

The State of our Land

The land area of Waitakere City is 39,134 hectares, including 18,130 hectares of open space. Land and soils are important resources that support life. There is a range of soil types, dominated by clays with low natural fertility, but generally good structure and drainage. The soils and landforms greatly influence land use.

The West Coast is dominated by the Waitakere Ranges, a forested region that extends down to the foothills covering the western half of the city. The foothills are a mosaic of remnant orchards, quarter acre sections, and small sized farms. Between the foothills and the Waitemata Harbour to the east is an urban area that stretches from the Manukau Harbour in the south to the fertile terraces of Whenuapai to the north. Over the last century urban sprawl has resulted in more impervious surfaces, mainly roads and concrete surfaces, which has a significant effect on drainage and requires careful management of stormwater.

The availability of land for further urban development is limited, due to the risk that further development in the rural areas will reduce the quality of the environment, and increase the risk of flooding. This chapter outlines a number of natural and human influences on the quality of the environment.

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This chapter highlights the following key issues:

1. LOSS OF PRODUCTIVE LAND
2. CONTAMINATION OF SOIL
3. PROTECTION OF GEOLOGICAL FEATURES
4. NATURAL HAZARDS

Information about land use is contained in the chapter “City Form and Design”.

Information about landforms and landscapes, including the Waitakere Ranges, foothills and coastal areas, is contained in the chapter “State of our Landscape”.

Information about vegetation is contained in the chapter “State of our Biodiversity”.

KEY INDICATOR

Soil loss through earthworks and runoff.

1. LOSS OF PRODUCTIVE LAND

Soils are complex and sensitive eco-systems. The productive Class II soils owe their fertility to a mix of biological, chemical and physical processes that have occurred over a very long time (*Auckland Regional Council, Regional Policy Statement, Soil Conservation Chapter 12*). However all soils are vulnerable to degradation, which can occur as a result of compaction by vehicles or building development. Earth moving and stormwater runoff can lead to erosion washing soils into waterways and leaving behind contaminants from urban activities. The removal of vegetation, and the covering of soils are all factors in the degradation of soils, associated with new construction.

The best horticulture soils are Class II soils located around Whenuapai and between Hobsonville and Massey. The eastern-side of the Te Atatu Peninsula also contains Class II soils. However, the area has been, or will be, built up for housing. Pip fruit orchards and vineyards were successful on Class III soils throughout the foothills, and particularly in Oratia. In recent years those orchards have proved increasingly uneconomic, and there has been a shift in land use from orchards to lifestyle blocks. The intensification of urban activities in the rural areas of the foothills and Whenuapai-Hobsonville could make these areas useless for horticulture if soils are not protected.

The District Plan includes restrictions on the subdivision of land outside the Metropolitan Urban Limit. It is intended that new development be consolidated in the existing urban area, to limit the necessity to urbanise areas that may be useful for horticulture.

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2. CONTAMINATION OF SOIL

Soil contamination occurs as a result of the manufacture, storage, use and disposal of chemicals and hazardous substances.

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Landfills, ‘cleanfills’ and quarries are areas of risk. Landfills may leach chemicals and gases into the soil if not managed correctly. This becomes a risk when those chemicals are then allowed to escape from the site, and into the air and waterways.

The “Aftercare” unit of Council manages old landfill and cleanfill sites. Aftercare is responsible for the maintenance of these sites and for remedial works to improve the quality of the environment onsite. Recycling waste is one way that we can minimise our impact on the land by minimising the quantity of material that we dump into landfills. Everyone in Waitakere City has a responsibility to ensure that hazardous materials like batteries, tyres and products that release chemicals into the soil are not buried, so that soil contamination may be avoided.

While current agricultural practices take into account the potential for soil contamination, the practices of past decades have caused some lasting problems. Some past orcharding, viticulture and glasshouse sites can have levels of soil contamination which could prove to be a problem, especially to young children who are in the habit of eating soil. The Council is currently working to identify such sites and to put in place management procedures.

The ‘Aftercare’ Unit of Council has identified 129 historical landfill/cleanfill sites in the City. Of these, Council has ownership and responsibility for 50 – the other 79 are privately owned, mainly cleanfill sites. Aftercare is responsible for the maintenance of these 50 sites and for remedial work to avoid or reduce their environmental impacts.

3. PROTECTION OF GEOLOGICAL FEATURES

A giant volcano that reached as high as Mt Taranaki was lifted from the seabed about 16 millions years ago to form the Waitakere Ranges. The eastern side of the city was once the ocean floor of the Waitemata Basin, which stretched from Dargaville to Hamilton. The basin was edged by a landmass that stretched from Whangarei to the present Coromandel Peninsula. That landmass was eroded over time; to form layers of sandstone sediment that once uplifted with the Waitakere Volcano created the fertile areas of Whenuapai and Te Atatu. (Hayward, Bruce, 1950, ‘Ancient Undersea Volcanoes: A guide to the geological formations of Muriwai, West Auckland, Geological Society of New Zealand).

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Waitakere City is blessed with a rich heritage of significant landforms, which include the pillow lava formations to the south of Muriwai and Nihotupu, Lion Rock and a number of coastal caves and tunnels, the Piha Gorge, and the Pollen Island mudflats on the eastern side of North Te Atatu Peninsula. These areas are either protected by Water Care Services, Marine Reserve designation or are located within the Auckland Memorial Centennial Park.

The following table lists the significant natural features, and whether they are internationally (I), nationally (N) or regionally (R) significant. The rankings are

sourced from the Geological Society of New Zealand (Kenny, Jill & Bruce Hayward, 1993, ‘Inventory of Important Geological Sites and Landforms in the Auckland Region, Geological Society of New Zealand).

Table 1: Significant natural geological features

| Name/Location (Significance) | Description | Threat |
|--|--|--|
| Bethells Swamp (R) | Dune dammed swamp | |
| Lion Rock Neck (R) | Lion shaped rocky stack | |
| Nihotupu Gorge, Volcaniclastic Flysch (N) | Best exposed section of boundary between Waitemata Basin and Waitakere Volcaniclastic pile | |
| Nihotupu Pillow Lavas (R) | Pillow Lavas | |
| Piha Gorge (R) | Best example in Waitakere Ranges, incised gorge 5-20m wide and 50-100m high | Future quarrying |
| Pollen Island Mudflats (N) | Best remaining largely unmodified area of salt-marsh in the Waitemata Harbour | |
| Te Atatu Pleistocene plant beds (R) | Remnants of swamp and estuarine vegetation from Pleistocene age | |
| The Gap at Taitomo Cave (R) | Best example of sea arches and blow hole on the west coast of Northland | |
| Waimanu Lakes (R) | Two lakes formed by damming of valley by active sand dunes | Stabilisation of sand dunes cutting off supply of sand |
| Whatipu Caves, pyroclastic breccia dikes (N) | Best example of pyroclastic dikes of volcanic origin in New Zealand | |
| Whatipu Coastal Flats (N) | Sand flats and low duns, mostly deposited between 1900-1930 | |

Source: Kenny, Jill & Bruce Hayward, 1993, ‘Inventory of Important Geological Sites and Landforms in the Auckland Region’, Geological Society of New Zealand).

A more comprehensive list of geological features is provided in the District Plan, Appendix of Outstanding Natural Features.

4. NATURAL HAZARDS

Despite the City's geological history of volcanic eruption and earth movement there have been few earthquakes in recent times, and the risk of volcanic eruption is considered low. The strongest earthquake to affect Waitakere in recent times was in 1891, measuring (MM 7) and centred near the mouth of the Waikato river (*Waitakere City Council, Waitakere City Civil Defence Plan, November 1999-November 2002, p.19*). Natural hazards such as landslips and flooding occur commonly in Waitakere City but the severity of such events can be minimised by managing land responsibly.

The coastal settlements of Piha, Karekare, Bethels and Huia are particularly vulnerable to natural disasters due to their isolation and coastal position. A landslide or storm could block road access, or a tsunami or high wave could threaten homes and the security of residents. First generation native bush is a fire risk in the Waitakere Ranges and to nearby settlements. The spread of urbanisation into the foothills and Waitakere Ranges, increasing the risk of downstream flooding, has the potential to affect the greatest number of people. A volcanic eruption or major earthquake is unlikely, though the consequences of such a possibility demand that the city be prepared for such an emergency.

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To minimise the risk of flooding, the District Plan strongly discourages development in 1 in 100 year floodplains. Additional subdivision on the slopes of the foothills has the potential to substantially increase stormwater run-off and overload waterways with floodwaters. A large proportion of properties located on the slopes of the Waitakere Ranges contain slopes that are listed in the Hazards Register. The downstream flooding risk will be minimised by requiring structure plans in the foothills, and requiring people to produce technical reports proving that additional development can be accommodated without increasing the risk of landslides and flooding.

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C A S E S T U D Y

TAIPARI STRAND

Restoration of a contaminated site

Taipari Strand is located on the southeastern edge of Te Atatu Peninsula on the east bank of Henderson Creek. Between 1963 and 1974, refuse including domestic, commercial and industrial wastes were dumped directly onto marine sediment. No protection measures were installed to avoid surface water contamination or contaminants entering into the groundwater beneath the landfill. As a consequence, contaminants entered into the ground and seeped onto the mudflats of Henderson Creek. The contaminants were flushed out to sea and dissipated by seawater, but at low tide the contaminants were prevented from entering into the sea, and instead remained in the mudflats, endangering the estuarine ecosystem.

To remedy the situation the Aftercare team installed a collection system to contain contaminants entering into the groundwater. A pump station was installed to pump contaminants into a sanitary sewer some 100 metres away at periods of low tide. The site was then recapped to make the landfill secure, and to prevent future contamination of surface water. The surface of the landfill was also re-contoured to enhance stormwater run-off and to make the area more attractive. Remedial works were completed in September 1998.

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The picture clearly shows the surface profile of the closed landfill/reserve and the proximity of the pump station to the seawall/mangrove of the coastal marine area.

The total effect of the project has been to make a degraded environment more attractive. The landfill is now actively managed to ensure that contaminants enter the creek at a rate and time compatible with the tidal flushing of Henderson Creek. The area is now safe for recreation and an asset to the community.

WHAT THE COUNCIL IS DOING:

The following are some of the actions the Waitakere City Council is taking:

- District Plan rules and structure plans.
- Some areas receive protection under the District Plan on the basis of soil type.
- Weed control and eco-sourced planting.
- Restrictions on land use in sensitive areas.
- Encouraging better use of urban land to avoid pressures on natural areas, Waitakere Ranges, coastal areas and sensitive areas.

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WHAT YOU CAN DO:

- Preserve native plants to protect forests, birds, streams.
- Join Keep Waitakere Beautiful or other local organisations to restore the natural environment.
- Control pests and animals on your land.

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