

6 Sustainably managing our natural resources - Toitū te whenua, toitū te taiao

*Ngā ariki o te rangi,
ngā ariki o te whenua, ngā ariki o te moana, ngā ariki o te taiao.*

The chiefly deities of the sky, of the earth, of the sea, the spiritual caretakers of the environment.

6.1 Air

Introduction

Motor vehicles, domestic fires and to a lesser extent industry are the main sources of our urban air pollution. In our rural areas and even more so in our coastal areas, air quality is usually very good. Rural air pollution is normally more localised and comes from outdoor fires, use of agricultural chemicals and odour from agricultural activities. Emissions in our urban areas cause our air quality to exceed national and international standards and guidelines from time to time, in both localised areas and across greater Auckland.

Air pollutants need to be controlled both for the protection of public health, particularly those groups in society that are susceptible to air pollution, and for the wider use and enjoyment of our environment. As people need to be able to use vehicles and heat their homes and industry and rural production is vital to our economic prosperity, a balance needs to be struck between continuing these activities, and achieving acceptable levels of air quality.

National environmental standards for air quality establish health related ambient air quality standards. These focus mainly on the control of PM¹⁰ particulate matter, but also set maximum acceptable air concentrations for other contaminants such as nitrogen dioxide. To reduce the health impacts caused by poor air quality and meet the national standards, the Auckland Plan set a target to reduce Auckland's human generated PM¹⁰ levels by 50 percent from 2005 levels by 2016. Nitrogen dioxide concentrations occasionally do not meet guidelines and standards so emissions of nitrogen oxides should also be decreased. There are other air pollutants such as PM^{2.5} that are not addressed in national environment standards, but which have significant impacts on human health in Auckland. Therefore Auckland Ambient Air Quality Standards (AAAQS) have been developed to provide guidance in this Unitary Plan on the management of a range of contaminant discharges to air.

Air pollution levels are affected by the weather and topography, and can vary considerably across Auckland. Air quality worsens in light wind conditions and on cold winter days when contaminants are trapped close to the ground. The major sources of air pollutants in Auckland are from domestic fires used during winter and the discharges from motor vehicles. Air contaminants from industries also contribute to Auckland's urban air pollution overall, but to a much lesser extent than domestic fires and vehicle emissions. However, industrial emissions can have localised adverse effects on amenity and some industrial emissions can contain noxious or dangerous substances that are hazardous to human health. Industry emissions therefore need to be managed to avoid or reduce these effects. When new sensitive activities are put in close proximity to activities with air discharges, reverse sensitivity may occur, impacting on the effective long-term operation of the existing activity.

Objectives

1. Air discharges and the use and development of land are managed to improve air quality, enhance amenity values and reduce reverse sensitivity in Auckland's urban areas and to maintain air quality at existing levels in rural and coastal marine areas.
2. The Auckland Ambient Air Quality Standards and National Environmental Standards are met, and in particular priority is given to meeting the annual average standards for fine particles (PM¹⁰ and PM^{2.5}) and hourly and 24-hourly standards for nitrogen dioxide.

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3. The directives of the National Environmental Standard for Air Quality to reduce PM¹⁰ contaminant levels are implemented through Unitary Plan provisions and other relevant techniques available to the council.
4. Adverse effects of air discharges on human health, property and the environment are avoided, remedied or mitigated including those from:
 - a. domestic solid fuel burning
 - b. outdoor burning
 - c. industrial and trade premises
 - d. application of chemicals
 - e. motor vehicles.

Policies

1. Manage discharges to air and the use and development of land to:
 - a. avoid significant adverse human health effects and reduce exposure to adverse air discharges
 - b. regulate activities that use or discharge noxious or dangerous substances
 - c. minimise reverse sensitivity conflicts by avoiding or mitigating land use conflict between air discharges and activities that are sensitive to air discharges
 - d. enable the operation and development of light and heavy industrial activities and rural production activities, that have air discharges
 - e. protect activities that are sensitive to the adverse effects of air discharges
 - f. reduce the adverse effects of emissions from domestic fires and motor vehicles
 - g. minimise actual and potential risk to people and property
 - h. protect flora and fauna from the adverse effects of air contaminants.
2. Meet AAAQS by giving priority to:
 - a. reducing PM¹⁰ and PM^{2.5} particulate discharges from combustion sources such as domestic fires, motor vehicle emissions and industrial discharges to air
 - b. establishing caps for the total discharge of fine particles (PM¹⁰ and PM^{2.5}) and nitrogen dioxide from sources that require air discharge consents
 - c. providing for new major discharges, or increases in existing discharges of fine particles (PM¹⁰ and PM^{2.5}) where:
 - i. the activity will not exceed the cap established under (b) above
 - ii. the emissions are offset.
 - d. advocating for the reduction of discharges of nitrogen oxides in motor vehicles emissions
 - e. advocating for reductions in sulphur dioxide emissions from marine sources.
3. Recognise the significance of air pollutant discharges from domestic fires as the major source of poor air quality in urban Auckland and reduce discharges of fine particles (PM¹⁰ and PM^{2.5}) to meet Auckland Ambient Air Quality Standards and National Environmental Standards by:
 - a. phasing out domestic open fires un urban Auckland areas
 - b. requiring new solid fuel-burning domestic fires to meet appropriate emissions standards
 - c. promoting effective and efficient low emission home heating sources
 - d. encouraging housing design which minimises the need for home heating

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- e. encouraging the use of clean burning fuel and the effective operation of existing solid fuel domestic fires, while supporting their progressive replacement by more efficient and lower emission heating options.
4. Reduce the impacts of air contaminant discharges from motor vehicles on human health and the environment by:
 - a. promoting patterns of land use that minimise the need to travel by motor vehicle
 - b. promoting urban design that minimises the adverse effects of air discharges from motor vehicles
 - c. supporting the development of passenger transport, ride sharing, cycling, walking, working from home and other measures to reduce the need to use motor vehicles to move people and goods around Auckland
 - d. avoiding and mitigating the adverse effects on human health associated with high traffic generating activities and major new transport projects
 - e. encouraging heavy-duty diesel vehicles to use routes that are part of the strategic freight network and to avoid routes that are not part of this network
 - f. encouraging public transport to meet appropriate emission standards including the preferred use of electric and low emission vehicles
 - g. supporting the use of low emission motor vehicles (both light and heavy duty).
5. Manage the discharge of contaminants to air from the use and development of land and the coastal marine area in a manner that provides for different levels of amenity according to the purpose of the zone and the predominant types of activities within any given area, and in particular:
 - a. allow for reduced air quality amenity in industrial areas
 - b. maintain a high level of air quality amenity, including good visibility in other urban areas and in the coastal marine area
 - c. provide for minor and localised degradation of amenity, including visibility in rural areas, only where the air discharge is from a rural activity.

Methods

Regulatory

Unitary Plan:

- Auckland-wide objectives, policies and rules for air quality.
- Overlay objectives, policies and rules for industry transition, sensitive activity restriction and transport corridor separation.
- Land use zoning that encourages the development of a compact city and enables greater walking and cycling, use of public transport and a reduced reliance on private motor vehicles.

Bylaws

Non regulatory

Advocacy and education:

- Raising awareness of air quality issues
- Education about low emission home heating, insulation and waste management.
- Education encouraging reduced reliance on the private motor vehicle.

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Monitoring and information gathering

Explanation and reasons

Approaches to managing air quality vary, depending on the type of contaminant discharge. Some pollutants are managed by the reduction, containment and treatment of the discharge at its source, such as for discharges from industry, domestic fires and discharges in rural areas. The air quality effects of motor vehicles are managed through the control of land use and associated activities by encouraging more efficient land use patterns to reduce reliance on the private motor vehicle. Further measures can also be taken such as separating the source of emissions from sensitive activities.

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6.2 Minerals

Introduction

Minerals are essential for Auckland's development and include:

- aggregates, such as stone, rock, sand and gravel, for industry, construction and infrastructure
- limestone deposits for manufacturing fertilisers, roading basecourse and cement
- silica sand, shells and shingle for construction materials, glass production and beach replenishment purposes
- iron sand for production of steel
- clay for brick, ceramics and pottery products.

In the past, Auckland's quarries have produced nearly 10 million tonnes of aggregates per year. Currently a number of mineral extraction sites still operate in Auckland. Minerals are also imported from other parts of the country, particularly from the northern Waikato area.

The demand for minerals, particularly aggregates, is expected to increase to 15 million tonnes per annum by 2041. This will service new growth, and renew and maintain buildings, roads and infrastructure.

Given the anticipated increases in demand and Auckland's dependence on minerals, an accessible supply of minerals is a matter of regional importance.

Objective

1. Auckland's mineral needs are met largely from within Auckland.

Policies

1. Zone regionally significant quarries and provide for mineral extraction activities within rural areas to ensure a secure supply of extracted minerals for Auckland's continuing development.
2. Encourage the use of recycled mineral material, construction waste and demolition waste to supplement supply.
3. Undertake new mineral extraction activities, where possible, outside:
 - a. ONCs, ONLs or SEAs
 - b. ONFs or scheduled sites and places of significance to Mana Whenua.
4. Where there are no practicable alternatives to locating outside the areas in Policy 3, the council will consider:
 - a. the benefits derived from mineral extraction, particularly its contribution towards meeting greater regional demand and improved self-sufficiency
 - b. the reduced transport effects and costs from having a mineral extraction site closer to the area of demand
 - c. the scale of significant physical and visual adverse effects on ONCs, ONLs or SEAs and the extent to which these can be remedied or mitigated
 - d. the extent to which residual adverse effects on the SEAs can be mitigated or offset to achieve, where practicable, no net loss of biodiversity.
5. Identify mineral deposits for future use and safeguard the regionally significant ones from inappropriate land use and development.
6. Mineral extraction activities shall be established and operated in ways which mitigate significant adverse effects on the environment by:

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- a. considering design and layout of the site, access roads and supporting facilities
 - b. preparing management, mitigation, biodiversity offsetting and/or rehabilitation plan(s) to address a full range of adverse effects
 - c. undertaking remedial measures during mineral extraction
 - d. considering site rehabilitation and use after mineral extraction ceases.
7. Subdivision, use and development adjacent to regionally significant mineral resources and adjoining transport routes shall avoid the establishment of sensitive activities which may compromise existing and future mineral extraction.

Methods

Regulatory

Unitary Plan

- Zone objectives, policies and rules for: Special Purpose and Quarry.
- Overlays objectives, policies and rules for: Quarry Buffer Area.
- Designations e.g. Whitford Quarry.

Non-Regulatory

Non-statutory plans and strategies:

- Quarry management plans.

Monitoring and information gathering

Explanation and reasons

Auckland's increasing dependence on mineral resources from adjacent regions has environmental and cost implications for the industry and end-users, particularly the increased costs associated with longer transport distances. There are also benefits from locating the extraction and processing of minerals and in particular aggregates as close together as possible. Increasing the level of mineral self sufficiency for Auckland is the main objective of this plan's mineral extraction section. This involves identifying and protecting existing significant quarries by the use of a specific zone, and enabling mineral extraction to provide both local and Auckland wide needs.

Mineral extraction activities are encouraged to adopt best practice management of the site to minimise adverse effects on both the natural environment and on the amenity values and quality of life of neighbouring land uses. Greater focus is also given to avoiding reverse sensitivity conflicts between mineral extraction sites and surrounding land uses and giving greater protection to the ongoing supply of minerals for Auckland.

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6.3 Freshwater and Geothermal Water

Introduction

Lakes, rivers, streams and wetlands (including their headwaters, margins and associated flood plains) and aquifers make up our freshwater systems. They are valued for their natural character, landscape, ecological and biodiversity values, amenity and recreational values, navigation and access, and stock, domestic and municipal water supply. Freshwater systems also provide an essential link between the land and the sea, including natural processes to regulate runoff during storms, receive and filter contaminants, and allow fish to reach spawning areas and upstream habitats.

Auckland is characterised by relatively small and shallow natural lakes, remnant numbers of wetlands, a few larger rivers and a network of small, shallow and short streams. Groundwater aquifers underlie both urban and rural areas and there are geothermal water resources in Auckland. The sources of municipal water supply for Auckland include a number of water supply lakes (created by dams), rivers and groundwater aquifers. Maintenance of the quality of freshwater and improved management of its quantity, allocation and use can improve the relationship between demand and supply of both surface and groundwater.

The loss of freshwater systems and degradation of their values, particularly small streams, is a significant issue facing Auckland. The piping and infilling of streams, including headwater reaches, has been prevalent in our past urban development and resulted in the permanent loss of important community and ecological resources and their values.

Sediment runoff from land development and the runoff of contaminants from urban land uses have contaminated urban streams, and led to undesirable impacts on coastal water quality and use and enjoyment of the CMA. Increased impervious surfaces in urban areas have also changed the amount and intensity of surface water runoff which can create or worsen flooding events, and the erosion of rivers and streams.

However, rivers and streams in particular also have an essential role as a natural component of an urban stormwater collection and management system. Development must therefore be managed to facilitate this function while retaining the natural, recreational and amenity values.

Past land development has had a significant impact on Auckland's freshwater systems. It is now recognised that in many situations a water sensitive approach to development can provide for land development while retaining natural water systems and enhancing them where they are degraded. Intensification and redevelopment can also offer opportunities to restore and enhance degraded freshwater systems, and improve the natural environment in Auckland.

In rural areas lakes, rivers and particularly streams are physically affected by stock access to and trampling of stream beds, loss of riparian vegetation, and reduced water quality from the runoff of fertiliser, sediment and other contaminants from primary production activities. Major infrastructure in rural areas may also affect all types of freshwater resources.

In the Mana Whenua worldview, water represents the tears of Ranginui, the lifeblood of Papatūānuku, and is the domain of Tangaroa. The mauri of water is at the core of sustaining Papatūānuku. Mana Whenua are responsible for the kaitiakitanga of water, its spiritual essence to cleanse, and its importance to the ongoing well-being of people. Land-based activities can also compromise the ways in which Mana Whenua value water in rivers and streams. The mixing of different types of water through discharges, or by the diversion of these water bodies is contrary to Mana Whenua views on how water should be managed.

All of these matters need to be addressed in an integrated manner to minimise adverse effects on freshwater systems during subdivision, use and development. The National Policy Statement for Freshwater Management 2011 (NPSFM) and the New Zealand Coastal Policy Statement 2010 (NZCPS) provide both short-term and long-term directions that the Unitary Plan has to implement.

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This needs to be done in a way that takes account of Auckland's physical, economic, social and cultural characteristics and requirements.

Objectives

1. The natural, social, economic and cultural values of freshwater and geothermal water resources are safeguarded when land, freshwater and geothermal water is used and developed.
2. The quality of freshwater and the natural and cultural values of freshwater systems are maintained and restored and enhanced where they have been degraded below levels necessary to safeguard life supporting capacity and meet community values.
3. Freshwater and geothermal resources are managed and allocated to support their natural and cultural values and to make efficient use of available water for economic, social and cultural purposes.
4. The amount of freshwater used by Auckland is progressively reduced on a per head basis.
5. The adverse effects of stormwater runoff and wastewater discharges on communities, freshwater systems and coastal waters are minimised and existing adverse effects are progressively reduced.
6. Mana Whenua values, mātauranga and tikanga associated with freshwater resources are recognised.
7. Mana Whenua actively participate in freshwater management processes and decision-making.

Policies

Integrated management of land use and freshwater

1. Integrate the management of use and development and freshwater systems by:
 - a. ensuring water supply, stormwater and wastewater collection and treatment infrastructure is adequately provided for in areas of new growth or intensification
 - b. requiring greenfield and brownfield development to be supported by comprehensive and integrated land use and water management planning processes, and adopt sensitive design and green infrastructure as a core development approach
 - c. controlling the use of land to minimise the adverse effects of stormwater runoff on freshwater systems and coastal waters, and reduce existing adverse effects where those systems or waters are degraded
 - d. avoiding development where it will increase existing adverse effects, unless these adverse effects can be adequately mitigated.

Freshwater systems

2. Manage land use, development and subdivision to:
 - a. avoid the permanent loss of lakes, rivers, streams and wetlands and their margins, particularly through the piping and infilling of streams and their headwaters
 - b. minimise the erosion and modification of stream beds and banks
 - c. protect and enhance the supporting elements and natural, social and cultural values of remaining rivers and streams including their headwaters, riparian margins and vegetation, flood plains and wetland areas
 - d. retain and enhance the connectivity between land, freshwater systems and the coast
 - e. avoid the permanent diversion of rivers and streams unless necessary for public health and safety or significant infrastructure only where other alternatives are not practicable
 - f. manage stormwater flows to minimise adverse effects on stream channels and the natural, social and cultural values of freshwater systems

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- g. maintain and enhance as far as practicable, navigation along rivers and public access to and along rivers
- h. maintain and enhance existing riparian vegetation located on the margins of streams in natural stream management areas
- i. use opportunities provided by land use change, development and redevelopment to restore and enhance natural, social and cultural freshwater values where practicable.

Managing freshwater quality

- 3. Manage use and development, discharges and other activities to avoid where practicable, and otherwise minimise and reduce:
 - a. adverse effects on the water quality and biodiversity values in identified natural lake, natural stream and wetland management areas and in SEAs
 - b. adverse effects on Mana Whenua values associated with freshwater resources, including wāhi tapu, wāhi taonga and mahinga kai
 - c. adverse effects on the quality of receiving water, including its ecology and mauri, where such water is subject to any new inter-catchment transfer or mixing of water
 - d. significant bacterial contamination of freshwater and coastal waters
 - e. the adverse effects of discharges on the quality of freshwater and coastal waters by:
 - i. reducing the potential for contaminants generated on or discharged to land at both point source and non-point sources to enter surface water and groundwater
 - ii. requiring management and treatment of discharges and contaminants
 - iii. managing land use activities that generate and discharge contaminants
 - iv. adopting the best practicable option for managing stormwater and wastewater network diversions and discharges.
- 4. Use opportunities provided by land use change, development and redevelopment to progressively improve the quality of freshwater and coastal waters.

Mana Whenua mātauranga, values and tikanga in the sustainable management of freshwater

- 5. Facilitate the identification, definition and goal setting for freshwater health from a Mana Whenua perspective using tools such as:
 - a. the Ministry for the Environment's Māori environmental performance indicators.
 - b. specific environmental or cultural indicators based on mātauranga and tikanga Māori for example the Cultural Health Index
 - c. iwi planning documents.

Freshwater and geothermal quantity, allocation and use

- 6. Manage the quantity of water taken from freshwater systems by:
 - a. avoiding further over allocation of water
 - b. establishing limits beyond which water cannot be allocated
 - c. safeguarding spring flows, surface water body base flows, the recharge of adjacent aquifers, and geothermal temperature and amenity.
- 7. Promote the efficient taking of groundwater rather than the taking of water from rivers and streams in

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areas where groundwater is available for allocation.

8. Manage the allocation of geothermal water, heat or energy by giving priority in the following order to taking or use:
 - a. in accordance with tikanga Maori for the communal benefit of Mana Whenua
 - b. existing lawfully established water uses
 - c. heating public pools
 - d. all other uses.

Sediment runoff

9. Minimise the loss of sediment from land use, development and manage sediment discharges into surface water bodies and coastal water by requiring land disturbing activities to be designed and undertaken to:
 - a. retain soil and sediment on land and not discharge it to surface water bodies and coastal water, as far as practicable
 - b. use industry best practices and standards appropriate to the nature and scale of the land disturbing activity and the sensitivity of the receiving environment to minimise sediment discharges
 - c. limit the amount of land being disturbed at any one time to minimise the risk to receiving environments particularly where the:
 - i. nature of the soil type or topography is likely to result in increased sediment loss; or
 - ii. resulting sediment laden discharge is likely to adversely affect sensitive areas.

Urban stormwater

10. Manage the adverse effects of use, development, and the discharge of contaminants from stormwater networks in urban areas on freshwater systems and coastal waters by:
 - a. using land use change and development opportunities to reduce the adverse effects of existing land use
 - b. controlling the extent of impervious surfaces to minimise adverse effects on rivers and streams, the capacity of the stormwater network, flood risk and overflows from the sewer network;
 - c. controlling stormwater volumes and runoff from use and development in areas that discharge to rivers and streams that are identified as being susceptible to the adverse effects of increased stormwater flows
 - d. minimising the generation and discharge of stormwater and contaminants to the stormwater network
 - e. adopting the best practicable option to manage discharges from public stormwater networks and enabling prioritised improvements to those networks and reduction in adverse effects on a catchment, network or receiving environment basis.

Urban wastewater

11. Manage the adverse effects of discharges from wastewater networks by:
 - a. ensuring that new development is supported by wastewater infrastructure of a capacity that is sufficient to cater for expected population growth within the area to be serviced
 - b. progressively reducing existing overflows, and associated adverse effects, with a priority for areas that are sensitive to the adverse effects of wastewater discharges by:

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- i. adopting the best practicable option for preventing and minimising the adverse effects of discharges from the separated and combined wastewater networks, including works programmes to reduce overflow frequencies and volumes
- ii. ensuring operations and maintenance plans are in place for the effective operation of the wastewater network and to minimise dry weather overflow discharges
- iii. ensuring response processes are in place to mitigate the adverse effects of overflows on public health and safety and the environment where they occur
- iv. managing discharges from wastewater treatment plants to meet community and environmental objectives.

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Methods

Regulatory

Unitary Plan

- Auckland-wide objectives, policies and rules for lakes, rivers, streams and wetland management, water quality and integrated management, water quantity, allocation and use, stormwater management, onsite wastewater, wastewater network management, taking, using, damming and diversion of water and drilling
- Auckland wide objectives, policies and rules for agrichemicals and VTAs and rural production discharges
- Riparian yard controls which control earthworks and vegetation removal and contribute to maintaining water quality and in-stream habitats
- Overlay objectives, policies and rules for stormwater management area: flow, water allocation, freshwater management areas, water supply management area, wetland management area.

Non regulatory

Advocacy and education:

- Education about how water quality can be safeguarded by behaviour change at home and work.

Monitoring and information gathering:

- Pollution response team and hot-line
- Active management of council owned close landfills.

Funding and assistance:

- Incentives for improved riparian management and planting
- Funding hazardous waste collection services.

Explanation and reasons

These objectives and policies relate to the management of the quality and quantity of freshwater resources, both surface water and groundwater in Auckland. They are implemented through a variety of different plan provisions that deal with the management of land uses, the quality of both direct and indirect discharges, including sediment and organic and chemical contaminants, the taking, use and allocation of freshwater from streams and aquifers and disturbance of lake and river banks and beds. All of these activities affect the overall quality and availability of freshwater and the options for its human use and enjoyment, as well as the maintenance and protection of its biodiversity values.

Some freshwater bodies outside urban Auckland have high biodiversity and/or water quality and are included as management areas, with a protection oriented management approach. In urban areas particular attention is given to the management of stormwater quantity and quality from stormwater network systems and wastewater overflows from the public wastewater network. These discharges have the greatest adverse effects on the physical form and quality of urban streams, and are also a major source of degradation of coastal water quality and ecosystem values. Past experience has shown that the adverse effects of stormwater discharges cannot solely, or effectively, be managed "at the end of the pipe". Stormwater management must also encompass the land use activities that contribute stormwater and associated contaminants to the stormwater network and integrated land and water management is an important focus of this approach.

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Sediment being discharged from urban and rural streams is also a major source of freshwater and coastal contamination. The Auckland Plan sets a target of reducing the overall yield of suspended sediment to priority marine receiving environments by 15 percent between 2012 and 2040. This requires appropriate provisions to be put in place to ensure as far as practicable, soil and sediment are retained on the land and kept out of rivers, streams and coastal waters.

Surface water bodies and groundwater aquifers cannot supply all of Auckland's future water needs, without more efficient management approaches to the allocation and use of available freshwater being introduced. The principal consumptive use of freshwater in Auckland is for municipal water supply, which is in part supplied from the Waikato River. Maintaining the quality of freshwater so it is fit for purpose, and managing the allocation and use of water according to priority users and making more efficient use of available supply are key policy approaches taken in the Unitary Plan.

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6.4 Land - hazardous substances

Introduction

Industry and commercial activities (including the energy sector), farms and homes may all use, store, transport or dispose of hazardous substances including fuels, fertilisers, agrichemicals, industrial and commercial gases, solvents, cleaners, oils and corrosive substances. Some of these activities rely on bulk storage and distribution facilities.

The storage, use, disposal and transport of hazardous substances are subject to minimum performance requirements that are set by regulations under the Hazardous Substances and New Organisms Act 1996 (HSNO). These requirements apply regardless of circumstances such as activity and location. Additional land use controls may also be made under the RMA for the prevention or mitigation of any adverse effects of the storage, use, disposal and transport of hazardous substances. Land use controls may manage the risk, likelihood and consequence, of adverse effects, such as those resulting from spills, fires and explosions, having regard to the site-specific circumstances of an activity.

Objective

1. The environment is protected from the adverse effects and risks associated with the storage, use, disposal and transport of hazardous substances, while recognising and providing for the social and economic benefits of these activities.

Policies

1. Manage the use and development of land for hazardous facilities to avoid unintended discharges or other unintended events resulting in adverse effects on human health and the environment.
2. Manage the use and development of land for hazardous facilities:
 - a. so that hazardous facilities are resilient to damage caused by natural hazards that could result in adverse effects, including risks to people, property, and the contamination of air, land, ground and surface waters
 - b. to minimise risks caused by a natural hazard event.
3. Manage the effects associated with use and development of land for hazardous facilities by:
 - a. not allowing sensitive activities to be established near hazardous facilities or areas identified for hazardous facilities if they are likely to be adversely affected by any hazardous facility or if they have the potential to constrain operation of the hazardous facility
 - b. not allowing new hazardous facilities to be located near sensitive activities unless adverse effects are avoided
 - c. providing areas for hazardous facilities within Auckland away from sensitive activities so that they may carry out their operations without unreasonable constraints.

Methods

Regulatory

Unitary Plan

- Auckland wide objectives, policies and rules for managing hazardous substances, biosolids and industrial and trade activities.

Non regulatory

Advocacy and education:

- Making available guidance to assist operators of hazardous facilities in achieving compliance with relevant requirements, such as brochures or web-based information

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- Promotion of good practices by hazardous facilities operators, including best management practices and adoption of environmental or quality management systems
- Promotion of 'Cleaner Production' principles
- Identification and promotion of suitable industrial standards, guidelines and codes of practice
- Education of public on risk issues associated with hazardous substances and hazardous facilities
- Providing generic information on reverse sensitivity issues
- Making available information on examples of comparable cases and precedents for reverse sensitivity effects on hazardous facilities.

Monitoring and information gathering

Funding and assistance

- Liaison with parties involved with hazardous substance management – such as adjoining territorial authorities, central government departments, the New Zealand Police and Fire Service and owner/operators of hazardous facilities - will allow for more effective risk management co-ordination
- Council facilitating a resolution process outside the consents process to manage reverse sensitivity effects on hazardous facilities.

Explanation and reasons

To manage the effect of hazardous substances, the Unitary Plan focuses on the facilities and activities which use, store or dispose of hazardous substances, rather than on the substances themselves, which is the role of HSNO. All activities involving hazardous substances have the potential to create adverse effects if they escape into the environment, burn, explode, or react with each other. Adverse effects resulting from inadequate management or an accidental release or spill, can include contamination of water, soil and air, damage to ecosystems, human health and property.

New hazardous facilities should not be located near sensitive activities or other hazardous facilities where significant cumulative effects may occur.

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6.5 Land - contaminated

Introduction

Contaminated land is an area where the quality of the soil, groundwater or surface water has been compromised, predominately from the manufacture, use, storage, transport and disposal of chemicals and hazardous substances. Land contamination can limit the use of land, cause corrosion that may threaten building structures, reduce land value, and directly endanger the health and safety of people through contact with contaminated soil, swallowing food or water from contaminated environments, or breathing vapours or contaminated dust. Contaminants leaching from soil into groundwater, surface and eventually into the CMA effects water quality and flora and fauna.

Auckland has a legacy of soil contamination. Common past activities that have led to contaminated sites include:

- use of agrichemicals
- storage and use of petroleum products
- timber treatment
- sheep-dipping.

Objective

1. Human health and the quality of air, land and water resources in Auckland are protected by the identification, management and remediation of land containing elevated levels of contaminants.

Policies

1. Identify potential and confirmed land containing elevated levels of contaminants in Auckland based on the following priorities:
 - a. sites known to have supported contaminating land use activities in the past
 - b. sites with a significant potential risk to human health.
2. Land that has not been investigated but which has a likelihood of contamination due to the type or nature of prior land uses will be noted by the council as being potentially contaminated.
3. Remediate land containing elevated levels of contaminants where:
 - a. the level of contamination renders the site unsuitable for its existing or potential use
 - b. the contaminants are generating adverse effects on the environment
 - c. there is a high risk of contamination spreading beyond the site
 - d. development or subdivision of land is proposed.

Methods

Regulatory

Unitary Plan

- Auckland wide objectives, policies and rules for contaminated land, agrichemicals and vertebrate toxic agents, discharge of contaminants, industrial and trade activities, managing hazardous substances.

Non regulatory

Monitoring and information gathering:

- Pollution response team and hot-line
- Active management of council owned contaminated land

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- Collection of information about contaminated land.

Funding and assistance:

- Funding hazardous waste collection services.

Explanation and reasons

Identification of contaminated sites is the first step in any management regime. Initial assessments conducted on behalf of the Ministry for the Environment suggests Auckland may have more than 1700 contaminated sites. This assessment has only targeted sites that are, or have been, occupied by activities historically associated with site contamination, rather than sites that have actually been confirmed as contaminated. Systematic identification of sites needs to continue.

To protect human health, the National Environmental Standard for Assessing and Managing Contaminants in Soil to Protect Human Health (Soil NES) was issued in January 2011. The Soil NES has established soil contaminant standards that protect human health for a range of land uses. It aims to appropriately identify and assess land affected by contaminants in soil when the land uses changes, or it is being subdivided, and, if necessary, remediated or the contaminants contained to make the land safe for human use.

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6.6 Genetically Modified Organisms

Introduction

The outdoor use of genetically modified organisms carries risks of adversely affecting the environment, economy and social and cultural resources and values.

Objective

1. The sustainable management of the natural and physical resources of Auckland with respect to the outdoor use of GMOs.

Policy

1. Adopt a precautionary approach, including adaptive responses, to the outdoor use of GMOs.

Methods

Regulatory

Unitary Plan:

- Auckland wide objectives, policies and rules for GMOs.

Non regulatory

- Promoting farming and land management practices that do not require the use of GMOs.

Explanation and reasons

Genetic modification (GM) refers to a set of techniques that alter genetic makeup by adding, deleting or moving genes (within or between species) to produce new and different organisms. Genetically modified organisms (GMOs) are products of genetic modification.

The benefits of GMOs is continually being redefined as biotechnology advances. However, there remains scientific uncertainty of the potential adverse effects of GMOs on natural resources and ecosystems. The risks could be substantial and certain consequences irreversible. Once released into the environment, most GMOs would be very difficult to eradicate. If the GMO is related to a food product, the "GE Free" food producer status of Auckland would likely be permanently lost, along with any marketing advantages that status confers.

The relevant legislation which applies to the management of GMOs in New Zealand is the Hazardous Substances and New Organisms Act 1996 (HSNO Act). The HSNO Act establishes the legal framework for assessments by the national regulator, the Environmental Protection Authority (EPA). This Act sets minimum standards and enables the EPA to set additional conditions for a particular GMO activity.

Councils also have jurisdiction under s. 30 and 31 of the RMA to control field trials and the release of GMOs, to promote sustainable management. This enables gaps in the national regulatory regime for the management of GMOs to be addressed. In particular to:

- ensure GM operators are financially accountable for the full costs associated with the GMO activity including unintentional contamination, clean-up, monitoring and remediation
- adopt a precautionary approach to manage potential risks (economic, environmental, social and cultural) associated with the outdoor use of GMOs
- protect marketing advantages associated with a "GE free" status
- address cultural concerns of Mana Whenua.

The council does not seek to foreclose potential opportunities associated with a particular GMO that could benefit the community or the area. However, the outdoor use of GMOs, without taking adequate precautions,

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can have irreversible adverse effects on the environment, including people and communities and their social, economic and cultural well being. To protect the community, it is important to allow for the desired benefits, while managing the risks and potential adverse effects.

There is the ability to review a particular GMO activity if it were to become evident during the field trial stage or in light of other new information that it would be of net benefit to Auckland and that potential risks can be managed to the satisfaction of the council. The council or a GMO developer can initiate a plan change to change the status of a GMO activity.

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6.7 Natural hazards

Introduction

Auckland is affected by a wide range of natural hazards including those that occur frequently such as flooding (coastal and freshwater) and land instability, and those that occur less frequently including volcano activity, tsunami, earthquakes, meteorological hazards (cyclones, tornadoes, drought) and fire. The risk that these hazards pose is not just a reflection of the frequency of these events, rather it is made up of a number of factors including:

- the size and nature of the hazard
- the likelihood of the hazard occurring
- the exposure and vulnerability of elements at risk (people, buildings, infrastructure etc).

Each of these elements needs to be considered to determine the most effective way to reduce natural hazard risk. Some risks can be effectively managed through land use planning and are addressed through objectives, policies and rules in the Unitary Plan, while others are better managed through public education, emergency preparedness, early warnings, building consents and insurance and through the provision of new or upgraded infrastructure.

Existing land use activities in areas prone to natural hazards may cause or worsen risk. New growth and intensification may also cause or worsen risk, depending on the degree to which natural hazards are avoided, mitigated or accepted during development.

Predicted changes in climate could have an effect on the environmental processes that cause natural hazard events.

Objectives

1. Reduce risk to people, property and infrastructure from natural hazards while minimising any adverse effects on the environment.
2. Protect the natural functions of floodplains and overland flow paths from the adverse effects of development and infrastructure.

Policies

1. Identify areas potentially affected by natural hazards, giving priority to those at high risk of being affected.
2. Undertake hazard identification and risk assessments for subdivision, use and development using the best available and up-to-date hazard information.
3. Assess the risk of development locating in areas subject to natural hazards based on the:
 - a. type and severity of the event
 - b. the effects of other activities from development
 - c. vulnerability of the activity to adverse effects, including safety, resilience to damage and effects on the environment and human health

across a range of timeframes appropriate to the hazard, including a 100 year timeframe for flooding and coastal hazard

4. Adopt a precautionary approach to natural hazard management and risk assessment in circumstances when:
 - a. the effects of natural hazards are either unknown or may be significant, including the possibility of low frequency, high magnitude events
 - b. the level of information on the probability and/or consequences of the hazard is limited

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- c. considering the location and design of significant infrastructure and future urban areas.

Management approaches

5. Protect, as a priority, maintain and where appropriate enhance natural defence systems, such as retention of flood plains, sand dunes and vegetation and riparian margins in their natural state, as opposed to using hard engineering methods.
6. Avoid or mitigate the effect of activities, such as earthworks, changes to natural and man-made drainage systems and/or vegetation clearance so that the risk of natural hazards in the locality is not worsened.
7. Encourage activities that reduce, or do not increase, the risk posed by natural hazards, including:
 - a. protecting and restoring natural landforms and vegetation
 - b. managing retreat by relocation, removal or abandonment of structures
 - c. replacing or modifying existing development to reduce risk without using hard engineering structures
 - d. designing for re-locatable or recoverable structures
 - e. providing for low intensity activities that are less vulnerable to the effects of relevant hazards, including modifying their design and management.
8. Encourage existing development, on land subject to natural hazards, to reduce existing risk and ensure that it does not create new risk by:
 - a. using a range of measures such as the placement of buildings and structure
 - b. design
 - c. managing activities to increase their resilience to hazard events
 - d. change of use to a less vulnerable activity.

Infrastructure

9. Minimise the risk to new significant infrastructure which functions as a lifeline utility by:
 - a. assessing the risk from a range of hazard events including low likelihood, high consequence events such as tsunami, earthquake and volcanic eruptions
 - b. utilising design, location and network diversification to minimise the adverse effects on that piece of infrastructure and to minimise the adverse effects on the community from the failure of that piece of infrastructure.

Methods

Regulatory

Unitary Plan:

- Land use zoning and policies
- Auckland wide objectives, policies and rules for natural hazards
- Coastal zone objectives, policies and rules
- Ensuring the safety of buildings through the Building Consent process.

Land Information Memoranda

Building consent process

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Non regulatory

Non-statutory plans and strategies:

- Preparation and implementation of a Natural Hazard Risk Management Action Plan for Auckland.

Advocacy and education material:

- Providing information about natural hazards in Auckland to the public.

Civil defence and emergency management.

Explanation and reasons

These objectives and policies seek to ensure adequate spatial planning to reduce the risk from natural hazards. They also seek to locate and design new development and infrastructure to deal with the impacts that may be experienced over their lifetime. This includes responding to the effects of climate change.

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