

APPENDIX THREE:

**PROPOSED
DISTRICT PLAN
CHANGE 65**
Section 32 Report

Earthworks

1 July 2008

Wellington City District Plan

SECTION 32 REPORT

PROPOSED DISTRICT PLAN CHANGE 65 - EARTHWORKS

Introduction

Before a proposed District Plan change is publicly notified the Council is required under section 32 of the Resource Management Act 1991 (the Act) to carry out an evaluation of the proposed change and prepare a report. As prescribed in section 32 of the Act:

An evaluation must examine:

- (a) the extent to which each objective is the most appropriate way to achieve the purpose of the Act; and*
- (b) whether, having regard to their efficiency and effectiveness, the policies, rules, or other methods are the most appropriate for achieving the objectives.*

An evaluation must also take into account:

- (a) the benefits and costs of policies, rules, or other methods; and*
- (b) the risk of acting or not acting if there is uncertain or insufficient information about the subject matter of the policies, rules or other methods.*

Benefits and costs are defined as including benefits and costs of any kind, whether monetary or non-monetary.

A report must be prepared summarising the evaluation and giving reasons for the evaluation. The report must be available for public inspection at the time the proposed change is publicly notified.

Background

In 2005, the Strategy and Policy Committee agree to replace the Earthworks Bylaw with a district plan change (the Bylaw is the present control on earthworks). The main function of the Bylaw is to control the engineering aspects of earthworks, to minimise the risk of landslips and other types of earthworks failure. The main function of the existing District Plan earthworks rules is to address the visual effects of earthworks.

Officers have taken the opportunity of the plan change to fully review all the existing earthworks rules in the District Plan. Beside engineering stability, the main issues the proposed change addresses are erosion, dust and sediment control; earthworks affecting streams and wetlands; the transport of material between properties; the visual appearance of earthworks generally, and their appearance in suburban coastal areas.

Consultation

The earthworks review has the potential to affect large sectors of the community. This was recognised in the planner's report to the Strategy and Policy Committee in February 2007. Draft objectives, policies and rules were presented to the Committee, which voted to use them as the basis for consultation.

Letters were sent to a wide range of professional, industry, environmental and interest groups. Letters were also sent to residential owners of suburban coastal properties.

Appendix Four of the main report (to Strategy and Policy Committee - 13 March 2008) details all the groups and individuals who were consulted.

Key Documents

The primary documents relevant to the review of the Earthworks Provisions were:

Review of the Wellington Consolidated Bylaw 1991 Part 8 – Earthworks, Report to the Strategy and Policy Committee, 16 February 2005

Draft District Plan Change – Earthworks Provisions, Report to the Strategy and Policy Committee, 15 February 2007

A guide for assessing effects of urbanisation on flow-related stream habitat, NIWA Science & Technology Series No. 52, Sandy Elliot, Ian Jowett, Alistair Suren, Jody Richardson, 2004

Erosion and sediment control for small sites, Greater Wellington Regional Council, 2006

Erosion and sediment control guidelines for the Wellington Region, Greater Wellington Regional Council, 2003

Guidelines for assessing planning, policy and consent requirements for landslide-prone land, GNS Science Miscellaneous Series 7, W. Saunders and P. Glassey (Compilers), 2007

Managing Earthworks under the Resource Management Act, Quality Planning website

Technical notes and sketches for the plan change from Tonkin and Taylor,
Environmental and Engineering Consultants

Evaluations

Resource Management Issues

Earthworks are an important activity that facilitates the community's use of natural and physical resources. The following issues were identified in the course of preparing the proposed plan change:

Earthworks and the economy
<ul style="list-style-type: none">▪ Earthworks are an essential part of building and development▪ Earthworks provide roads at driveable gradients▪ Mass earthworks for greenfield subdivisions makes land more usable▪ Domestic scale earthworks also make properties more usable▪ Levelling ground is cost effective in comparison to building on slopes▪ Earthworks enable people to create drive-on access to properties▪ Earthworks provide for recreation e.g. sports fields, tracks, gardens▪ Earthworks are essential to lay and maintain underground services▪ Earthworks are necessary to the construction and operation of landfills, reservoirs and cemeteries
Earthworks stability
<ul style="list-style-type: none">▪ Economic pressure to develop steeper and more difficult infill sites▪ Earthworks need to be engineered to be stable or retained by structures▪ Landslips due to climate change and increasing frequency of extreme weather events▪ Greater public concern following high profile landslips▪ Engineering design may not be to a high enough standard for large earthquakes and extreme weather events▪ Lack of detailed mapping of risky sites – time and cost required to map
Erosion, dust and sediment control
<ul style="list-style-type: none">▪ Dust can be a major nuisance to neighbours▪ Settled dust can become sediment▪ Sediment runoff onto footpaths and the road▪ Sediment runoff into channels, sumps and the stormwater system▪ Sediment runoff into streams and the sea, affecting water quality and aquatic life▪ Many small earthworks sites resulting in large cumulative sediment problems▪ Erosion, water quality and aquatic ecology are regional council functions▪ However, the Council has considerable ability to control because it directly regulates development sites▪ 'Soft engineering' alternatives are not well developed for Wellington's steep terrain

Protecting streams and wetlands

- Loss of streams detracts from the landscape and peoples' enjoyment of the environment
- Piping or modification of streams affects aquatic ecology
- Work in streams is a regional council function, but current regional rules don't protect urban streams
- Subdivisions and other developments along streams often determine whether stream are piped or modified
- Hard surfaces associated with development increase the volume and speed of water (flow), causing bank erosion (sediment) and changes to the stream channel and the need for flood control structures, affecting aquatic ecology
- Changes to the shape and flow of streams affect peoples' enjoyment

Flooding hazard

- Earthworks in floodplains can add to flooding hazards
- Hard surfaces associated with development increase the volume and speed of water, causing flooding

Visual amenity

- Earthworks change the contours of the natural ground – on a large scale they can change landforms and peoples' experience of the landscape
- Earthworks can leave long terms 'scars' on the land
- Earthwork on single properties can be unattractive for neighbours or from the street
- Earthworks are often associated with achieving drive-on access to older properties
- Earthworks often have associated structures to stabilise or retain them
- The visual impact of these associated structures is often as bad as untreated earthworks
- New buildings and structures often hide the worst of the earthworks and structures
- Landslips are often stabilised with sprayed concrete, which is ugly
- City Council earthworks and retaining structures on roads are highly visible
- Landscape planting is often ineffective in mitigating the adverse effects of earthworks

Coastal environment

- Wellington has a very attractive coastal environment within the suburban part of the City
- Steep coastal escarpments contribute significantly to its character
- A number of houses have been constructed on escarpments in the last few years changing the peoples' experience of the coastal roads
- Earthworks for access roads has also occurred on the escarpments
- Cutting back the escarpment for building can detract from visual amenity
- Earthworks for encroachment garages can detract from visual amenity
- Mitigation through landscape planting is difficult due to wind and salt spray
- Weather rock and weather concrete are significant parts of the existing character

Transport of material

- Transport of material can affect pedestrian, cycle and vehicle safety, and cause congestion
- Transport of material can affect neighbours amenity through noise, dust and dropped material

Archaeological sites

- Earthworks destroy archaeological material and information
- Earthworks can destroy historic patterns of land use
- Archaeological sites protected by Historic Places Act 1993 but not always effective as land owner doesn't know about archaeological site
- Iwi Authority concerns about destruction of human remains and cultural material – want to be consulted on projects and advised of discoveries
- Archaeological site policy in District Plan but no sites identified as such
- All of Central Area and much of the inner suburbs are archaeological sites
- Significant financial implications if projects stopped to excavate archaeology

Efficiency and effectiveness of regulation, enforcement

- Decision to reduce the number of required consents for earthworks
- Greater ability to enforce complex issues under RMA
- Greater complexity and cost for applicants
- Potential time delays for applicants
- Coordination with building consent approvals
- Greater resources needed to approve and monitor new resource consents
- Minimising overlap with rules in the Regional Council's plans

The identification of issues is an important part of the process of developing plan provisions because objectives, policies and means of implementation all flow from the issues chosen.

Examining the appropriateness of objectives

Section 32 of the Act requires the appropriateness of each objective in achieving the purpose of the Act to be examined. This section of the report outlines a summary of the evaluation for a proposed, single new objective, for earthworks, against both the purpose of the Act, and matters that are relevant to this purpose.

An evaluation of objectives under section 32 must examine:

- (3) (a) the extent to which each objective is the most appropriate way to achieve the purpose of this Act,*

The purpose of the act:

- 5 (1) The purpose of the Act is to promote the sustainable management of natural and physical resources.*
- (2) In this Act, “sustainable management” means managing the use, development, and protection of natural and physical resources in a way, or at a rate, which enables people and communities to provide for their social, economic, and cultural wellbeing and for their health and safety while –*

- (a) Sustaining the potential of natural and physical resources (excluding minerals) to meet the reasonably foreseeable needs of future generations; and*
- (b) Safeguarding the life-supporting capacity of air, water, soil, and ecosystems; and*
- (c) Avoiding, remedying, or mitigating any adverse effects of activities on the environment.*

The evaluation considers the objective in terms of different elements that make up the purpose of the Act.

In assessing the extent to which the objective is the most appropriate way to achieve the purpose of the Act, it is necessary to look at the proposed policies and methods that will implement the objective. The analysis of those provisions should ideally reveal that the cost of pursuing the objective do not significantly outweigh the benefits.

The new objective

New policies and rules have been developed to address the environmental issues caused by earthworks. The new earthworks provisions have been organised into a single stand-alone chapter, which has created the need for an objective to focus and organise the policies, rules and methods.

Under the existing district plan (the Operative District Plan) the earthworks the policies, rules and other methods are located under the Area based chapters. The policies sit under objectives concerned with a range of issues i.e. amenity values, the natural environment, flooding hazard and ridgelines and hilltops. There are no objectives that address the issue of earthworks itself.

The proposed objective is:

19A.2.1 To provide for earthworks for the use, development and protection of land throughout the city, while avoiding, remedying or mitigating any adverse effects of earthworks, landslips and associated structures on the environment.

The new objective responds in part to all of the ‘qualities and values’ and most of the ‘specific issues’ identified in Chapter One of the District Plan (1.6.1 and 1.6.2):

- Q1 Efficient City
- Q2 Amenity
- Q3 Healthy/Safe City
- Q4 Accessible City
- Q5 Natural Environment

- S2 Managing Rural Areas, the Coastal Environment, and Waterbodies
- S3 Protecting Open Space
- S4 Maintaining the Quality of Living Environments
- S6 Maintaining and Enhancing the Quality of the Built Environment
- S7 Maintaining and Enhancing the Quality of the Natural Environment
- S8 Reducing Risk

This indicates the objective is achieving the purpose of the Act.

In terms of section 5, the following table considers the objective in terms of different elements that make up the Act.

Elements that make up the purpose of the Act	Examination of objective in meeting the Act’s purpose
Enabling – social wellbeing	New earthworks contribute to people’s social, economic and cultural wellbeing as part of the processes of building and development. These provide places to work, shop, live, recreate and worship. Earthworks are integral to constructing and maintaining roads, railways, airports and ports, which allow people to move around in their environment.
Enabling – economic wellbeing	
Enabling – cultural wellbeing	
Enabling – health and safety	Ensuring that earthworks are properly engineered for stability provides for people’s safety. Flood control work and considering the adverse effect of earthworks in floodplains also provide for people’s safety. Earthworks are also relevant to the issues of hazardous substances and contaminated sites and they help to protect people’s health and safety by containing spills and sealing off contaminated ground. Dust from earthworks can affect people’s health and the transporting earth / material can affect people’s safety

Sustaining the potential of natural and physical resources	Earthworks can affect the stability of land, removing its potential for building, development and use; and its potential for protection e.g. for its amenity, recreational and ecological values.
Safeguarding life-supporting capacity	<p>Earthworks can affect the life supporting capacity of soil through compaction, mixing and erosion.</p> <p>Earthworks can affect the life supporting capacity of water through sediment runoff to streams, wetlands and the sea; and by adverse effects on aquatic ecosystems.</p> <p>Earthworks play a part in the complex physical and biological cycles that contribute CO₂ and other gases to the atmosphere, which are responsible for global warming.</p>
Avoiding, remedying, or mitigating any adverse effects on the environment	<p>In addition to the adverse effects in other categories above:</p> <p>Earthwork can have an adverse effect on:</p> <ul style="list-style-type: none"> - the character and visual amenity of landscapes, suburbs and the coastal environment - the character and visual amenity of streams and wetlands

This objective is consistent with the purpose of the Act, It enables people to provide for their, *social wellbeing, economic wellbeing, cultural wellbeing, and for their health and safety* (5(1)). The objective is also satisfies sections 5(2)a, 5(2)b, and 5(2)c) as it provides a mandate for the policies and methods that; sustain the potential of resources, safeguard life-supporting capacity and avoid, remedy and mitigate adverse effects.

The objective is also considered to be the most **appropriate** for achieving the purpose of the Act. This conclusion is made on the basis of the second part of the evaluation of section 32 (3) (b):

whether, having regard to their efficiency and effectiveness, the policies, rules, or methods are the most appropriate for achieving the objectives.

This analysis is provided in the next section of the report.

Efficiency/effectiveness of policies, rules or other methods

Benefits and costs of policies, rules and other methods

In considering whether having regard to their efficiency and effectiveness, the revised earthworks policies and rules are the most appropriate for achieving the earthworks objective the following two options were evaluated:

- Option 1. Fragmented control – Status Quo
- Option 2. Unified control – Adopt the reviewed and updated earthworks policies and rules

Option 1 – Fragmented Control – Status Quo

Explanation

The Status Quo option – represents fragmented management of earthworks issues. This is reflected in the current separation of the stability aspects of earthworks, assessed under the Earthworks Bylaw and the environmental and amenity aspects assessed under the District Plan. The Bylaw expires on 30 June 2008, which would leave no regulation of earthworks stability. This would represent an extreme form of fragmentation - earthworks stability would only be controlled by indirect and reactive processes.

Efficiency and effectiveness – the case for regulation

People do not need policy guidance or rules to *provide for earthworks for the use, development or protection of land*. It is that part of the objective, concerned with controlling the adverse effects of earthworks, that creates the needs for policies, rules and other methods. These can be said to be efficient and effective, if they prevent the negative (adverse) effects. These rules should be used only to the extent that it is necessary to control the adverse effects.

The negative effects of earthworks can have natural causes for example, geological processes, earthquakes and extreme weather. Little can be done about these except to factor them into the engineering design of earthworks. The other negative (adverse) effects are the result of human behaviours.

Regulation is generally accepted to be an appropriate means of discouraging negative behaviours in the community (unless a strong incentive to positive behaviours can be provided). As the negative effects of earthworks result from behaviours that seek to simplify and minimise the cost of earthworks, it is appropriate to use regulation to ensure that earthworks are well designed and engineered to first, minimise any risk of instability and secondly to ensure the other policies of the plan change e.g. erosion, dust and sediment control, visually amenity.

Other methods can be effective as a complement to regulation. The Council can use advocacy, information and education to inform, explain and persuade the Councils policies for earthworks.

Earthworks Stability

If the District Plan is not used the Council has a number of other options to regulate earthworks to minimise the risk of instability. They are:

- revise the Earthworks Bylaw
- rely on the building consent process
- rely on common law
- use section 17 of the Resource Management Act

The appropriateness of the Earthworks Bylaw was analysed in a Policy Unit's report to the Strategy and Policy Committee, in 2005. That report recommended the District Plan as the most appropriate means to regulate earthworks (this recommendation was adopted by the Strategy and Policy Committee). The reasons for not continuing to use the bylaw were the duplication and confusion caused by need to apply for more than one consent (sometimes up to three – bylaw, building consent and district plan) that Council may face greater legal liability under its bylaw process and the enforcement options under the Local Government Act 2002 are not as effective as those under the RMA.

For the proposed plan change, the use of the Building Act 1991 and the building consent process was explored as an alternative (or complement) to district plan rules. It was rejected after legal advice, because the Act can not give consent to earthworks and because it is difficult to separate situations where earthworks are indirectly controlled by the approval of a building consent for retaining structures from situations on the same site where the Building Act has no influence.

In theory, at least, the Council doesn't have to regulate earthworks when people have obligations in common law to support other property, or stop their land from falling on to other property. This approach is a reactive one, which can only be applied once the earthworks are known about or undertaken, or after the earthworks have collapsed. Neither is it a practical one for the Council. The City owns large amounts of property and infrastructure, including the road network, that it doesn't want threatened by poor earthworks. Secondly, the community expects the Council to regulate earthworks. It regulates buildings through the building consent process and driveway access through the Vehicle Access Bylaw. It would be the 'first port of call' for neighbour's concerns about stability and there would be considerable pressure on officers and councillors to 'do something'.

The final option is not to require consent for earthworks before they take place but to take enforcement action under section 17 of the Act, *Duty to avoid, remedy, or mitigate adverse effects*. This option has most of the disadvantages of relying on common law. It is reactive and the solutions in both legal and engineering terms are likely to be very expensive. The only real

difference is it would allow the Council to meet some of the community's expectations about the role it should be playing. The costs of enforcement could prove to be greater than those of regulation.

Other earthworks issues

If the policies, rules and methods in the Operative District Plan were retained, many of the issues identified under the above heading, 'resource management issues', would not be addressed. The existing plan does have assessment criteria that require consideration of the effects of earthworks on waterbodies and the coastal marine area, but they have proved to be too broad and they have been little used. Dust has been reasonably well controlled under existing (non-earthwork) rules or under section 17 of the Act. The flooding hazard rules are pretty much the same as those in the proposed plan change, as are those permitting tracks in Open Space and Conservation Sites areas.

The rules for the visual effects of earthworks are the ones that have been the reason for the overwhelming majority of resource consents and they have been used extensively. They have had a fair to moderate success in mitigating the worst effects of earthworks and retaining structures. However, the policy and assessment criteria are general and provide limited guidance to the type of earthworks and structures that are acceptable or how their design could be improved.

Three new issues that have been identified (which would have policies and rules under the proposed plan change) have no counterpart in the existing earthworks rules and could not be addressed in the existing provisions for earthworks. They are the issues of earthworks and structures associated with streams and wetlands, the new rules for earthworks in the suburban coastal environment and the transport of material.

Benefits and costs

The key benefits and costs of Option 1 can be summarised as follows:

Benefits

- Reduced compliance costs for owners or developers
- Reduced processing time
- Possibly less legal liability for Council

Costs

- High costs to individual property owners (and occupiers) from landslips
- High cost to Council from landslips affecting its roads, properties and infrastructure
- Numerous complaints and political pressure for Council to do something

- High cost of enforcement for Council
- Lower quality of visual mitigation of earthworks
- Adverse effects to streams, wetlands and the sea
- Adverse effects of earthworks in the suburban coastal environment
- Adverse effects from the transport of material
- Higher long term community costs from poor engineering and design of earthworks

Option 2 – Unified Control – Adopt Reviewed and Updated Earthworks policies and rules

Explanation

The proposed plan change brings stability assessment into the District Plan and reviews the existing policies and rules. New issues have been identified and addressed in the provisions. As a further step to unification the earthworks provisions have been brought together in their own chapter. This is considered to be a more effective approach.

There are two main reasons for the new earthworks chapter. Firstly, the permitted activity conditions are designed to address earthworks at different scales, for a wide range of landforms and geology / soils. To minimise the risk of instability they need to be relatively complex. As the principles are the same for all Areas of the city it is appropriate to locate them in a single place, rather than repeat them in each chapter. The rest of the issues (erosion, dust and sediment control, flooding hazard etc) are also common to all Areas, or they apply to several Areas, or they are similar enough to warrant them being located in the same place in the document.

The second reason is the earthworks provisions work together as an interrelated group of policies and rules. The rules in the existing plan are generally discrete, which has made it relatively easy to remove them from the Area based chapters.

Stability of earthworks

Earthworks are an essential part of development and building in a hilly city. Mass earthworks provide roads at reasonable gradients and areas of flat or gently sloping land that can be built on or used for other activities. Earthworks are essential to the construction of buildings whether they are built on the level ground or steep slopes.

Mass earthworks and construction of buildings is dependant on the finished land being stable. Earthworks need to be regulated for this reason. The consequences of instability, of death or injury to people, or damage to property, are too important to not regulate. People, whether they are ordinary land owners or contractors, seldom have the knowledge to understand the geotechnical characteristics of a site and the risks associated with them. The same applies for many engineers. The proposed policy and rule have been developed with advice from Tonkin and Taylor, an engineering consultancy.

Erosion, dust and sediment

The proposed rule has been developed and refined in close cooperation with officers at Greater Wellington. A major feature of the rule is the use of two Greater Wellington Regional Council's guidance documents.

The mechanism for controlling erosion and sediment, in the proposed plan change, is tied to applications for stability, which as the vast majority of resource consent applications will be for stability, allows them to be assessed for their potential to cause problems with sediment. With the proposed rule structure, conditions for sediment control can be placed on resource consents to be followed up under the Council's monitoring and enforcement processes.

The dust rules have been included with those for erosion and sediment because dust is created in the same way as sediment through excavation and erosion. Further, dust once it settles can become sediment. The control of one practically belongs with the other.

A major consideration in drafting the rules has been to avoid, as much as possible, overlap between district plan and regional plan rules, so applicants will not need to apply for resource consent from both councils.

Earthworks and structures associated with streams and wetlands

The reasons for protecting streams and wetlands are to protect them for their character and amenity values, as the habitat of fish, insects and other 'animals' and to ensure the functioning of the ecosystems that support these species. While the biological matters are principally the function of the Regional Council, under the Act, it does not preclude the City Council taking on this function. The rules of the present Regional Freshwater Plan provide very little protection to urban streams from piping or other modification. The District Plan rule is intended to complement the Regional Council's rule and has been drafted in terms of protecting the character and amenity of streams and wetlands, which biology aside, is a solid reason to prevent piping or drainage.

Flooding hazard

The rolled over provisions in the District Plan prevent undesirable earthworks in defined flooding hazard areas. They are by no means the only way to prevent or reduce the effects of flooding but they have worked reasonably well in combination with other methods such as detention dams and flood control structures. A new policy criterion is proposed directing the applicant and the Council to consider 'soft' engineering practices. The success of this new area will need to be assessed after a period of time.

Visual amenity – general

While the rule threshold stays the same, the existing policy and criteria have been extensively rewritten to be more specific and to provide better guidelines to the appropriateness and effectiveness of mitigation. It is considered that the new policy will be more effective than the existing policy / criteria.

Visual amenity – coastal environment

This is a new policy and rule designed to reduce the impact of earthworks in a part of the City with a highly valued character. It is also an area where inappropriate earthworks are both particularly visible and difficult to mitigate. The policy and rules are a more restrictive version of the 'visual amenity – general'.

Transport of materials

This is a new rule introduced to manage the impacts of transporting large quantities of earth or construction fill material to, or from, a site. It is based on conditions that are currently placed on larger earthworks consents, requiring the preparation of a traffic management plan. This process has proved an effective means of mitigating many of the adverse effects of this activity.

Cultural and archaeological values

A new policy addresses the possible loss of Maori and non-Maori cultural and material or archaeological sites. It proposes a policy and a note against the rules, which will form the basis for requiring applicants to provide information when seeking resource consent for earthworks, and for conditions on resource consents requiring work to stop if material is discovered.

No permitted activity condition is proposed as a blanket condition would be too onerous. It would require people undertaking earthworks of any size to investigate the archaeological potential of their site, while the discovery of archaeological material could stop work on a site, which would have major cost implications for larger projects.

It is proposed to notify cultural and archaeological sites as individual listing in the District Plan. This has been anticipated and allowed for by changes to the Heritage Chapter under Plan Change 43. Work will proceed to collate and assess archaeological sites, in consultation with iwi, culminating in a district plan change, similar to that of other Heritage Items.

Conclusion on effectiveness and efficiency

The proposed plan change would provide a unified and comprehensive set of objectives, policies, rules and methods for earthworks. Overall, it is considered that the reviewed provisions will be an effective and efficient tool for controlling the adverse effects of earthworks.

Benefits and Costs

The key benefits and costs of Option 2 can be summarised as follows:

Benefits

- Reduced risk of earthworks instability
- Reduced short-term and long-term costs to neighbours, the Council and the community from well engineered earthworks
- Higher quality visual mitigation of earthworks and structures
- Protection of the character of the suburban coastal environment, streams and wetlands
- Less sediment entering streams, wetlands and the sea
- Fewer adverse effects from the transport of material

Costs

- Higher compliance costs arising from the need to have resource consent for earthworks
- Customer dissatisfaction and teething problems with a new, more complex resource consent process

The Risk of Acting or Not Acting

The evaluation under section 32 must consider the risk of acting or not acting if there is uncertain or insufficient information about the subject matter of the proposed approach. In this case, it is considered that there is sufficient information available for:

- Earthworks stability
- Erosion and sediment control
- Dust control
- The character and amenity values of streams and wetlands
- Flood hazard areas
- Construction of tracks
- The visual effects of earthworks generally

- The landscape / townscape values of the coastal environment
- Experience of problems with the trucking of material

Areas where the Council has insufficient information are:

- Detailed mapping of geotechnical hazard areas. The proposed plan change has compensated for this by taking a precautionary approach and having a low threshold for all earthworks stability consents
- It is not known how much sediment stream, wetlands and coastal waters can absorb cumulative without water quality and ecosystems being affected. At this time, the proposed plan change aims to raise the standard of erosion and sediment management. Streams etc will continue to be monitored by both the Council and the Regional Council.

There is sufficient information to deal with all the key issues. The development of the earthworks stability conditions are backed by appropriate technical advice from a geotechnical and engineering expert. The policy is flexible and allows for the geotechnical analysis of the site if officers consider it necessary. It allows for the Council's level of assessment to grow over time as resources, such as hazard mapping, become available.

Other earthworks issues are dealt with in accord with existing practice or a blend of appropriate analysis and the experience of council officers. It is therefore considered that there is a very low risk of any untoward outcomes resulting from the implementation and application of the proposed earthworks provisions.

Conclusion

The review of the earthworks objective, policy, rules and methods, adds to, and updates, provisions for earthworks in the Operative District Plan. It is considered that the proposed improvements to the earthworks provisions will ensure that they will work more effectively and efficiently to address the 'qualities and values', and 'specific issues identified in the District Plan and the relevant provisions of Part 2 of the Resource Management Act 1991.