

**BEFORE THE HEARINGS PANEL  
FOR THE QUEENSTOWN LAKES PROPOSED DISTRICT PLAN**

**IN THE MATTER** of the Resource  
Management Act 1991

**AND**

**IN THE MATTER** of the Open Space and  
Recreation / District  
Wide Hearing Stream  
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**STATEMENT OF EVIDENCE OF TRENT DAVID SUNICH  
ON BEHALF OF QUEENSTOWN LAKES DISTRICT COUNCIL**

**CHAPTER 25 EARTHWORKS: ENVIRONMENTAL MANAGEMENT AND  
TECHNICAL BASIS FOR CHAPTER**

**23 July 2018**

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 **Simpson Grierson**  
Barristers & Solicitors

S J Scott / C J McCallum  
Telephone: +64-3-968 4018  
Facsimile: +64-3-379 5023  
Email: sarah.scott@simpsongrierson.com  
PO Box 874  
SOLICITORS  
CHRISTCHURCH 8140

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## 1. INTRODUCTION

- 1.1 My full name is Trent David Sunich. I hold the position of Senior Environmental Consultant at 4Sight Consulting. I have been in this position since August 2012.
- 1.2 I hold a Bachelor of Technology (Environmental) which I obtained from the Unitec Institute of Technology in 2001. I have approximately 17 years' experience in the field of natural resource planning and environmental engineering. My expertise is in erosion and sediment management, stormwater quality management, integrated catchment management planning, and industrial site auditing and contaminant management where previously I have held roles with the Auckland Regional Council and URS New Zealand Limited.
- 1.3 I have been engaged by the Queenstown Lakes District Council (**QLDC**, or the **Council**) to provide evidence in relation to Chapter 25 Earthworks of the Proposed District Plan (**PDP**).
- 1.4 In relation to the PDP I was the author of the report entitled '*Queenstown Lakes District Council Proposed District Plan: Assessment of Thresholds for Earthworks*' in September 2017 to inform the development the earthworks area thresholds.
- 1.5 I confirm that I have read the Code of Conduct for Expert Witnesses contained in the Environment Court Practice Note 2014 and that I agree to comply with it. I confirm that I have considered all the material facts that I am aware of that might alter or detract from the opinions that I express, and that this evidence is within my area of expertise, except where I state that I am relying on the evidence of another person.
- 1.6 The key documents I have used, or referred to, in forming my view while preparing this brief of evidence are:
- (a) PDP (Stage 1) Decision version 5 May 2018 (**PDP**);
  - (b) The Resource Management Act 1991 (**RMA**);

- (c) Queenstown Lakes District Council '*Queenstown Lakes District Council Proposed District Plan: Section 32 Evaluation – Stage 2 for Earthworks*' report dated 3 November 2017;
- (d) 4Sight Consulting '*Queenstown Lakes District Council Proposed District Plan: Assessment of Thresholds for Earthworks*'; prepared for Queenstown Lakes District Council, dated September 2017;
- (e) '*Section 42a Report Of Jerome Wyeth On Behalf Of Queenstown Lakes District Council*', dated 20 July 2018.

1.7 I refer to the following versions of the PDP text in my evidence:

- (a) **Provision X.2.1:** to refer to the notified version of a provision (i.e. Objective 31.2.1); and
- (b) **S42A Provision X.2.1:** to refer to the recommended version of a provision. (i.e. S42A Objective 31.2.1).

1.8 When referring to the Stage 1 PDP provisions, I am referring to the Council's Decisions Version notified on 7 May 2018, (i.e. Decisions Objective 3.2.1).

## 2. EXECUTIVE SUMMARY

2.1 The key conclusions in my evidence are that:

- (a) It is established practice throughout the country to have a standalone set of earthwork rules to manage such activities through a separate objective, policy and rule framework. This approach recognises the unique set of effects that need to be managed and that earthworks are an activity that can occur independently of other activities that may require resource consent.
- (b) The general approach to setting permitted activity earthworks volume thresholds is to define a level which can be reasonably expected to accommodate and enable most building or land use requirements within certain zones without needing a resource consent. In this regard the Council has largely carried over the maximum volume thresholds from the

ODP earthworks chapter. I have reviewed the submissions regarding the permitted volume thresholds and have concluded that the thresholds are fit for purpose and I am not recommending any changes.

- (c) I assisted the Council to determine a set of earthworks area thresholds for Rule 25.5.11 and my report is appended to the Council's section 32 report. I have responded to various submissions to the new area thresholds and find the thresholds are appropriate in terms of setting the scale of earthworks that can be undertaken as a permitted activity, relative to the erosion and sediment runoff risk and the current practice in the district to mitigate those risks through the implementation of erosion and sediment controls.
- (d) I agree with the proposal to extend the water body setback for earthwork activities to 10m from the bed of any waterbody. This is consistent with the recommendation in my report to the Council where a setback contributes to maintaining the natural character of wetlands, lakes rivers and their margins. The PDP has stipulated that no earthworks can take place within the 10m setback without a resource consent. I am concerned that this may unduly capture minor earthworks with minimal adverse effects and thus have recommended the reinstatement of a permitted activity maximum earthwork volume threshold of 5m<sup>3</sup> within the waterbody setback rule. This is less than the current ODP earthworks permitted activity limit of 20m<sup>3</sup> for earthworks within a waterbody setback which in my view is not appropriate.
- (e) The PDP introduces a sediment standard (25.5.12) and there are several submissions that contest the difficulty of practitioners to comply with the standard in its current wording as it centres on the use of the word 'prevent' in relation to sediment entering waterbodies, stormwater networks or going across the boundary of a site . I agree with the submissions and the consequential change My Wyeth has recommended in his s42a report.
- (f) As is detailed in the section 32 report, the Council is developing an erosion and sediment control guideline document to assist practitioners in the design, construction

and maintenance of such practices. I consider that the development of this document is necessary and will contribute to the outcomes sought by the PDP earthworks chapter and management of adverse effects associated with sediment runoff from earthworks sites.

### **3. BACKGROUND**

**3.1** Earthworks are an important part of the sustainable use and development of land, but the potential adverse effects need to be managed. Poorly managed earthworks can have adverse effects on the important resources of the District, including the Outstanding Natural Features and Landscapes, amenity landscapes and built resource such as infrastructure, buildings and roads. Sedimentation arising from poorly managed erosion and sediment management can also reduce the capacity of the Council's stormwater network and infrastructure and can adversely affect the amenity and ecological values of the District's lake and river receiving environments.

**3.2** Through the PDP the Council is proposing earthworks provisions in Chapter 25 which are largely consistent with the overall approach to manage earthworks in Chapter 22 of the Operative District Plan (**ODP**). However, there are some changes both in terms of the overall approach and the wording and effect of certain provisions.

**3.3** Prior to notification of Chapter 25 Earthworks of the PDP, I assisted the Council to define a set of area thresholds which would inform drafting of Rule 25.5.11. A report addressing the methodology to define the earthworks area thresholds was appended to the Council's section 32 report and I have summarised its contents in this evidence in response to various submissions.

**3.4** My evidence summarises the role of a standalone earthworks rule chapter in response to various submissions and discusses the adverse effects typically associated with earthworks activities.

**3.5** Several submissions related to the permitted maximum volume thresholds proposed in Chapter 25 Earthworks and in conjunction with

My Wyeth's report I have provided analysis and comments where necessary.

- 3.6** Proposed Chapter 25 also introduces a sediment control standard (Standard 25.5.12) with associated assessment criteria. I have responded to various submissions in which address this standard and also the role of the Council's erosion and sediment control guidelines which are being developed to assist with implementation of Chapter 25 Earthworks.

#### **4. CHAPTER 25 EARTHWORKS – RELEVANT BACKGROUND AND CONTEXT**

- 4.1** Through Chapter 25 Earthworks, the PDP manages earthworks as a standalone activity on a district wide basis, with a set of objectives, policies, rules and assessment criteria that seek to manage and mitigate the adverse effects of earthworks associated with land development on a variety of land use activities.

- 4.2** As has been discussed in Mr Wyeth's report, it is established practice throughout New Zealand<sup>1</sup> to have a standalone set of earthwork provisions rules to manage such activities. This approach recognises the unique set of adverse effects that need to be managed, and that earthworks are an activity that can occur independently of other activities that may require resource consent (e.g. prior to lodging subdivision, land use or building consents).

- 4.3** I was engaged by the Council to assist with developing the area thresholds in proposed Chapter 25 which culminated in the report entitled 'Queenstown Lakes District Council Proposed District Plan: Assessment of Thresholds for Earthworks' (the report). As part of that review project I visited several sites in the district where bulk earthworks were being undertaken, and in most instances erosion and sediment control practices (site stabilisation, sediment ponds, silt fences, hay bales) did not, in my opinion, meet best practice in their design, construction and maintenance. In my view, based on these observations, more stringent and targeted earthworks controls and

<sup>1</sup> E.g. Auckland Unitary Plan (Operative in Part) 2016, Operative Tauranga City Plan (2013).

earthwork area thresholds were required for inclusion in the notified PDP.

**4.4** I acknowledge that there are several ways to improve erosion and sediment control on earthworks sites. However, in my view, standalone targeted earthworks provisions are a good starting point and consistent with the approach taken in other areas of New Zealand that are undergoing significant urban growth.<sup>2</sup> As I discuss later in this evidence, earthworks provisions should be supported with good, pragmatic guidance information and industry upskilling on implementation.

**4.5** I acknowledge that, other than may be the case for a unitary authority, it is not typical for district plan earthworks rules to manage large-scale bulk earthwork activities with area thresholds. Area controls generally address soil conservation and effects on water quality, sitting within the remit of regional council functions under the RMA. This matter has been discussed in both the section 32 report and evidence prepared by Mr Wyeth. I concur with the analysis by both, in that the Council is obliged to manage the effects of land use and development, including earthworks, and in this case the control of erosion and the minimisation of sediment leaving a site, in addition to amenity and land stability related effects.

**4.6** Earthworks are a necessary component of land use and development, required to facilitate the maintenance or construction of residential dwellings, commercial premises, infrastructure and for other purposes. The effects of undertaking earthworks activities are generally well understood and, depending on the scale and type of land use, typical effects include:

- (a) nuisance and amenity effects associated with noise, dust and vibration from the operation of earthwork and construction machinery, and heavy vehicle movements through the importation or removal of soil from site;

2 E.g. Auckland Region, Hamilton City, Tauranga City.

- (b) significant volume and/or areas of earthworks permanently (and adversely) altering landforms and natural landscapes;
- (c) disturbance and alteration of sites of archaeological or cultural significance, both known and discovered during the earthworks process;
- (d) inappropriate construction and earth compaction methods resulting in land instability and/or the instability of surrounding infrastructure, building foundations or land;
- (e) erosion of exposed, unvegetated soil surfaces during rainfall and the corresponding entrainment of soil/sediment particles in site runoff. Sediment discharges (and deposition) off-site can result in a nuisance for neighbouring properties and deposition on road carriageways. Sediment deposition can also affect stormwater networks by clogging and reducing the efficiency of stormwater treatment devices (catch pits, stormwater ponds, roadside swales, rain gardens) and can block stormwater pipes and inlets leading to a reduced level of service and potentially local flooding;
- (f) should sediment laden runoff reach water bodies, the following adverse effects can result:
  - (i) reduced clarity and visual amenity;
  - (ii) reduced vision, sense of smell, gill functionality and oxygen of aquatic fish species;
  - (iii) reduced light and smothering of lake benthic flora and fauna through sediment deposition;
  - (iv) in extreme cases, permanent alteration of lake or stream bed morphology through bulk sediment deposition; and
  - (v) sediment in the freshwater column can render water unsuitable for human uses or stock drinking water and can clog pumps and intake structures affecting abstraction for horticultural crop, pasture irrigation or other uses.

## 5. TABLE 25.2 – MAXIMUM VOLUME THRESHOLDS

- 5.1** Maximum volume thresholds are listed in Table 25.2. Earthworks up to the maximum total volume within each zone can be undertaken as a permitted activity, subject to meeting other standards. Several submissions<sup>3</sup> have requested an increase to the maximum volume threshold for a number of zones, or have requested alignment with a different zone threshold, generally seeking a higher permitted maximum volume threshold. Before responding to those submissions, I discuss the rationale for the maximum volume thresholds.
- 5.2** The general approach to setting permitted activity earthworks volume thresholds is to define a level at which adverse effects are likely to be minor or can be adequately managed using standard controls with minimal risk. Ideally, these are aligned to the likely scale or nature of the activities that are provided for within the relevant zone, so that most earthworks can be undertaken without the need for a resource consent, although this is not always possible due to the sensitivity of some activities and the receiving environment.
- 5.3** The maximum volume thresholds are combined with performance standards (Table 25.3), which must also be complied with for an activity to be permitted. While it is possible for performance standards to adequately address the potential for adverse effects, they are usually 'after the event' compliance standards (e.g. dust, sediment runoff, sediment deposition on roads). That is, if they are breached, a problem has occurred. The application of maximum volume thresholds is to proactively manage risk by requiring a resource consent to be applied for and subject to regulatory oversight where earthworks are of a scale or nature that has the potential to create significant adverse effects (i.e. where the standards are not complied with, or mitigation measures are poorly implemented). Regulatory oversight is possible through the grant of consent on appropriate conditions that identify / require suitable mitigation measures to address the effects that are specific to

<sup>3</sup> Sean McLeod (2349.1, 2349.5, 2349.23, 2349.24, 2349.25), Broadview Villas Limited (2222.4, 2222.5), T. Rovin (2228.4, 2228.5), The Escarpment Limited (2230.4, 2230.5), Queenstown Park Limited (2462.2), Remarkables Park Limited (2468.3), Millbrook Country Club (2295.8), Darby Planning LP (2376.32), Skyline Enterprises Limited (2493.12, 2493.13), Queenstown Central Limited (2460.1), Queenstown Airport Corporation (2618.5), Boxer Hill Trust (2386.2), Slopehill Properties Limited (2584.8), BSTGT Limited (2487.14), Trojan Helmet Limited (2387.16 and 2387.17).

the site and activity and establish an appropriate compliance monitoring schedule to ensure management and associated controls are implemented effectively.

**5.4** I have reviewed the maximum volume thresholds for each zone and note that they group the zones based on typical land use types – for example development density (i.e. certain residential areas) and Town Centre / commercial zones. The groupings generally reflect the scale and intensity of certain types of land use, and the resulting scale of adverse effects that might arise. The grouping of land use types enables consistency in implementation without unnecessarily complicating the rules, which in my view is beneficial for the Council, the development industry and other parties undertaking earthworks.

**5.5** Noting there have been zone changes and the addition of new zones (albeit generally with similar land use outcomes), the maximum volume thresholds have generally been carried over from Section 22: Earthworks Rules of the ODP indicating to me that the Council is generally comfortable with how the ODP earthworks chapter is being implemented. This reflected by the limited commentary in the section 32 report regarding the proposed volume thresholds.

**5.6** Reviewing the section 32 and 42A analysis for setting the ODP thresholds, common themes emerged that I consider are still appropriate for the PDP maximum volume thresholds listed in Table 25.2. I have considered the maximum volume thresholds for various zone types and my comments are as follows:

- (a) 25.5.1<sup>4</sup>: The maximum volume of 100m<sup>3</sup> recognises the sensitivity of the receiving environments and the need to be cognisant to historic values and special character such as with the Arrowsmith Residential Historic Management Zone and the Arrowsmith Town Centre Zone;
- (b) 25.5.2<sup>5</sup>: This rule introduces a very low maximum volume of 10m<sup>3</sup> and conservatively seeks to manage a suite of

4 Arrowsmith Residential Historic Management Zone, Arrowsmith Town Centre Zone, Open Space and Recreation Zones.

5 Heritage Landscape Overlay Area, Heritage Precinct, Outstanding Natural Feature.

earthworks adverse effects relative to the unique and sensitive receiving environments in the Heritage Landscape Overlay Area, Heritage Precinct and Outstanding zones.

- (c) 25.5.3<sup>6</sup>: The 300m<sup>3</sup> volume threshold has been carried over from the ODP to manage earthworks related adverse effects while at the same time providing for a realistic level of development consistent with that provided for in the zones;
- (d) 25.5.4<sup>7</sup>: A rationalisation of large lot residential and rural residential zone volume thresholds has taken place to reasonably accommodate the scale of building anticipated in these zones with a volume threshold of 400m<sup>3</sup> and has been carried over from the ODP. The Wakatipu Basin Rural Amenity Zone and Precinct has also been added to this zone;
- (e) 25.5.5<sup>8</sup>: The town centre and mixed-use zones have been grouped in the PDP with a maximum volume of 500m<sup>3</sup>. Prior to the ODP, many of the town centre zones had a maximum volume of 100m<sup>3</sup>. Excluding more sensitive or historically significant zones, this threshold accounts for the typical scale of building anticipated in the zones including other anticipated outcomes such as underground car parking;
- (f) 25.5.6<sup>9</sup>: The maximum volume of 1,000m<sup>3</sup> has been retained from the ODP for the Rural Zone and Gibbston Character Zones where the purpose of this zone is to provide primarily for viticulture and viticulture affiliated activities. This threshold reflects typical rural land uses, while also providing for the commercial and viticulture related activities of the Gibbston Character Zone. Sensitive landscapes are excluded and fit into grouping under Standard 25.5.2; and
- (g) 25.5.7: There is no maximum volume threshold stipulated for roads (local and state highway),<sup>10</sup> which reflects the role of the Council and the New Zealand Transport Authority in operating and maintaining this linear infrastructure in the district.

6 Low Density Residential Zone, Medium Density Residential Zone, High Density Residential Zone, Waterfall Park Zone, Millbrook Resort Zone.

7 Large Lot Residential Zone, Rural Residential Zone, Rural Lifestyle Zone, Wakatipu Basin Rural Amenity Zone and Precinct.

8 Queenstown Town Centre Zone, Wanaka Town Centre Zone, Local Shopping Centre Zone, Business Mixed Use Zone, Queenstown Airport Mixed Use Zone.

9 Rural Zone, Gibbston Character Zone.

Importantly roads within an Outstanding Natural Feature are excluded and revert to a 10m<sup>3</sup> limit consistent with Standard 25.5.2. Large scale road projects are likely to trigger the area thresholds of the PDP where matters such as erosion and sediment control are more significant. This is discussed later in this evidence.

- (h) The remaining maximum earthworks volume thresholds (25.5.8 – 25.5.10) are for the Jacks Point Zone. Chapter 41 as notified contained rules under Table 2, Clause 41.5.4, regulating earthworks within the Jacks Point Zone. These provisions have now been removed from Chapter 41 and incorporated into Chapter 25 Earthworks<sup>11</sup> My understanding is that the different earthworks limits for the activity areas within this overall zone were specifically considered by Council when developing the zone provisions and was found to be the most effective and efficient approach.

**5.7** With the implementation of the ODP volume thresholds following the notified district plan review<sup>12</sup>, the Council and development industry has had an opportunity to 'field test' the maximum volume thresholds, receive feedback and monitor receiving environment effects. For the PDP, changes to the zone groups have been made by the Council to reflect experience and include new zones; however, there appears to be no compelling reason to make significant changes to the thresholds. This is reflected in the limited commentary in the section 32 report, indicating to me that the volume thresholds as proposed demonstrate efficiency and levels of intervention that are reasonable. I acknowledge that they are not entirely effects based, but rather a combination of risk of effects and the type and scale of development anticipated within the zone and therefore are fit for purpose in my opinion.

11 QUEENSTOWN LAKES DISTRICT COUNCIL, Hearing of Submissions on the Proposed District Plan, Report 12, Report and Recommendations of Independent Commissioners, Regarding Chapter 41 – Jacks Point, Paragraph 19.

12 District Plan Review Section 32 Analysis Earthworks, March 2014.

## **6. SUBMISSIONS ADDRESSING MAXIMUM VOLUME THRESHOLDS**

**6.1** Mr Wyeth's report details several submissions in relation to permitted maximum volume thresholds or how the volume thresholds are implemented. I make the following comments and endorse his analysis to reject the submissions.

### **Sean McLeod**

**6.2** Sean McLeod (2349.1) requests that a permitted activity earthworks rule is added to the PDP to provide for earthworks for one or two residential units in site zoned residential. Mr McLeod considers that earthworks associated with residential development of this scale is an expected part of development and should not require resource consent.

**6.3** Sean McLeod (2349.5, 2349.23, 2349.24, 2349.25) also requests that Rules 25.5.3, 25.5.4, 25.5.5 and 25.5.6 be amended to double the maximum earthworks volume threshold. Mr McLeod notes that, while some of the maximum volume thresholds for earthworks have increased in the PDP, he does not consider this sufficient and that earthworks that form part of a residential development should be a permitted activity in most cases.

**6.4** These submissions that seek to double the PDP volume thresholds or apply volume limits specific to a certain land use (e.g. two residential units on one lot) are not appropriate in my view. As noted above, I consider that the zone maximum volume thresholds are fit for purpose for the zone groupings, the receiving environments and the scale of earthworks to construct the scale and nature of the activity anticipated by those zones.

### **Broadview Villas Limited (2222.4), T. Rovin (2228.4), the Escarpment Limited (2230.4)**

**6.5** Broadview Villas Limited (2222.4), T. Rovin (2228.4), and the Escarpment Limited (2230.4) requests that the permitted volume of earthworks within the Lower Density Suburban Residential Zone

(Chapter 7) be modified so that 300m<sup>3</sup> of material can be disturbed for every 450 m<sup>2</sup> of site area. The reason for this request is that the volume limits apply regardless of the size of the site and their largest site is over 3ha. The submitters consider the threshold should apply to every 450m<sup>2</sup> of site area as this is minimum site lot size anticipated for the Lower Density Suburban Residential Zone in Chapter 27 (Rule 27.6).

- 6.6** In my view, this approach would not adequately account for the incremental increase in potential adverse effects that such a rule would give rise to. Generally, as proposed, the 400m<sup>3</sup> volume threshold allows for the internalisation of adverse effects thereby allowing for activities to be undertaken where possible as a permitted activity. For that reason, I oppose the relief sought.

**Broadview Villas Limited (2222.5) T. Rovin (2228.5) the Escarpment Limited (2230.5)**

- 6.7** Broadview Villas Limited (2222.5) T. Rovin (2228.5) the Escarpment Limited (2230.5) also request that the other rules in Table 25.2 are modified to provide for earthworks volumes that are proportionate to the size of the sites.

- 6.8** Similarly, I do not consider there to be a compelling reason to alter to entire volume threshold framework listed in Table 25.2. As I have noted earlier, I acknowledge that they are not entirely effects based, but based on a combination of risk of effects and the type and scale of development anticipated within each zone grouping. Further, proportionality to define an earthworks volume threshold may result in consequential adverse effects where volume thresholds are inconsistent throughout the district and within zones (i.e. where sites are significantly different in terms of total area), which in my view is in conflict with the consistency in rule approach that the Council is seeking through the PDP and the corresponding predictability of adverse effects relative to receiving environments. Therefore, I recommend this submission be rejected.

### **Queenstown Park Limited (2462.2), and Remarkables Park Limited (2468.3)**

**6.9** Queenstown Park Limited (2462.2), and Remarkables Park Limited (2468.3) request that the earthworks chapter be amended to expressly provide for 'bulk earthworks' as a restricted discretionary activity. No specific reasons are given. However, the submitters are generally of the view that the ODP earthwork provisions (as amended by Plan Change 49) should be retained.

**6.10** This matter is discussed later in my evidence; however, I concur with this request, and it was integral to the analysis and reporting I completed to assist the Council in defining the proposed earthwork area thresholds rules which generally seek to regulate bulk earthwork activities. Permitted area thresholds have been proposed under Rule 25.5.11, where non-compliance with the standard will result in a consent application assessed as a restricted discretionary activity.

### **Friends of Lakes Hayes Society (2140.3)**

**6.11** Friends of Lakes Hayes Society (2140.3) requests that a higher threshold (lower volume limits) is set for earthworks in the Lake Hayes Catchment to account for the special risk to Lake Hayes water quality posed by nutrient and sediment inputs. Friends of Lakes Hayes Society generally supports the introduction of area thresholds for earthworks. However, the submitter is not certain that these are sufficient and considers that higher thresholds may be needed to protect the fragile water quality in Lake Hayes.

**6.12** I agree this is a valid concern and consider this submission will be adequately addressed through the maximum area thresholds<sup>13</sup> and improved implementation practices for erosion and sediment control (for all scales of development) throughout the district, which is addressed later in my evidence.

13 PDP Rule 25.5.11.

**Lake Hayes Limited (2377.23), Henley Downs Farm Holdings Limited and Henley Downs Land Holdings Limited (2381.6), Glendhu Bay Trustee Limited (2382.7), Soho Ski Area Limited and Blackmans Creek No.1 LP (2384.6), Treble Cone Investments Ltd (2373.6) and Darby Planning LP (2376.23)**

**6.13** These submitters support Advice Note 25.3.3.1 in part. However, they request an amended so that earthworks volume thresholds are measured at the completion of the work. The submitters consider that the advice note provides clarity on how the volume of earthworks is to be calculated. However, they note that earthworks are a dynamic process during construction and calculating earthworks volumes at the completion of works would assist in the implementation of the volume thresholds in Table 25.2.

**6.14** This approach to the calculation of earthwork volume thresholds is not practicable in my view. As has been stated earlier in this evidence, the permitted earthwork maximum volume thresholds stipulated in Table 25.2 define various volumes of earthworks that are acceptable to be carried out as a permitted activity. Exceeding these permitted thresholds elevates risk associated with earthworks activities, which the PDP determines requires scrutiny via the resource consent process with targeted compliance if the consent is granted and the earthworks are being implemented. Volume measurement at the completion of earthworks activities, after they have been undertaken, is a retrospective approach that does not enable the engaging of conditions of consent, or proactive mitigation of potential adverse effects. I therefore recommend that this submission be rejected.

**7. SUBMISSIONS ADDRESSING MAXIMUM VOLUME THRESHOLDS WITHIN ZONES**

**Millbrook Country Club (2295.8)**

- 7.1** Millbrook Country Club (2295.8) requests that Table 25.1 be amended to apply:
- (a) A 500m<sup>3</sup> maximum volume threshold for earthworks in the Residential Village, Resort Services, Landscape Protection, Landscape Protection (Malaghan) Activity Areas; and
  - (b) No maximum volume thresholds for earthworks in the Golf Course and Open Space, Recreation Facilities, Helepad Activity Areas.
- 7.2** Millbrook Country Club notes that golf holes need to be re-conditioned or re-routed and, in these circumstances, the golf resort need to continue operating whilst these works are undertaken, and these earthworks need to be undertaken effectively and efficiently. As such, the Millbrook Country Club considers that the works should be permitted activities consistent with the proposal for the Jacks Point Zone in the Stage 1 PDP hearings.
- 7.3** Millbrook Country Club also considers that grouping the with urban residential zones in Table 25.2 is inappropriate, unnecessary and unreasonable. Millbrook Resort Zone submits that it would more efficient and practical to create a separate category for the Millbrook Resort Zone, similar to the approach adopted for the Jacks Point Zone, which separately identifies the earthworks rules for that zone.
- 7.4** Submissions regarding the Millbrook Resort Zone (**MRZ**) requested alignment or similar status as the Jacks Point Zone where the standards 25.5.8 - 2 5.5.10 list various activities and maximum volume thresholds (Standard 25.5.3 stipulates MRZ has a maximum volume threshold of 300m<sup>3</sup> for all activities). The Jacks Point volume thresholds were deleted from the proposed zone chapter (Chapter 41 Jacks Point) through the Stage 1 Decisions and were retained in full in the proposed Chapter 25 Earthworks in Stage 2. Mr Wyeth's report responds

submissions<sup>14</sup> seeking relief sought consistent with the Chapter 41 Jacks Point Zone at Stage 1 hearing.

**7.5** This status as a standalone group in Table 25.2 reflects the unique scale of the Jacks Point Zone in the district (over 1000 houses plus other land use activities), its land use types and the aim to manage land use development (including earthworks activities) in a consistent and integrated manner. I understand similar outcomes are sought with the development of the MRZ but consider that approximately 500 dwellings proposed (including the Dalgleish Farm block), with recreational, commercial, visitor accommodation can be accommodated within Standard 25.5.3 without the application of a special status in Table 25.5 and therefore I recommend this submission be rejected.

**7.6** Regarding the recontouring of golf courses I note this type of work is not precluded from the earthworks rules and the process of excavation, recontouring and reinstatement can potentially be accommodated within the 300m<sup>3</sup> maximum volume threshold. If this volume is exceeded, regulatory oversight is supported through the grant of consent on appropriate conditions that identify / require suitable mitigation measures to address the effects that are specific to the site and activity. . Therefore, I recommend this submission be rejected.

### **Darby Planning LP (2376.32)**

**7.7** Darby Planning LP (2376.32) requests that Rule 25.5.2 be amended to introduce maximum volume thresholds for the Glendhu Station Zone consistent with the position they advanced at the Stage 1 PDP hearings. Darby Planning LP considers that this is important to ensure appropriate volume triggers are provided for this zone. The proposed volume thresholds requested range from 500m<sup>3</sup>, 1,000m<sup>3</sup> and no maximum depending on the activity area within the Glendhu Station Zone.

14 Henley Downs Farm Holdings Ltd and Henley Downs Land Holdings Limited, and Darby Planning LP (2381.12, 2376.29, 2382.37, 2376.3, 2382.38, 2376.31).

**7.8** I note that the zone does not exist in the PDP as it was specifically rejected in the Stage 1 decisions. Under the PDP Chapter 25, a maximum volume threshold of 1,000m<sup>3</sup> applies in the rural zone<sup>15</sup>. For the above reasons, I recommend that the relief sought be rejected.

**Skyline Enterprises Limited (2493.12, 2493.13)**

**7.9** Skyline Enterprises Limited (2493.12, 2493.13) opposes the earthworks volume limits and requests that the Ben Lomond Sub-Zone is added to 25.5.6 so that a 1000m<sup>3</sup> limit is provided throughout the sub-zone. Skyline Enterprises Limited notes that the ODP permits earthworks between 300-1000m<sup>3</sup> within the sub-zone (depending on zone) and this has been reduced to 100m<sup>3</sup> (in the Open Space and Recreation Zones). Skyline Enterprises Limited submits that there has been no evidence to demonstrate that ODP limits are resulted in inappropriate landscape and visual effects within the Bed Lomond Sub-Zone.

**7.10** Notwithstanding the submitter's assertion that the previous rule framework was functioning correctly, the reduction in maximum volume threshold aligns with the Council's intention to simplify and ensure consistency across the zone types throughout the district. In my view there is also merit in reducing the maximum volume threshold for this subzone where effects on landscape and amenity need to be carefully managed and assessed through a resource consent process if the volume threshold is exceeded. Therefore, I recommend this submission be rejected.

**Queenstown Central Limited (2460.1)**

**7.11** Queenstown Central Limited requests that Table 25.2 be amended to address the Frankton Flats B zone. Queenstown Central Limited notes that this zone is not included in Table 25.2 like all other zones in the District and this creates uncertainty as to which provisions apply to their land. The submitter therefore considers that Rule 25.2 should refer to

15 Table 25, Standard 25.5.6.

the Frankton Flats B zone or refer back to this chapter for earthworks provisions within the zone.

- 7.12** This zone has not been notified in either Stage 1 or Stage 2 of the PDP and therefore I oppose this submission.

**Queenstown Airport Corporation (2618.5)**

- 7.13** Queenstown Airport Corporation request that standards 25.5.5 and 25.5.6 be amended to apply a 2500m<sup>3</sup> permitted threshold for the Wanaka and Queenstown airports. Queenstown Airport Corporation considers that this will help to recognise the significant role of the airports in facilitating the movement of people and goods to Queenstown and the wider region.

- 7.14** The Council has released a notice of decisions on the PDP Stage 1<sup>16</sup> including a decision on Chapter 17 Airport Zone. Chapter 17 replaces the notified version of the chapter<sup>17</sup> and creates a zone both the Queenstown and Wanaka airports. For Chapter 25 Earthworks, this requires a consequential change to Table 25.2.

- 7.15** Respectively, as notified in Chapter 25, the maximum volume thresholds for the Queenstown and Wanaka airports are 500m<sup>3</sup> (Queenstown Airport Mixed Use Zone) and 1000m<sup>3</sup> (Rural Zone). Acknowledging the different urban and rural characteristics of the receiving environments for the two airports and the potential receiving environment effects of undertaking earthworks, in my opinion these maximum volume thresholds are appropriate to retain and I recommend the following consequential change to Table 25.2 and Standards 25.5.5 and 25.5.6 as follows:

<sup>16</sup> Notice of Decisions on QLDC Proposed District Plan - Stage 1, 7 May 2018.

<sup>17</sup> Proposed District Plan, Chapter 17, Airport Mixed Use Zone August 2015.

Table	Maximum Volume	Maximum Total Volume
25.2		
25.5.5	<del>Queenstown Airport Mixed Use Zone</del> Airport Zone (Queenstown Airport)	500m <sup>3</sup>
25.5.6	Airport Zone (Wanaka Airport)	1000m <sup>3</sup>

**7.16** In respect of the submission by Queenstown Airport Corporation which seeks a permitted earthwork maximum volume of 2,500m<sup>3</sup>, it is reasonable in my opinion to expect earthworks of this volume to be undertaken via a resource consent to appropriately manage risk and ensure regulatory oversight to effectively manage earthwork risk and associated mitigation. Therefore, I oppose this submission.

**Boxer Hill Trust (2386.2), Slopehill Properties Limited (2584.8), BSTGT Limited (2487.14), Trojan Helmet Limited (2387.16 and 2387.17)**

**7.17** Boxer Hill Trust requests that Standard 25.5.4 as it relates to the Wakatipu Basin Amenity Zone be amended to increase from 400m<sup>3</sup> to 1000m<sup>3</sup>. Boxer Hill Trust considers that the earthwork volume thresholds within the Wakatipu Basin Amenity Zone should be consistent with other rural zones.

**7.18** Similarly, Slopehill Properties Limited requests that the earthworks rules and standards that apply to the Wakatipu Basin Rural Amenity Zone are amended so they are the same as the Rural Zone. No specific reasons are given but Slopehill Properties Limited is generally seeking the Wakatipu Basin Rural Amenity Zone provisions to be more enabling of development.

**7.19** BSTGT Limited also requests that Rule 25.5.4 is amended so that the maximum limit is 1000m<sup>3</sup> and there is no limit for golf course earthworks. BSTGT generally opposes the PDP earthworks provisions on the basis they are more restrictive than the ODP and is specifically opposed to the 400m<sup>3</sup> maximum permitted volume earthworks limit in the Wakatipu Basin Rural Amenity Zone. BSTGT Limited notes that the 400m<sup>3</sup> limit is more aligned with rural-residential zones but the controls on minimum lot size in Wakatipu Basin Rural Amenity Zone mean

development will be rural in nature. As such, the submitter considers the earthwork volume limits should be consistent with the general Rural Zone.

**7.20** Trojan Helmet Limited requests that Standard 25.5.4 be amended to increase the total permitted volume of earthworks to 1000m<sup>3</sup>. Trojan Helmet Limited considers that the earthworks maximum volume should be consistent with the operative Rural Zone if the zoning remains on their land.

**7.21** Trojan Helmet Limited also requests that Rule 25.5.10 be amended so that there is no maximum volume of earthworks for the proposed Hills<sup>18</sup> (LUC22) of the Wakatipu Basin Rural Amenity Zone. This amendment will ensure all earthworks related to the construction and on-going maintenance of 'The Hills' golf courses is recognised and provided for.

**7.22** The Wakatipu Basin Amenity Zone has been characterised as an area of the district which has significance in terms of landscape character, its function as a gateway to Queenstown and the wider area, its role as a tourism destination and cornerstone for the visitor industry, and as a desirable location for both visitor and permanent accommodation<sup>19</sup> This is echoed in the purpose of the Wakatipu Basin Rural Amenity Zone PDP Chapter 24 as follows:<sup>20</sup>

*The purpose of the Zone is to protect, maintain and enhance the particular character and amenity of the rural landscape which distinguishes the Wakatipu Basin from other parts of the District that are zoned Rural.*

*A primary focus of the Zone is on protecting, maintaining and enhancing rural landscape and amenity values while noting that productive farming is not a dominant activity in the Wakatipu Basin.*

**7.23** Each of the submissions have requested that the permitted maximum volume threshold of 400m<sup>3</sup> be aligned with that of the Rural Zone, thus increasing the threshold to 1000m<sup>3</sup>. In my view this is not in keeping with the intention of the zone, which places a high value on landscape amenity and stipulates zone rules to mitigate adverse effects on these

18 'The Hills' golf course.

19 Wakatipu Basin Land Use Planning Study Final Report, March 2017.

20 Section 42A Recommended Chapter, 30 May 2018.

values. A maximum volume threshold of 1000m<sup>3</sup> also does not align with the other similar zone groupings in Rule 25.5.4<sup>21</sup> which in my view seek to internalise adverse effects relative to the typical rural lot areas thus enabling earthworks to be carried out as a permitted activity. Therefore, in my view the 400m<sup>3</sup> permitted volume threshold is appropriate given the permanent adverse effects on landscape and amenity values that may result from poorly planned and implemented earthworks practices. Therefore, I oppose these submissions.

**7.24** Similarly, the request by Trojan Helmet Limited to have no earthworks volume limit associated with the construction and ongoing maintenance of The Hills golf course is not supported. Having a single volume threshold, regardless of end land use in my view will assist in leading to consistency in earthworks outcomes for the zone. In my view it is not unreasonable to require a resource consent to ensure effects of such activities are adequately mitigated.

## **8. SETBACKS FROM BOUNDARIES**

### **Sean McLeod (2349.7, 2349.8, 2349.9, 2349.1)**

**8.1** Sean McLeod (2349.7, 2349.8, 2349.9, 2349.1) requests a number of changes to the diagrams in section 25.9 as he considers that requiring retaining walls to be set back from boundaries results in a waste of land. Mr McLeod requests that following amendments:

- (a) Diagram 25.4 is accepted but amended to state "distance is 1 x depth" instead of 1.5 x depth;
- (b) Diagram 25.5 is amended to show that the fill is allowed within 300 mm of the boundary similar to Diagram 25.4;
- (c) Diagram 25.6 is amended to allow walls to be constructed to the boundary as a permitted activity or limit the height to 2.0 metres before requiring consent. Mr McLeod also considers that larger walls should only require a Geotech supervision and neighbours written approval; and
- (d) Diagram 25.7 is amended to allow a retaining wall to the boundary or limit a wall on the boundary to 2.0 meters.

21 Large Lot Residential Zone, Rural Residential Zone, Rural Lifestyle Zone.

**8.2** I oppose the relief sought by Sean McLeod that seeks changes to the interpretative diagrams in Chapter 25 Earthworks (Diagrams 25.4, 25.5, 25.6, 25.7). The various diagrams assist with interpretation of Standard 25.5.19 Setbacks from boundaries, where the standard text and diagrams have been adapted from established plan practices.<sup>22</sup> Strict compliance with the requirements shown by these diagrams is not required by the PDP, with non-compliance defaulting to a restricted discretionary activity where a higher level of scrutiny into matters such as land stability, erosion, effects on infrastructure and natural hazards. Specific comments are as follows with respect to this submission:

*Diagram 25.4 Unsupported Cut*

**8.3** As is detailed in the diagram a distance of 1.5 multiplied by the depth of the cut (equivalent to 1:3<sup>23</sup>) is appropriate to establish a conservative batter slope angle as a permitted activity that ensures that the batter remains stable relative to the adjacent boundary. This batter slope angle is commonly used in the construction of other slope sensitive infrastructure<sup>24</sup> and therefore I am comfortable its proposal. This introduction of a more conservative permitted activity batter slope is offset by the proposed reduction in the distance of the crest of the cut to the boundary to 300mm.

*Diagram 25.5 Unsupported Fill*

**8.4** I note that this setback has been carried over from the ODP earthworks chapter<sup>25</sup>. The relief sought by Sean McLeod does not reflect a risk-based approach to locating unsupported fill. Reflecting other planning practice<sup>26</sup>, in my view, an appropriate factor of safety for unsupported fill has been applied in that the separation distance from the toe of the fill to the boundary is equal to the height of the fill (e.g. a fill height of 2m will require a boundary setback of 2m from the toe of the fill).

<sup>22</sup> Proposed Second Generation Dunedin City District Plan.

<sup>23</sup> Section 32 Report, pg. 42.

<sup>24</sup> Pond and wetland internal batter slopes, pg248, Guidance Document 01, Stormwater Management Devices in the Auckland Region.

<sup>25</sup> Chapter 22 Earthworks, Diagram 2.

<sup>26</sup> Wellington City District Plan, Proposed Second Generation Dunedin City District Plan.

### *Diagrams 25.6 and 25.7 Earthworks Supported by Retaining Walls*

**8.5** The setbacks from the boundary, as shown in Diagrams 25.6 and 25.7, are again linked to the risk profile of locating such structures, and therefore the submission by Sean McLeod to locate retaining walls on the boundary is not supported. An exemption from the rule is allowed if the retaining wall has a granted building consent (confirming the design has appropriately been assessed by the Council) meaning the retaining wall proposal does not need to be assessed against Standard 25.5.19.

## **9. STANDARD 25.5.11 – AREA THRESHOLDS**

### **Background and context**

**9.1** Bulk earthworks are typically associated with medium to large scale subdivisions and land development where significant areas of soil can be exposed to reform the land ready for the construction of building platforms, roads, tourism facilities and infrastructure. The scale of potential adverse effects is exacerbated with large exposed areas of soil combined with extended duration of works, rainfall and site slope, leading to erosion and sediment discharges off-site if not appropriately managed.

**9.2** The ODP does not currently apply area-based thresholds for the management of large scale earthwork activities. 4Sight Consulting was asked by the Council to assist in defining suitable area thresholds for the district, and the subsequent report<sup>27</sup> I produced was appended to the section 32 report for Chapter 25 Earthworks. The aim of the report was to answer the following questions:

- (a) What is a suitable threshold for bulk earthworks activities to require resource consent, and associated more comprehensive erosion and sediment control practice implementation?

<sup>27</sup> Queenstown Lakes District Council Proposed District Plan: Assessment of Thresholds for Earthworks, 4Sight Consulting 2017.

- (b) Are there factors that significantly increase risk and hence require a more stringent threshold, including commonly utilised factors such as:
  - (i) slope; and
  - (ii) proximity to a water body.

**9.3** It is important to recognise that there are several key factors that influence soil erosion and the subsequent discharge of sediment from an earthworks site and adverse effects. These include:

- (a) local climate conditions, particularly the frequency and intensity of rainfall events;
- (b) soil types and their erodibility once exposed by earthworks;
- (c) topography – steep slopes are more susceptible to erosion than flat areas;
- (d) the area of exposed soil, which influences the total amount of soil that is eroded and discharged;
- (e) the duration of exposure;
- (f) the application of erosion and sediment control measures to firstly minimise soil erosion and then to remove entrained sediment from runoff; and
- (g) the location and nature of receiving environments and their sensitivity to sediment-laden discharges.

**9.4** Given this range of factors, there is no single measure that defines earthworks discharge ‘risk’. Rather is a combination of factors that need to be considered and assessed to determine the threshold(s) at which the risk is sufficient large to justify a more comprehensive approach to erosion and sediment control management, including regulatory assessment and oversight through a resource consent process.

**9.5** Therefore, the approach to defining the rule thresholds has been to:

- (a) assess the comparative sediment yield discharging from a site and the factors that increase risk. This has been done using the Universal Soil Loss Equation (**USLE**) with

representative local rainfall, soils and representative slope characteristics. The output of the USLE is an annual sediment yield (indicating sediment discharging from a site in tonnes/he/year) and was used to test various slope, soil, area earthworks site area scenarios throughout the district;

- (b) review earthwork area thresholds adopted in other relevant plans; and
- (c) assess current erosion and sediment control practices - including during a site visit of the district to see existing bulk earthworks sites, current erosion and sediment control practices and future areas of development identified in the PDP.

**9.6** The findings from the report demonstrated that:

- (a) The soil types from the district assessed and inputted into the USLE all exhibited high erodibility meaning that when exposed to rainfall, soil is easily detached, tends to crust and produces higher levels of sediment runoff relative to less erodible soils.
- (b) Slope is a key determinant to increasing sediment runoff volume and site sediment runoff risk. The USLE introduces a higher sediment delivery ratio (sediment loss from a site) for slopes above 10 degrees.
- (c) The review of the Canterbury and Wellington district and regional plan rules, while not directly transferrable to QLDC, has been helpful to gauge other Council thresholds. I note that while the thresholds I recommend for QLDC were assessed independently using characteristics unique to the district, the recommended thresholds are not dissimilar to these other plans.
- (d) In terms of assessing current erosion and sediment control practices, I observed a cross-section of bulk earthwork development sites in the Wanaka, Millbrook, Arthurs Point and Queenstown areas. Wanaka exhibited several earthworks sites (each estimated to exceed 1 ha of earthworks area) that were being undertaken either entirely without sediment and erosion control practices or utilising

practices which appeared to be functioning poorly (e.g. silt ponds, sediment fences) compared to best practice.

- (e) An important component associated with the proposed Chapter 25 Earthworks and the earthworks area threshold rules will be implementation of erosion and sediment control practices either as a permitted activity standard, or via the requirements of a resource consent. Accordingly, the purpose of the site visit was to understand the current earthworks practices. In my opinion, this highlighted largely inadequate erosion and sediment control practices, which provided an important risk factor that influenced the recommended earthwork area thresholds.
- (f) The proximity of a site to a waterbody (other than immediately adjacent to the waterbody) was not considered a significant determinant of sediment runoff risk and associated adverse effects in that runoff can travel significant distances to a water body and still result in adverse effects. This was highlighted by the sediment discharge (following the site visit) to the Clutha River from the Outlet Road site via an overland flow path some considerable distance from the waterbody. Accordingly, no Sediment Control Protection Area, as found in some other plans, was recommended.

**9.7** I also note that in my opinion, the relatively pristine nature and sensitivity of many of the District's freshwater bodies, together with the significant growth predicted for the District, support a conservative approach.

**9.8** The outcomes of the report, which formed the recommendations for the area thresholds in the PDP, are as follows:

- (a) In my view it is appropriate for the Council to establish an area threshold for the PDP Chapter 25 Earthworks. I consider that earthworks area (combined with slope) is an appropriate metric to indicate the point at which earthworks scale, complexity and risk warrant regulatory oversight.

- (b) As is detailed in the report, the following permitted activity area thresholds were recommended for the earthworks chapter:
- (i) Earthworks of up to 2,500m<sup>2</sup> on land with a slope of over an area of 10° or more; and
  - (ii) Earthworks of up to 1 ha (10,000m<sup>2</sup>) on land with a slope of less than 10°.
- (c) The lower threshold of 2,500m<sup>2</sup> primarily reflects the significant impact that slope has on soil erosion and sediment loss, the highly erodible nature of soils within the district, the scale at which more comprehensive erosion and sediment controls are typically required, and the current level of (relatively poor) practice in respect of the implementation of erosion and sediment controls for bulk earthwork activities in the district.
- (d) I consider the 10,000m<sup>2</sup> area threshold appropriate on low-slope terrain less than 10°, reflecting the lower risk of erosion and sediment runoff. However, at the same time, it also considers the highly erodible soil and the relatively limited level and sophistication of erosion and sediment control in the district. In my opinion, these factors support a conservative approach to setting thresholds to manage erosion and sediment discharge risk.

## **10. RESPONSE TO SUBMISSIONS ADDRESSING THE AREA THRESHOLDS**

### **Patterson Pitts (2457.9)**

- 10.1** Patterson Pitts (2457.9) requests that the area thresholds in Standard 25.5.11 be deleted and replaced with an alternative method of achieving the outcome of better site management procedures, such as

a site management plan. In particular, Patterson Pitts raises the following concerns with Standard 25.5.11:

- (a) It is unclear whether the area limits apply in the same way as the calculation of volume limits for cut and fill (as demonstrated in the interpretive diagrams);
- (b) The area limit may render the volume limits as irrelevant and remove the ability for land uses to undertake a scale of earthworks as a permitted activity;
- (c) The rationale for the area limits appear to be management of erosion and sedimentation but the matters of discretion are much broader than this; and
- (d) It is likely to create additional consenting burden for matters that would otherwise be assess as permitted standards for sediment and erosion control.

**10.2** I oppose the submission to delete 25.5.11. As I have discussed earlier there is rationale for the different area and slope thresholds in Standard 25.5.11, and the technical and practicable basis for those thresholds. The analysis to form the recommendations in the report finds that these thresholds are set at an appropriate level which will require resource consent to be obtained as a restricted discretionary activity when the environmental risks are greater. These area thresholds, together with the conditions that require erosion sediment control practices to be implemented for these sites, are the key requirements in the PDP to help improve earthworks management practices and environmental outcomes across the District.

**10.3** I make the following additional comments in relation to the Patterson Pitts submission:

- (a) For clarification, calculation of earthworks area is based on the maximum area of exposed soil on site including site cut and fill areas (as is detailed in 29.5 Interpretative Diagrams).
- (b) As has been discussed earlier, the findings from the report determined the earthwork area thresholds are risk-based relative to the scale of bulk earthworks anticipated to be carried across the district and the need to mitigate sediment

runoff related adverse effects. Therefore, for bulk earthwork activities, the open earth worked area (i.e. exposed soil) is the key metric that determines activity status (and potential for adverse effects), not the volume as may be the case in constructing residential dwellings, or a commercial building and basement. I also note that the area limits are relatively large; 2,500m<sup>2</sup> (slope greater than 10°), 10,000m<sup>2</sup> (slope less than 10°); meaning the earthworks area limits will not render the volume limits irrelevant as submitted by Patterson Pitts.

- (c) As has been identified by the submitter, matters of discretion listed in 25.7.1 are not limited to erosion and sediment control. In line with the Council's intention to streamline the earthworks rules I considered it appropriate to have a single set of matters of discretion for consent applications to be assessed against. This approach will assist in ensuring consistency of environmental outcomes across the district regardless of how a consent has been triggered, with analysis commensurate to the type and scale of work being proposed.
- (d) In recommending the permitted earthwork area thresholds, I did consider the additional resource consent and compliance requirements that would be placed on the development industry. This however was balanced against current earthworks practice, the need to improve erosion and sediment control and associated community and environmental outcomes including the high amenity and sensitive rivers and lakes in the District. In my view the risk of undertaking large bulk earthworks activities sufficiently warrants the scrutiny of a resource consent process and associated compliance requirements at a suitable scale, and I recommend the thresholds proposed.

**Glendhu Bay Trustees Limited (2382.14), Lake Hayes Limited (2377.29), Henley Downs Farm Holdings Limited and Henley Downs Land Holdings Limited (2381.13), Darby Planning Limited (2376.33)**

- 10.4** Glendhu Bay Trustees Limited request that the Glendhu Zone Stage 1 rezoning request is exempt from the area thresholds to control erosion

and sediment from earthworks. Glendhu Bay Trustees Limited notes that proposed Glendhu Station Zone makes provisions for earthworks and it would be appropriate and desirable to incorporate those provisions into the new earthworks provisions, subject to decisions on Stage 1 of the PDP.

- 10.5** Lakes Hayes Limited opposes Rule 25.5.11 and requests that the Wakatipu Basic Rural Amenity Zone, including the Wakatipu Basin Lifestyle Precinct, is exempt from the area thresholds. Lakes Hayes Limited opposes additional controls on earthworks that did not otherwise apply under the operative Rural Lifestyle Zone and considers that these are unnecessary.
- 10.6** Henley Downs Farm Holdings Limited and Henley Downs Land Holdings Limited oppose Rule 25.5.11 and request that the Jacks Point Zone is exempt from the area thresholds. The submitter opposes additional controls on earthworks that did not otherwise apply under proposed Jacks Point Zone when this was notified and considers that these are unnecessary.
- 10.7** Darby Planning Limited requests that Standard 25.5.11 be amended to exempt the Wakatipu Basin Rural Amenity Zone (including Lifestyle and Lake Hayes Cellar Precincts), Ski Area Sub Zones, Jacks Point Zone or the Glendhu Station Zone from the earthworks area threshold limits. Darby Planning Limited opposes the area thresholds within these zones and seeks to ensure the rule is consistent with the approach for earthworks within Chapter 41 - Jacks Point Zone.
- 10.8** The USLE methodology outlined in the report was tested on site scenarios throughout the district where all soil types exhibited a high erodibility factor (when exposed by earthworks). This indicated there was no location sensitivity to inform a location specific rule structure across the district, leading to slope angle and open earthworks area becoming the key metrics to form the recommended thresholds. Rule 25.5.11 proposes to regulate large-scale bulk earthwork activities throughout the District to reflect the risk of significant off-site sediment movement and the sensitivity of the various receiving environments. The exemptions sought do not reflect that risk and would limit the ability

of the Council to regulate such activities and implement best practice erosion and sediment control measures where it is required to effectively manage risk. Therefore, in my opinion these submissions should be rejected. I also note that the Glendhu Station does not exist in the PDP as it was specifically rejected in the Stage 1 decisions. For the above reasons, I recommend that the relief sought be rejected.

**Z Energy Ltd, BP Oil NZ Ltd, Mobil Oil NZ Ltd (the Oil Companies)  
(2484.5)**

- 10.9** Z Energy Ltd, BP Oil NZ Ltd, Mobil Oil NZ Ltd (the Oil Companies) (2484.5) request that Standard 25.5.11 is amended to apply to the average ground slope. The Oil Companies support the standard in part but consider that it should be clarified to ensure it applies to the average ground slope before the earthworks not the earthworks themselves.
- 10.10** The assessment I undertook to inform the proposed area thresholds in Rule 25.5.11 identified that slope angle was a key factor in determining the erosion and sediment control risk associated with bulk earthwork activities. Erosion risk increases with increasing slope angle and my assessment concluded that 10° is an appropriate angle at which a lower earthwork area threshold is appropriate to effectively manage risk.
- 10.11** I do not agree with the submission of the Oil Companies that the slope angle should be averaged over the entire site. This would defeat the purpose of the control, which is to manage the elevated risk of erosion from earthworks on steeper land. This risk is not diminished by having flatter land elsewhere on the site. Therefore, in my opinion this submission should be rejected.

**11. RULES 25.5.20 AND 25.5.21 – EARTHWORK ACTIVITIES NEAR WATERBODIES**

**Real Journeys (2466.27), Cardrona Alpine Resort Limited (2492.21), Te Anau Developments (2495.25), and Go Orange Limited (2581.27)**

**11.1** The submitters oppose Standard 25.5.20 and request it better align with the ORP:W. To achieve this, the submitters request amendments to Standard 25.5.20 so that it does not apply to certain activities associated with water defence structure in and around waterways.

**11.2** The reasons given by the submitters are that the standard does not integrate/align with the ORP:W or recognise the need to undertake a range of works to mitigate flood and erosion hazards. The submitters note that they regularly need to undertake activities within 10 metres of a water body and consider that they should not be required to obtain a resource consent from Council in these circumstances. The submitters also note that ORC does not require resource consents for these activities because it recognises that water defences are important in Otago to mitigate flood and erosion hazards.

**Go Orange Limited (2581.9)**

**11.3** Go Orange Limited requests that PDP Chapter 25 is amended to ensure that earthworks undertaken for the purpose of recreation activities (including commercial recreation) near or within waterbodies, including lake and river margins, is provided for as permitted, controlled or restricted discretionary activities. Go Orange Limited notes that as part of its rafting operations, it is required to undertake earthworks within and along the beds of rivers and this is often required to address the actual and potential risks to people and infrastructure.

**Soho Ski Area Limited, Blackmans Creek No.1 LP (2384.15), Darby Planning Limited (2376.39, 2376.4), Henley Downs Farm Holdings Ltd and Henley Downs Land Holdings Ltd (2381.18), Lake Hayes Limited (2377.34) and Glendhu Bay Trustees Limited (2382.19)**

- 11.4** These submitters oppose the new 10m setback to waterbodies. The submitters request that Standard 25.5.20 is amended to be consistent with the ODP which permitted up to 20m<sup>3</sup> within 7m of a water body. The submitters consider there has been no assessment to justify the change from the ODP and note that a 7m setback is more consistent with the ORP:W.

**NZSki (2454.4)**

- 11.5** NZSki oppose Standard 25.5.20 and consider that requiring a resource consent for earthworks within 10m of a water body is unnecessary duplication (or triplicate) of the assessment undertaken by DOC and ORC. NZSki notes that they have jointly developed a set of protocols with DOC for the rehabilitation of natural alpine environments following Ski Area development and these set out extensive controls for soil erosion and sediment controls. In addition, NZSki notes:

- (a) ORC controls the discharge of sediment from works on land under Rule 12.C.1.1 and 12.C.3.2 of the ORP:W.
- (b) At the Remarkable Ski Area there are a myriad of wetlands, streams and a lake. The consequence of Standard 25.5.20 therefore is that most earthworks in the Ski Area would require resource consent.

- 11.6** In respect of a setback distance, the ODP includes an earthworks setback distance of 7 m from a water body, within which no more than 20m<sup>3</sup> of earthworks can be undertaken as a permitted activity in any 12-month period. In my report to determine area thresholds for the PDP, I also recommended that an earthworks setback from a waterbody be retained, but that this is increased to 10m to reflect practical considerations and current practice elsewhere in New

Zealand<sup>28</sup>. This increased distance is appropriate in my view as it provides:

- (a) additional protection, and buffer, for river and lake receiving environments;
- (b) additional room to provide for erosion and sediment control (such as silt fences) to minimise and mitigate discharges to waterways; and
- (c) protection of the structure and function of the riparian margin.

**11.7** The PDP has also removed the conditions that existed in the ODP earthworks chapter, namely the permission to undertake earthworks up to 20m<sup>3</sup> within the 7m setback in any 12-month period. Under the PDP any earthworks meeting the PDP earthworks definition<sup>29</sup> will effectively require a resource consent. While I agree with the intent of this rule proposal to effectively management earthworks activities within the setback area, it may result in otherwise minor activities being captured in a resource consent process based on the appropriately general definition of earthworks including 'disturbance of land'. Therefore, in my view a volume threshold for earthworks activities within 10m of a waterbody should be reinstated to allow for minor earthworks as a permitted activity. The previous 20m<sup>3</sup> limit in the ODP is not appropriate in view as it appears to be a large volume relative to the potential adverse effects on the natural character of wetlands, lakes, rivers and their margins. Therefore, I propose the following amendment to Rule 25.5.20:

~~Earthworks shall be setback a minimum distance of 10 metres from the bed of any water body.~~ Earthworks within 10m of the bed of any water body shall not exceed 5m<sup>3</sup> in total volume, within any consecutive 12-month period.

<sup>28</sup> Auckland Unitary Plan (Operative in Part), Christchurch District Plan.

<sup>29</sup> Means the disturbance of land by the removal or deposition on or change to the profile of land. Earthworks includes excavation, filling, cuts, root raking and blading, firebreaks, batters and the formation of roads, access, driveways, tracks and the deposition and removal of cleanfill.

**11.8** In my view this recommended change is consistent with the intent of the rule and the associated objectives<sup>30</sup> and policies<sup>31</sup> of the PDP earthworks chapter but permits activities which may have minimal adverse effects where a resource consent would otherwise be required.

## **12. RULE 25.5.12 – SEDIMENT CONTROL STANDARDS AND IMPLEMENTATION**

**12.1** As has been discussed in my evidence, my observation of bulk earthwork sites across the District indicates that erosion and sediment control implementation is limited and does not, in my view, meet best practice. Notwithstanding this, the area-based rule thresholds (Rule 25.5.11) and the sediment standard (Rule 25.5.12) will assist in improved attention on erosion and sediment control.

**12.2** As is discussed in the section 32 report, councils throughout the country use erosion and sediment control guidelines and practice notes as a means of communicating the outcomes sought through earthworks management, usually to avoid or minimise soil erosion, sediment generation and associated run-off.<sup>32</sup>

**12.3** The Council is producing an erosion and sediment control guideline and I agree that this guideline document is required to contribute to the outcomes sought by proposed Chapter 25.

**12.4** In my view the guideline document should address small, medium and large sites by detailing a set of practical tools for implementation by the industry, with guidance as to under what circumstances and site conditions the various tools should be used.

**12.5** However, improved guidance documentation does not diminish the need for appropriate area and volume thresholds as I have discussed

<sup>30</sup> Objectives 25.2.1 and 25.2.2.

<sup>31</sup> Policies 25.2.1.1, 25.2.1.2 (c), 25.2.2.3.

<sup>32</sup> Queenstown Lakes District Proposed District Plan Section 32 Evaluation Stage 2 Components October 2017. Section 5.79.

above. In my opinion, the thresholds are set at levels that are appropriate to effectively and pragmatically manage earthworks risk.

### **13. SUBMISSIONS ON SEDIMENT CONTROL STANDARDS**

#### **Patterson Pitts (2457.11), Eco Sustainability Development Limited (2539.1)**

**13.1** Patterson Pitts (2457.11) requests that Standard 25.5.12 be deleted. Reasons given are as follows:

- (a) There is a lack of guidance on appropriate sediment control measures to comply with the standard.
- (b) The standard is overly onerous, and it is not practicable to comply with all of the time even if the best management approaches are implemented.
- (c) Domestic gardening and landscaping rules may be captured by the standard as currently drafted.
- (d) The standard is worded in a way that would require retrospective resource consent after the event and there would likely be no discernible adverse effect left to assess (as sediment would have dispersed and mixed). Requiring a retrospective consent in this situation is nonsensical.

**13.2** Patterson Pitts (2457.11) considers that, if Standard 25.5.12 is not deleted, it should be amended to:

- (a) Refer to 'minimise' sediment rather than 'prevent'; and
- (b) Change the activity status for non-compliance to restricted discretionary; and
- (c) Add an exemption to the standard when earthworks are being undertaken in accordance with industry best practice, an approved site management plan, or pre-approved sediment controls contained within the Land Development and Subdivision Code of Practice; or
- (d) Develop more detailed permitted activity standards and guidance on the appropriate sediment control measures to comply with the standard. Patterson Pitts considers that a supporting guidance document is necessary to identify the measures that would comply with the standard but notes that, if this guidance document is non-statutory and not linked to

standard, then to it may be difficult for developers to demonstrate compliance.

- 13.3** Eco Sustainability Development Limited (2539.1) requests that Standard 25.5.12 is deleted. Eco Sustainability Development Limited considers that the net result of this standard (together with standards 25.5.13 and 25.5.14) is that all earthworks in the District will be required to apply for a non-complying resource consent. Eco Sustainability Development Limited supports the intent and desired outcome from Standard 25.5.12 but considers that it is unachievable to prevent all sediment exiting the site during earthworks, even with the best site management measures in place. Eco Sustainability Development Limited considers that the PDP should rely on the volume thresholds in Table 25.2 which allow site management measures to be assessed when resource consent is required. Eco Sustainability Development Limited considers that this is the most efficient and effective approach to achieve sound environmental outcomes without creating an onerous consenting regime.
- 13.4** Real Journeys (2466.22), Cardrona Alpine Resort Limited (2492.16), Te Anau Developments Limited (2492.2), and Go Orange Limited (2581.22) oppose Standard 25.5.12 and request that it is deleted. The submitters consider that Standard 25.5.12 is not practical to comply and will create an unnecessary administrative burden on landowners and Council. The submitters consider that it is more appropriate to manage sediment a resource consent process due to breaches to other standards, namely earthworks volume, cut or fill height. The submitters also consider Standard 25.5.12 overlaps and does not integrate with the functions of ORC (in particular Rule 13.5 of the Otago Regional Plan: Water).
- 13.5** Z Energy Ltd, BP Oil NZ Ltd, Mobil Oil NZ Ltd (the Oil Companies - 2484.6) request that the word 'prevents' in Standard 25.5.12 is replaced with 'minimises'. The Oil Companies note that they are supportive of Standard 25.5.12 but have concerns over its absolute nature. The Oil Companies note that it is impossible to ensure that no sediment will leave the site during earthworks and consider that

'minimise' is more consistent with the policy direction for earthworks in the PDP (namely Objective 25.2.1).

**13.6** A common theme of the submissions is the practicality of achieving the sediment control standard in Standard 25.5.12 where the word 'prevent' is used. Where erosion and sediment control measures have been designed, implemented and maintained in accordance with best practice then it is generally accepted that sediment leaving a site will have been minimised to a practicable level. I note that it is not possible to remove 100% of sediment from the water column as diminishing returns are observed in terms of cost and practicality relative to the marginal benefit in sediment removal efficiency of erosion and sediment control practices.

**13.7** Use of the word 'prevent' also has the potential to create the requirement for retrospective consents where it is deemed that that standard has not been met. In my view this is an in-efficient means of achieving compliance with the standard and more importantly would not assist in achieving the environmental benefit outcomes sought by the chapter in terms of sediment leaving a site and/or reaching a waterbody.

**13.8** Mr Wyeth has agreed with the concerns raised in the submissions and has recommended the following alternative wording for Standard 25.2.12:

~~Earthworks must be undertaken in a way that prevents Erosion and sediment control measures must be implemented and maintained during earthworks to minimise the amount of sediment exiting the site, entering water bodies and stormwater networks. or exiting going across the boundary of the site.~~

**13.9** I agree with this recommended wording change. Best practice is predicated on design, construction and maintenance of erosion and sediment controls thereby intrinsically 'minimising' sediment as proposed in the rewording by Mr Wyeth. While ideally erosion and sediment controls would be specified as a permitted activity standard, the variability of earthwork sites and receiving environments is such

that it is not possible to specify controls that are appropriate to all sites and circumstances – rather controls need to be customised to the site and earthwork areas. This highlights the role of the erosion and sediment control guideline (under development) in implementing the standard to assist with upskilling and education of the industry along with the Council performing an advocacy role to assist in achieving best practice.

#### **Queenstown Park Limited (2462.7)**

**13.10** Queenstown Park Limited (2462.7) request that the requirement for erosion and sediment control management plans to be prepared by a suitably qualified person for all earthworks be deleted and that this requirement only apply to bulk earthworks over 50,000m<sup>3</sup>.

**13.11** My analysis of this submission is that while preparation of erosion and sediment control plans is not an explicit requirement, Assessment Matters (25.8.2.d.) do identify that this will generally be required for large-scale earthworks that do not comply with the area thresholds in Standard 25.5.11. I also consider that it is appropriate for the Assessment Matters to signal the importance of preparing an erosion and sediment control management plans for large-scale earthworks. As I have identified in the report to define the earthwork area thresholds, risk of adverse effects from earthworks is elevated when the area thresholds are exceeded, and the preparation of an erosion and sediment control plans will generally be required to appropriately manage those risks. In certain circumstances this includes plan preparation by practitioners that are suitably qualified to design and, where necessary, certify that erosion and sediment controls have been constructed to a standard fit for purpose. Failure of sediment control devices through poor design and/or construction (e.g. sediment ponds, decanting bunds) can result in consequential adverse effects. Therefore, I recommend this submission be rejected.

**13.12** I also consider that that erosion and sediment control plans should not be limited to bulk earthwork activities over than 50,000m<sup>3</sup>. In my view erosion and sediment control plans can and should be adapted to various scales of earthwork activities using the toolbox of options that

will be available in the Council's guideline document. This approach will develop improved practice in the industry, thereby contributing to better environmental outcomes as is sought by the PDP earthworks chapter. Therefore, I recommend this submission is rejected.



**Trent David Sunich**

**23 July 2018**