

## **9 SUBDIVISION AND EARTHWORKS**

### **9.1 Background**

#### **Subdivision**

The principal purpose of subdivision is to provide a suitable framework for land ownership to facilitate development and activities. Subdivision itself is a procedural and legal function which creates constraints and opportunities for subsequent development. Therefore, even though the legal process itself may be environmentally neutral, the end product provides the framework for the generation of environmental impacts and resource use constraints.

In addition, the subdivision process is often closely associated with engineering works and a demand for services and utilities to make the land suitable for development. Thus, the subdivision process can generate immediate or indirect effects that could have implications for the sustainable management of the City's resources. Accordingly, the Plan adopts such controls as are necessary to avoid, remedy or mitigate actual or potential future adverse effects that subdivision may generate. The Chapters of the Plan dealing with zones set out the rationale for the different controls, including minimum site sizes that apply in each zone.

#### **Earthworks**

Earthworks and land disturbance may be required for subdivision or other activities. The undertaking of these activities in areas with natural hazards, active geological and geomorphological processes, watercourses, or where future urban growth will be directed may have adverse effects on the environment.

### **9.2 Resource Management Issues**

#### **9.2.1 *The potential adverse effects of subdivision on infrastructure and development.***

One of the major potential impacts of subdivision is adverse effects on infrastructure and development. Subdivision may add to the demands on the City's transport and roading system, telecommunications and utilities (such as water supply, sewage disposal, and electricity). Such demands should be monitored and responded to as appropriate, with controls to ensure that each developer contributes towards the cost of that additional demand and to ensure that cumulative effects are recognised.

**9.2.2                    *The potential effects of earthworks and vegetation removal on the stability of the land.***

Earthworks and land disturbances have the potential to cause or aggravate land instability. This may result in subsidence, erosion or slippage if undertaken in areas which have topographical constraints, are subject to active geological processes or have a geological or subsoil structure that is susceptible to land displacement. Because subdivision can create expectations that land can be used more intensively, any subsequent development may increase exposure to risk from natural hazards.

Land instability can be a significant hazard. Depending on the location and type of earthworks, and the intended or potential use of the site, earthworks will need to be undertaken subject to standards to avoid a potential hazard to the community, buildings or the environment.

Due to the City's geological and topographical characteristics, there are large areas of steep slopes vulnerable to erosion and slope instability. Removal of vegetation from these areas increases risks of erosion and there is the possibility of downstream hazards as a result of sedimentation of streams increasing the flood risk.

**9.2.3                    *That subdivision, earthworks and vegetation removal do not adversely affect significant natural landforms, areas of significant indigenous natural vegetation or significant habitats of indigenous fauna or areas of landscape and/or visual value as identified within the Southern Hills Overlay Area.***

Land disturbance in sensitive locations can seriously damage or denigrate the visual amenity of the environment. In the case of Upper Hutt, the eastern, southern and western hills are an important component of the landscape and visual appeal of the City. The scarring of land, whether urban or rural, detracts from the visual quality of the City.

Land disturbance in sensitive locations can also seriously damage or destroy the ecological values of the environment.

**9.2.4                    *That the needs of future generations are met.***

Land to be subdivided should be suitable for the anticipated land use, and be serviceable and clear of unacceptable hazards or limitations. Subdivision within a Flood Hazard Extent should avoid high hazard areas and ensure appropriate mitigation measures can be implemented in lower hazard areas to provide for suitable future development. Furthermore, the subdivided land should, where practical, also allow for a range of appropriate land uses so that the potential of the land for use by future generations is not significantly diminished. Thus, the pattern of subdivision within the City should provide future generations with a choice of lifestyles and living and working environments. It is important

that indigenous vegetation, which is a finite resource, is protected for future generations, and for intrinsic ecological reasons.

**9.2.5                    *The potential of earthworks to alter the natural flow of surface water and to adversely affect the visual amenity of the City.***

Land disturbance can create visual effects beyond the area of development that may be visible for a long period of time. This affects the amenity of an area, neighbouring properties or the wider valley floor where earthworks are undertaken on hillsides or other visually prominent areas such as ridgelines.

Earthworks may alter the natural flow of surface water and hence can cause effects on lower lying land. This issue becomes particularly significant for the City as more development occurs along the surrounding hillsides.

**9.2.6                    *Earthworks within identified Flood Hazard Extents can increase the flood hazard risk.***

Earthworks can adversely affect the function of the floodplain and therefore increase the flood risk to people and property.

Earthworks can obstruct or divert flood and surface water flow paths as well as increase erosion risk. Sediment loss from areas of work can affect the stream channel and have an impact on the function of the stream during times of flood.

**9.2.7                    *Subdivision within identified Flood Hazard Extents could potentially create lots susceptible to flooding hazards.***

Subdivision creates an opportunity for further development within the new lot and therefore when proposed within an identified Flood Hazard Extent, the suitability of the proposed lot for future development needs to be considered to avoid exposing future development to unacceptable risk. Subdivision within the Flood Hazard Extent should avoid creating new lots in high hazard areas and ensure mitigation measures can be implemented in lower hazard areas to provide suitable future development opportunities that do not expose people and property to unacceptable risk.

**9.2.8                    *Subdivision within the upper sub-catchment of Pinehaven Stream provides further development opportunities which can increase stormwater runoff and flood risk.***

The flood risk in the Pinehaven Flood Hazard Extent is influenced by

activities in the upper Pinehaven Catchment. Subdivision would provide for further development potential in the upper catchment which could result in increased stormwater runoff exacerbating the flood risk to the community in the lower Pinehaven floodplain.

## 9.3

### Objectives

#### 9.3.1

***The promotion of subdivision and development that is appropriate to the natural characteristics, landforms, and visual amenity of the City, significant areas of indigenous vegetation and habitats of indigenous fauna, is consistent with the sustainable use of land, and has regard for walking, cycling and public transport.***

Subdivision is usually a precursor to a change or intensification in land use, and the size and shape of the new sites can influence the effects of activities that can occur on the subdivided land.

Earthworks and land disturbance can create hazards such as land slippage, subsidence and falling debris. It is in the interest of the community that the adverse effects of earthworks are avoided, remedied or mitigated.

Earthworks undertaken in order to promote the development of land may affect the visual amenity of the City and hence the visual amenity enjoyed by surrounding residents and the wider community. It is essential that the adverse visual effects resulting from earthworks are avoided, remedied or mitigated.

Earthworks which alter the natural flow of surface water also generate adverse effects which need to be avoided, remedied or mitigated. Particularly, earthworks should be constructed in such a way to not concentrate stormwater generated from the development onto adjoining properties.

Subdivision, and the consequent development of land, creates a demand for travel. It is important that new development considers access for public transport, pedestrians and cycles.

Subdivision and land development have the potential to affect finite indigenous vegetation. Effects on this should be avoided, remedied or mitigated.

**9.3.2**

***To control subdivision within identified Flood Hazard Extents and Erosion Hazard Area to ensure the risk from flood hazards to building platforms and access in high hazard areas are avoided and the flood risk to people and property can be appropriately mitigated in the lower hazard areas.***

Where subdivision is proposed within a Flood Hazard Extent, the natural hazard constraints will be considered, with development avoided in the high hazard areas, and mitigated in the lower hazard areas. The impact of development on the flood hazard will also need to be managed to ensure it does not increase the level of risk to other people and property.

Subdivision in a Flood Hazard Extent can also mean that any development or activity on the subdivided site is prone to flood hazards. By controlling subdivision within identified flood hazard extents, this risk to people and property can be managed.

**9.3.3**

***To control earthworks within identified Flood Hazard Extents and Erosion Hazard Areas to ensure that the function of the floodplain is not reduced and unacceptable flood risk to people and property is avoided or mitigated.***

Earthworks can result in unacceptable risk for future development or obstruct or divert flood flow paths. Where earthworks are proposed within the Flood Hazard Extent or Erosion Hazard Area, the natural hazard constraints should be considered and areas subject to high hazards are avoided

**9.3.4**

***To control subdivision within the upper areas of the Pinehaven Catchment Overlay to ensure that peak stormwater runoff during both a 1 in 10-year and 1 in 100-year event does not exceed the existing run off and therefore minimise the flood risk to people and property within the Flood Hazard Extent.***

Development in the Pinehaven Catchment Overlay needs to be controlled to ensure that stormwater runoff does not exacerbate the impact of flooding in the lower catchment. Most of the upper catchment is currently undeveloped and any new development has the potential to affect the land use and peak stormwater runoff. This policy seeks to ensure that the peak stormwater runoff does not increase, thereby increasing the flood risk downstream.

<b>9.4</b>	<b>Policies</b>
------------	-----------------

- 9.4.1**      ***To ensure that earthworks are designed and engineered in a manner compatible with natural landforms, significant areas of indigenous vegetation and habitats of indigenous fauna, the amenity of an area, and the mitigation of natural hazards.***

Earthworks can leave unnatural forms or unsightly scars which in some cases can permanently detract from the amenities of an area. They can also alter stormwater and floodwater flows, cause potential for subsidence or erosion, or significantly affect the ecology of the area. For these reasons, Council considers that controls on such activities are necessary.

Earthworks are also essential for building development, which in some cases can have no more than minor environmental effects. Plan provisions have been designed to accommodate earthworks for building development whilst ensuring that adverse effects that may result from such earthworks on the amenity of an area are avoided, remedied or mitigated.

- 9.4.2**      ***To avoid, remedy or mitigate the contamination, degradation and erosion of soil from earthworks or vegetation removal through advocating responsible land use practices.***

It is important that activities on land are managed and monitored in such a way as to prevent the depletion of resources. This is particularly important in areas that are susceptible to this for a combination of reasons, including:

- Erosion prone areas, due to geological and topographical conditions.
- Climatic conditions, such as frequency and level of rainfall.
- Vegetative conditions, such as an absence of vegetative cover.
- Proximity of property or features that could be damaged by landslip, erosion or other events.
- Proximity of streams that could be affected by sediment from runoff.

Although the Regional Council has primary responsibility in these areas, the City Council needs to address the potential effects of land use on the quality and life-supporting capacity of the City's land resources, and to employ such methods as are appropriate for encouraging good land use practice to complement the responsibilities of the Regional Council. The Council will also seek to be involved with the Regional Council on such matters.

#### 9.4.3

***To promote a sustainable pattern of subdivision and development that protects environmental values and systems, protects the potential of resources, and has regard for walking, cycling, public transport and transportation networks.***

The subdivision process is often a precursor to engineering works and a demand for services and utilities to make the land suitable for development. Thus, it can generate immediate or indirect effects on the environment. Accordingly, the Plan includes such controls as are necessary to avoid, remedy or mitigate adverse effects.

The effects of subdivision of land which is already developed can differ from the effects of subdividing undeveloped land. The degree to which undeveloped land may be serviced varies in terms of road access, sewage disposal, water supply, electricity and other requirements. The question of servicing is thus often an important consideration of the subdivision process, and needs careful management to ensure that all effects and costs are taken fully into account. The importance of ensuring the safe and efficient use and development of the transportation network is addressed in Chapter 16. It is also important to protect the limited areas of indigenous vegetation that remain in Upper Hutt.

#### 9.4.4.

***To avoid subdivision where building platforms would be located within high hazard areas of the identified Flood Hazard Extents and Erosion Hazard Areas.***

This policy seeks to avoid subdivisions that result in building platforms being located within the high hazard areas of the relevant Flood Hazard Extent or Erosion Hazard Area. This is due to the risk that these high hazard areas present to people and property, characterised by the stream or river corridor, erosion hazard area and overflow paths. The high hazard areas can contain both fast and deep flowing water in a 1 in 100-year flood event, or are potentially subject to erosion, which have the potential to damage buildings and threaten lives.

#### 9.4.5.

***To control subdivision where building platforms would be located within lower hazard areas of identified Flood Hazard Extents and Erosion Hazard Areas by requiring mitigation to minimise the risk to people and property.***

This policy recognises that there are areas within the Flood Hazard Extent and Erosion Hazard Area that are outside the high hazard areas and therefore represent a lower level of flood or erosion hazard to people and property. As such, some development within these areas may be appropriate providing appropriate mitigation measures are incorporated into developments to reduce the risk (for example floor levels above the 1 in 100-year flood extent or being setback from the riverbank). These lower hazard areas are characterised by still or slow moving water and do not present the same threat to people and property as the higher hazard areas subject to the risk being appropriately mitigated.

**9.4.6**

***Limit earthworks in the high hazard areas within identified Flood Hazard Extents and Erosion Hazard Areas to avoid an increase in risk from flood hazards to people and property.***

Earthworks in high hazard areas are inappropriate and can result in the diversion of flood waters, blocking of water flow, or reduce bank stability, which can increase the risk to surrounding properties. To maintain the function of the floodplain it is important that the passage of flood waters is not impeded or blocked.

**9.4.7.**

***To manage earthworks in the low hazard areas within identified Flood Hazard Extents and Erosion Hazard Areas to reduce the flood risk to people and property.***

Earthworks in lower hazard areas may be acceptable as there is less risk of the earthworks blocking water flow or diverting flood flows. Furthermore, earthworks are likely to be required to ensure that future building platforms (and in the case of the Mangaroa Flood Hazard Extent, the access routes) are above the 1 in 100-year flood level. Managing earthworks in these lower hazard areas will support the necessary mitigation and reduce the flood hazard threat to people and property, within the identified Flood Hazard Extents.

**9.4.8**

***Require earthworks within identified Flood Hazard Extents and Erosion Hazard Area to be designed to minimise erosion and loss of sediment from the area of work to streams and rivers***

Earthworks in the Flood Hazard Extent and Erosion Hazard Area need to be undertaken in a manner to ensure that sediment runoff is minimalised. Sediment runoff has the potential to reduce the capacity of the river channel and exacerbate the flood risk. Furthermore, while not within the scope of the plan change, it is recognised that there are amenity, ecological and water quality benefits that are derived from controlling sediment runoff from earthworks



**9.4.9**

***Enable earthworks within identified Flood Hazard Extents and Erosion Hazard Areas that are directly associated with specific and planned flood mitigation works or floodplain management that are designed to reduce the flood risk to people and property or maintain the function of the floodplain.***

Earthworks that are undertaken for the express purpose of reducing the flood risk through mitigation works have wider community benefits and therefore it is appropriate that these are supported and encouraged through the policy framework. These works are often undertaken by Greater Wellington Regional Council (or an associated approved contractor) and will be identified in approved floodplain management plans (if one exists).

**9.4.10**

***To ensure subdivision within the Pinehaven Catchment Overlay area is designed so that the stormwater runoff, during both a 1 in 10-year and 1 in 100-year event, from all new lots and future building areas shall be at a rate no greater than when compared to the pre-development situation.***

Subdivision in the Pinehaven Catchment Overlay needs to be controlled to ensure that stormwater runoff does not exacerbate the impact of flooding in the lower catchment. The upper catchment is currently mostly undeveloped and any new development has the potential to affect the land use and peak runoff.

**9.5****Methods****9.5.1**

District Plan provisions consisting of:

1. Rules to promote the subdivision of land which reflects the objectives and policies of the District Plan.
2. Rules to control the density of development through zone requirements for minimum site areas.
3. ***Rules to control the location of building platforms, earthworks, and accessways in the identified Flood Hazard Extents and Erosion Hazard Area.***
3. Performance standards and consent conditions to minimise the adverse effects of subdivision and earthworks. These relate to:
  - Provision of utilities, supply of water and disposal of effluent.
  - Landscape values, native vegetation, heritage and cultural sites.

- Managing dust, water body siltation, soil erosion, effects on ground stability and other natural hazards.
4. Allowing activities permitted by the District Plan or those granted resource consent, to be undertaken on newly created allotments.
  5. Encouraging recognition of landscape character in the design and layout of subdivisions.
  6. Financial contributions for reserves and community facilities.
  7. Management of the effects of earthworks and clearing of native vegetation by using:
    - Zone performance standards to establish thresholds for resource consents.
    - Management plans and monitoring of ongoing operations.
  8. The ability to impose conditions on resource consents to avoid, remedy or mitigate any adverse effects.

**9.5.2** Liaison with service providers and network utility operators.

**9.5.3** The Code of Practice for Civil Engineering Works.

**9.5.4** To record known sites of potential instability on a hazard register and to supply this information, in response to requests for project information memoranda and land information memoranda and for processing resource consents.

**9.6 Anticipated environmental results and monitoring**

The following results are expected to be achieved by the objective, policies, methods and rules in this chapter. The means of monitoring whether this Plan achieves the anticipated environmental results are also set out below.

<b>Anticipated environmental results</b>	<b>Monitoring indicators</b>	<b>Data source</b>
A sustainable pattern of urban development	Number of applications for activities to establish out of zone	Council records
A pattern of subdivision that enhances opportunities for the sustainable use of resources and	Activities located in the urban area of the City	Council records

provides for walking, cycling and public transport as viable and convenient transport alternatives	Infill development	
Minimal adverse effects on the environment from subdivision and earthworks	Effectiveness of conditions of consent and methods used in managing adverse effects  Complaints received about adverse effects	Council complaints register  Council resource consent records and monitoring compliance
The maintenance of a safe and efficient roading network	Accidents caused by poorly sited or designed access points	Vehicle accident records
Prevention of development which increases the level of risk in areas identified as being at high risk from natural hazards	Number of resource consent applications approved or declined in areas identified in the District Plan as being susceptible to natural hazards and whether these numbers change with time.  The economic and insured costs from flood hazard events and whether these decrease in time, allowing for changes in inflation.  The number of section 74 certificates imposed on the titles of properties at the time of building consent and whether these decrease in time.	Council flood hazard modelling  Council resource consent records for compliance with conditions