auckland lives far from the sea, and we love to relax and play on our beaches and coastal waters. Auckland's islands, beaches, harbours and estuaries have shaped its urban and rural land uses.

457_ A range of coastal uses support our economy. These include one of New Zealand's major ports, marine transport links, a destination waterfront development, and the aquaculture, fishing and marine industries.

458_ Our marine environment also provides varied marine habitats and ecosystem types that sustain a great number of species. More than 195 fish species have been recorded locally, and estuaries and river mouths provide important spawning habitats. Areas such as the Kaipara and Manukau harbours provide feeding and breeding grounds for coastal and migratory birds. (See **Map 7.5**)

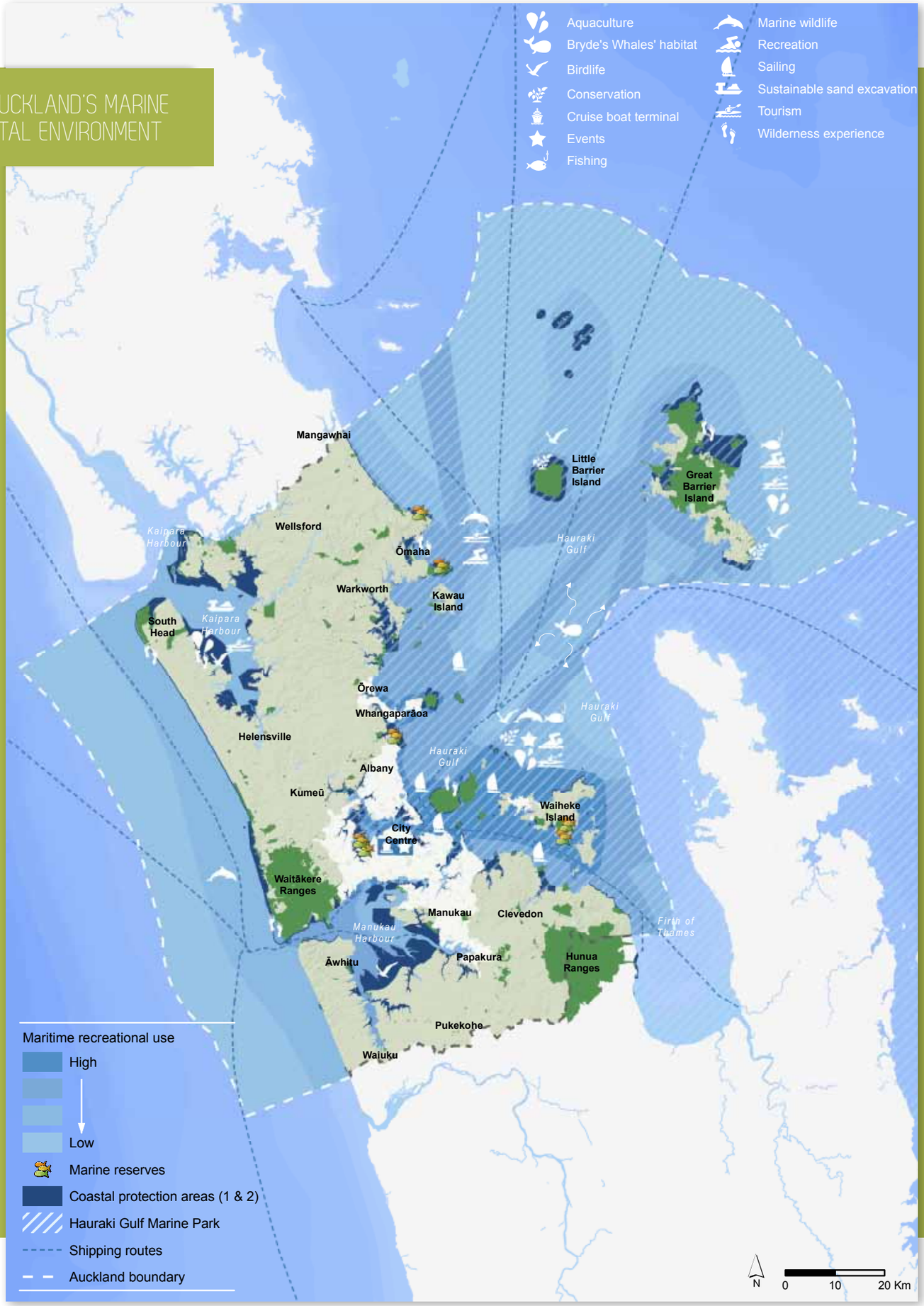
459_ Water that runs off the land flows through waterways or pipes to the sea, carrying sediment and contaminants with it. This can degrade or destroy coastal habitats (e.g. by mangrove expansion) and present risks to human health. This is a particular concern for city beaches, which can be unsafe for swimming following heavy rainfall. Continued degradation of the marine habitat will lead to a decline in fish numbers. While we cannot avoid discharges from the land, we can improve water quality and the coastal values of degraded areas. It is important to consider the effects of our land-based activities on the coast.

460_ Auckland's coastline encompasses a range of landforms from the high energy beaches (where destructive waves carry sediment out to sea) of the west coast to coastal cliffs and sheltered harbours. The Kaipara Harbour is largely surrounded by rural land, and is known for its spiritual and remote wilderness values. The Manukau Harbour has a long history of use and settlement, and has both urban and rural communities around its shores. Our western sea port is located there. The Waitematā Harbour provides a magnificent setting for surrounding suburbs and the city centre. This harbour is the site of the principal operations of the Ports of Auckland, our active working port. Our smaller harbours, such as Mahurangi and Whangateau, also offer aesthetic, recreational and ecological values.

DIRECTIVE 7.12

Protect coastal areas, particularly those with high values – including special natural character, significant marine habitats and recreational importance – from the impacts of use and development, and enhance degraded areas.

MAP 7.5 AUCKLAND'S MARINE AND COASTAL ENVIRONMENT



461_ The Hauraki Gulf Marine Park (see **Map 7.2**) covers the east coast marine area of the Auckland and Waikato regions. It was established in 2000 in recognition of its natural richness, environmental quality, biological diversity and landscape, which is distinctive within New Zealand. It protects important areas within a lived-in, worked-in environment that includes land controlled by different agencies. Objectives previously established for the Gulf, its islands and catchments, aim to achieve integrated management across land and sea, so that the effects of land use on the marine environment are considered and the life-supporting capacity of the Gulf is protected. Despite this, the Hauraki Gulf State of Environment Report (2011)*,[45] showed ongoing degradation, and stated that bold, sustained and innovative steps are required to protect this nationally significant and fragile environment.

DIRECTIVE 7.13

Ensure integrated and sustainable management of marine areas through marine spatial planning for the Hauraki Gulf, Kaipara Harbour, Manukau Harbour and west coast.

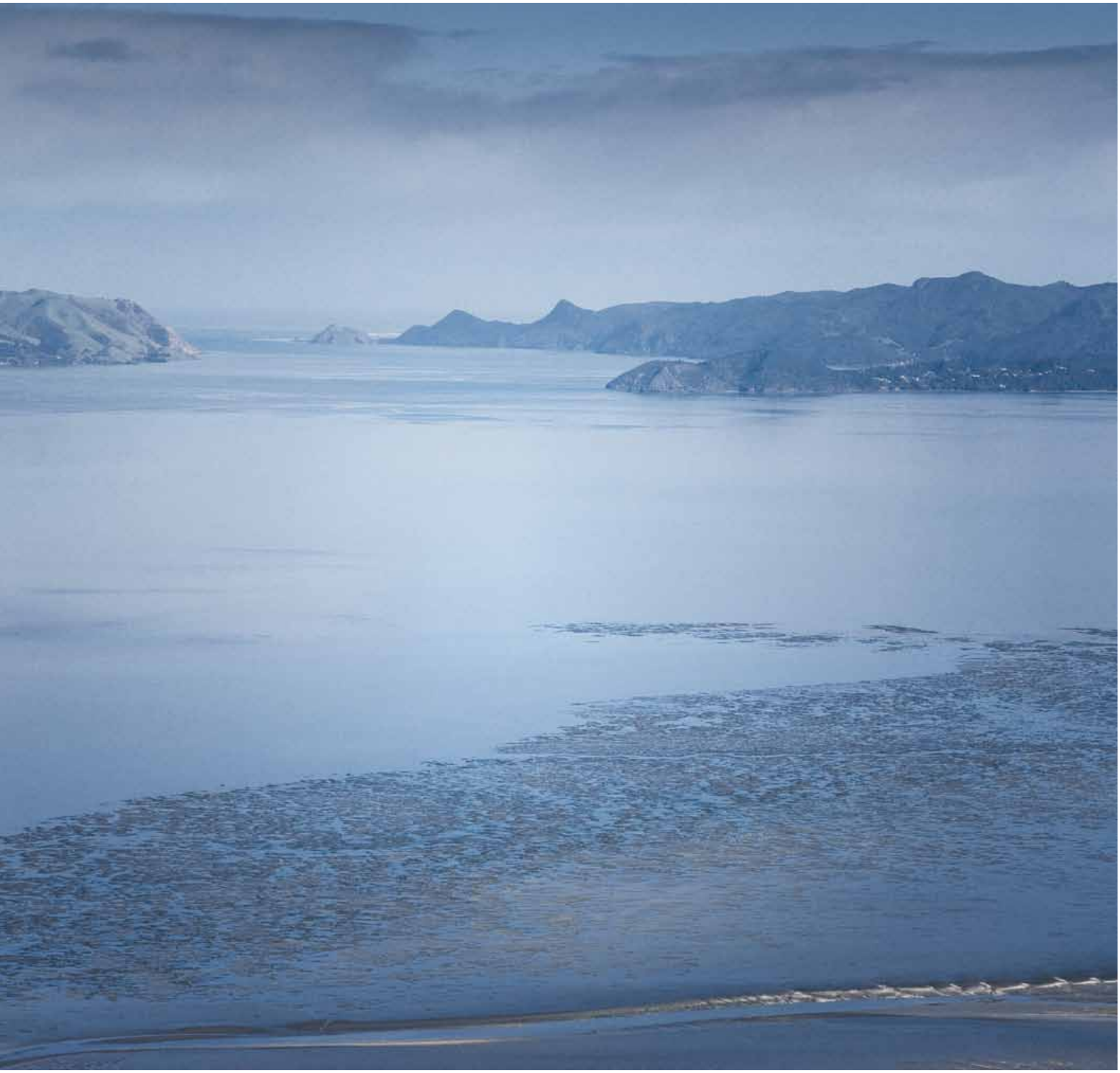
462_ Integrated management is necessary to address the effects of land-based activities on the marine area, and to enhance the linkages across land and sea. Sustainable management of the natural values of coastal ecosystems will maximise the economic, social and cultural opportunities that rely on a coastal location. Marine spatial planning is a collaborative approach to achieve more effective management of Auckland's marine environment.

463_ Protection of the marine environment provides a way for habitats and ecosystems to adapt and recover in response to disturbance; this ensures their long-term survival. Providing adequate protection for the marine environment involves considering the complete ecosystem, including the relationship between habitat types and the effects of different marine- and land-based activities on habitats.

464_ Multiple management tools can be used to achieve the appropriate level of protection of Auckland's marine environment, ranging from 'no-take' areas (marine reserves) to marine-protected areas that allow some extractive fishing activities. Auckland Council provides a level of marine protection through managing the adverse effects of discharges, disturbance, aquaculture and other activities. The first Marine Reserve in New Zealand was created at Leigh in 1977 and is now one of Auckland's best-known coastal attractions. The critically endangered Maui's Dolphin (**Maps 7.1** and **7.4**), which is estimated at around 55 in number[46] is currently protected by a marine mammal sanctuary. Other controls such as marine reserves, Mataitai, Taiapure, and the Resource Management Act (1991) ensure the protection of other species, locations and ecosystems.

465_ This plan includes a target to "establish by 2018, through the relevant statutory process, future marine-protected areas, including marine reserves, identified by the Hauraki Gulf, Kaipara Harbour, Manukau Harbour and West Coast marine spatial plans." These areas will be identified following an inclusive and consultative process with all stakeholders, and appropriate measures will be introduced for the effective management and protection of our marine values. To achieve the target, these measures will be effected through the relevant statutory process by 2018.

* Marine habitat and ecosystem types are defined in "Department of Conservation and Ministry of Fisheries (2008), Marine Protected Areas Classification, Protection Standard and Implementation Guidelines. New Zealand Government."



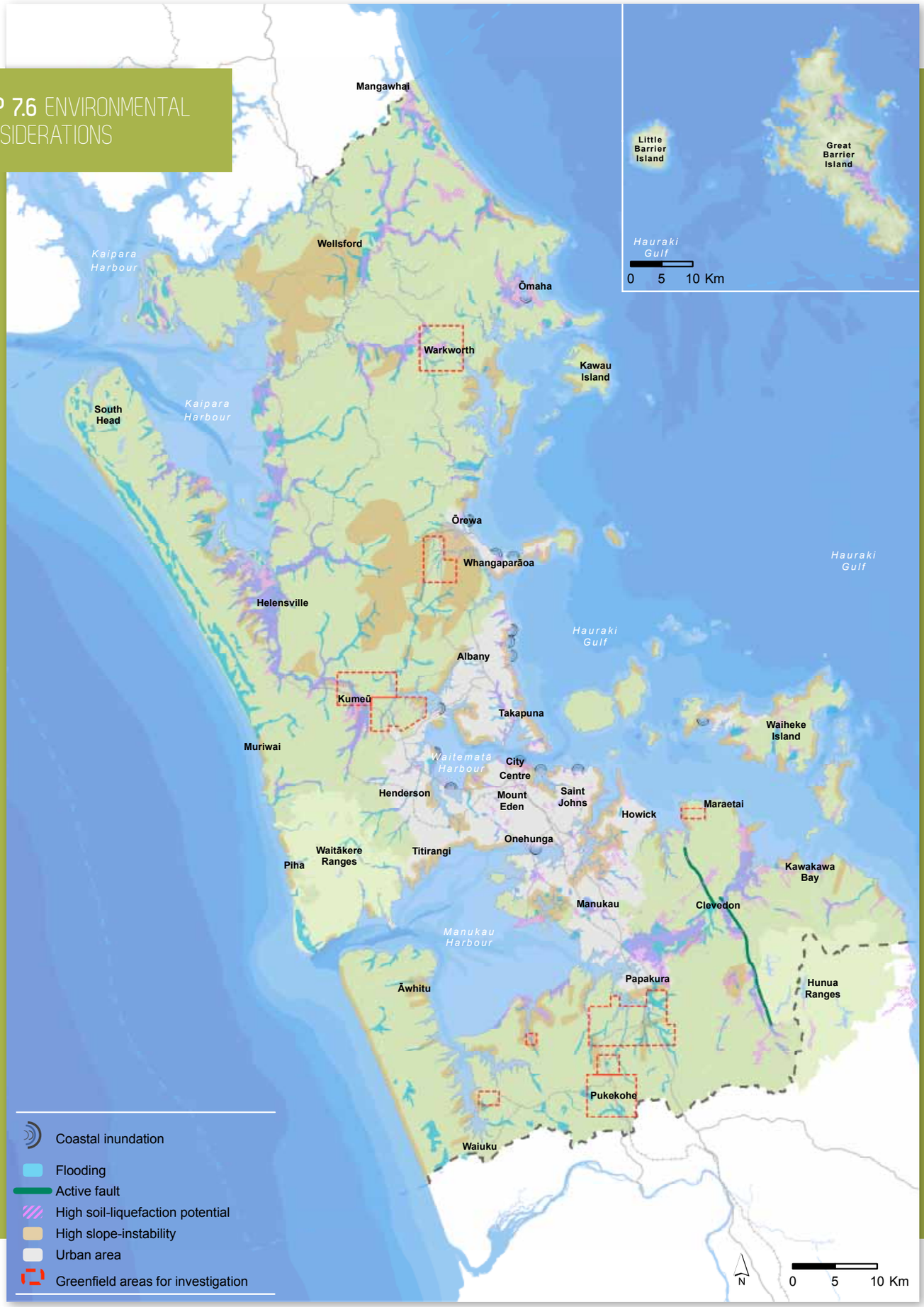
PRIORITY 4 BUILD RESILIENCE TO NATURAL HAZARDS

DIRECTIVE 7.14

Take account of environmental constraints as identified on Map 7.6 and Figure 7.1 when considering the location and nature of any future development.

466_ Aucklanders have become more aware of natural hazard risk as a result of the Canterbury earthquakes, which showed how vulnerable our communities, economy and day-to-day lives are to natural hazard events and environmental changes. It is important to build resilient and safe communities able to cope with, and adapt to, the effects of hazard events. Being more resilient protects people and their homes from natural hazard events; maintains critical infrastructure (energy supply, sewerage systems, water reticulation, telecommunications systems); and ensures social infrastructure can withstand external shocks (community and health networks, civil defence, and emergency services).

MAP 7.6 ENVIRONMENTAL CONSIDERATIONS



467_ Parts of Auckland are at risk from natural hazards that occur with varying severity and frequency. There is evidence of seismic activity, active faults, areas susceptible to liquefaction, tsunamis, volcanoes, landslides, flooding, tropical storms and cyclones, tornadoes, and storm surges. Low-lying coastal land is vulnerable to some of these hazards, in particular storm surges, tsunami and flooding associated with major rainfall events. Future housing development must be located away from natural hazards (see **Map 7.6** and **Figure 7.1**), to reduce the risk to people, property and the environment.

468_ Predicted changes in climate (see Chapter 8: Auckland's Response to Climate Change and Directive 8.5) could have an effect on the environmental processes that cause hazard events. These include an increase in frequency and intensity of rainfall and subsequent flooding events. Predicted sea-level rise associated with global warming is expected to exacerbate the effect of other coastal hazards in low-lying areas over time. **Map 7.7** indicates areas for further investigation of sea-level rise risk, and other low-lying coastal natural hazards. (Projections for sea-level rise are outlined in Chapter 8: Auckland's Response to Climate Change, **Box 8.3**). **Map 7.7** shows that although Auckland has coastal areas at risk, much of our urban land area is elevated.

469_ The projected effects of climate change must be incorporated into natural hazard management practices, including the approaches set out in Directives 7.14 and 7.15. These measures will build the capacity to cope with and adapt to changes in the future. The challenge is to develop strategies to reduce the vulnerability and exposure of people and assets to extreme climatic events.

DIRECTIVE 7.15

Avoid placing communities and critical infrastructure and lifeline utilities in locations at risk from natural hazards, unless the risks are manageable and acceptable.

MAP 7.7 POTENTIAL SEA LEVEL RISE SCENARIOS