

**BEFORE A HEARING PANEL  
CONSTITUTED BY NELSON CITY COUNCIL**

*IN THE MATTER*

of an application by **CCKV Maitahi Development Co LP** and **Bayview Nelson Limited** for a change to the Nelson Resource Management Plan (Plan Change 28)

*IN THE MATTER*

of Part 5 and Schedule 1 of the Resource Management Act 1991

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**STATEMENT OF EVIDENCE OF MICHAEL JOHN PARSONSON**

**EROSION AND SEDIMENT CONTROL**

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## Section A – Introduction and Scope of Evidence

### *Name, qualifications and experience*

- [1] My name is Michael John Parsonson.
- [2] I am a director of Southern Skies Environmental Limited (SouthernSkies) and have held that position since 2005. Prior to joining SouthernSkies I held various positions at Auckland Regional Council, including soil conservator, land and water specialist and consents and compliance manager.
- [3] I am a full member of the New Zealand Planning Institute, a member of the Resource Management Law Association, and a certified Resource Management Act 1991 (RMA) hearing commissioner with 14 years experience in that capacity. I hold an MSc in Geography from the University of Auckland and a Diploma of Agriculture from Massey University. I am a former board member of the International Erosion Control Association – Australasia.
- [4] I have 24 years experience in the assessment and preparation of resource consent applications, Notices of Requirement and Outline Plans of Work for various activities under regional and district plans; policy and plan development; expert witness services; hearing commissioner; erosion and sediment control design, auditing and training; development of best practice guidelines for RMA practitioners; and expert peer reviews.
- [5] My experience includes:
- Preparation and management of resource consent applications and outline plans for various activities within Northland, Auckland, Waikato, Gisborne, Wellington, Nelson and other regions including roading, quarries, managed fills, parks facilities and other infrastructure.
  - Hearings commissioner for resource consent applications, notices of requirement and plan changes for infrastructure, development and resource use proposals under district and regional plans. These include quarries, municipal landfills, roads, aggregate extraction from rivers, industrial discharges, schools and urban development.

- Member of the Board of Inquiry for the East West Link proposal (2017-2018).
- Member and deputy chair of the Board of Inquiry for the Ara Tuhono – Puhoi to Warkworth Motorway proposal (2015).
- Processing resource consent applications on behalf of Auckland Council and Waikato Regional Council.
- Processing stormwater network resource consent applications for Auckland Council.
- Lead planner developing provisions and reporting to the Independent Hearings Panel on earthworks topic (district and regional) of the Proposed Auckland Unitary Plan.
- Erosion and sediment control design for consent applicants; and technical reviews for Auckland Council, Waikato Regional Council, Horizons Regional Council and Wellington Regional Council.
- Erosion and sediment control training for public and private sector throughout New Zealand.
- Co-author of Auckland Council Guideline Document 2016/05 Erosion and Sediment Control Guideline for Land Disturbing Activity in the Auckland Region.

[6] Specific projects that SouthernSkies and I have been involved with the local context includes:

#### Nelson City

- Preparation of resource consent application, and erosion and sediment control plans and chemical treatment management plan for earthworks required for the Washington subdivision (104 Washington Road and 27 Britannia Heights, Nelson).
- Erosion and sediment control advise and design for York Valley Landfill, Nelson.
- Erosion and sediment control design and advice for Fulton Hogan Yorke Quarry, Nelson
- Erosion and sediment control plans and chemical treatment management plan for stages of the Quail Rise, Solitaire and Hilltops subdivisions, Stoke.

#### Tasman District

- Erosion and sediment control tendering, design and on-site support for the Waimea Dam project.
- Erosion and sediment control advice and design or Taylors Waimea Quarry.
- Erosion and sediment control design for Taylors Takaka Quarry.
- Erosion and sediment control plan for Branch River intake project.
- Delivery of erosion and sediment control training for various construction teams.

#### *Expert Code*

[7] While this is not an Environment Court hearing I have met the standards in that Court for giving expert evidence.

[8] I have read the Code of Conduct for expert witnesses issued as part of the Environment Court Practice Note 2014 (Part 7). I agree to comply with the Code of Conduct. I am satisfied that the matters addressed in this statement of evidence are within my expertise. I am not aware of any material facts that have either been omitted or might alter or detract from the opinions expressed in this statement of evidence.

#### *Role in Project*

[9] I was engaged by CCKV Maitai Dev Co LP (CCKV) on behalf of that entity and Bayview Nelson Limited (BNL) herein collectively referred to as “the Applicant”) on 21 March 2022.

[10] I undertook a site visit with Mr Neil Donaldson (CCKV), Mr Andrew Spittal (CCKV) and Mr Richard Pollock (BNL) on 25 March 2022. During that site visit I inspected the reaches of the Maitahi / Mahitahi River adjacent to the CCKV land, the confluence with the Kākā Stream at Dennes Hole, and the Kākā Stream reaches extending into the CCKV property. Mr Donaldson and I travelled up through the valley and up to BNL ridgeline. I met with Mr Pollock at the existing BNL earthworks / development site to the north of the PPC28 area. Mr Donaldson and I returned along the full extent of the ridge and back to the CCKV flats and back to Maitai Valley Road.

[11] I undertook several discussions with Mr Ridley by phone and attended expert conferencing with Mr Ridley on 5 May 2022. On 26 May 2022 Mr Ridley and I discussed, by phone, my suggested amendments to the Private Plan Change 28 (PPC28) provisions and matters relating to secondary (permitted activity) earthworks associated with individual lot development.

#### *Scope of Evidence*

[12] I have been asked to assess and comment on:

- the appropriateness of the applicant's approach to the plan change; specifically deferring the quantification and detailed assessment of earthworks effects until the future resource consent phases; and
- whether potential adverse sediment related effects of earthworks that are necessary for the development of the plan change area can be appropriately managed through the existing Nelson Resource Management Plan (NRMP) provisions and the proposed PPC28 provisions; and
- respond to Council's specialist review and s42A report, and matters raised by submitters.

### **Section B – Executive Summary**

[13] PPC28 seeks to rezone land within the Kākā Valley and Bayview Ridge. The area that lies within the Kākā Valley drains via the Kākā Stream to the Maitahi / Mahitahi River at Dennes Hole swimming site. Ultimately, all runoff from the area drains to the Nelson Haven.

[14] If approved, earthworks will be necessary within the PPC28 area to create roads and services (including stormwater treatment facilities), other access, geotechnical stabilisation, realigning the Kākā Stream, and regrading land for development.

[15] Earthworks will trigger the need for resource consents as restricted discretionary activities under the existing provisions of the NRMP. Additional provisions have been proposed to complement the existing provisions.

[16] In my opinion, those combined provisions will provide sufficient certainty in the consenting of earthworks to ensure that potential sediment related effects can be acceptable minimised. Under those provisions and as necessary for any given application, Nelson City Council (NCC) will have scope to require best practice erosion and sediment control methods, sediment yield modelling, staging, adaptive management and any other method that is considered necessary to achieve that outcome. All such measures are well understood and proven within the local and national context.

[17] I do not consider that sediment yield modelling, or specific controls on staging or other earthworks elements is necessary at this time or within the PPC28 provisions.

[18] I recommend that an additional provision be included to reinforce that all permitted activity earthworks must implement best-practice erosion and sediment control.

## **Section C – Evidence**

### *Proposed Private Plan Change*

[19] I rely on the application material and evidence of Mr Lile for the detailed explanation of the plan provisions and zoning sought.

[20] Those include additions that I have prepared in consultation with Mr Lile and the applicant, to reinforce the provisions that apply to consenting earthworks under the existing NRMP, and to reinforce the requirement to implement best-practice erosion and sediment control during all earthworks.

### *Nelson Resource Management Plan*

[21] As detailed in PPC28 and as summarised in Mr Lile's evidence, earthworks necessary to development various stages of subdivision and infrastructure across the PPC28 area will trigger the need for resource consent under the NRMP.

*Earthworks that require resource consent*

[22] I have reviewed the most likely triggers for consent and corresponding provisions of the NRMP. It is my understanding that general earthworks will trigger consent as a restricted discretionary activity under Rules REr.61 (residential), OSr.49 (open space) and RUr.27 (rural). There is significant commonality in the assessment criteria listed against each of the rules due to the same management approach used across each Zone. Those matters relevant to the potential effects of sediment discharges include:

- loss of topsoil or movement of soil downslope, and
- the potential for slope failure, and
- soil and vegetation entering rivers and coastal water, and
- damage to instream and coastal habitats, and
- adverse effects on catchment stream flow, and
- bank and coastal erosion, and
- duration of bare soil to wind and rainfall, and
- water quality, including suspended sediment load and increased stream bed load, and
- the method and timing of the activity, and
- the area to be cleared at any one time, and
- the provision of structures to control soil erosion or sedimentation, and
- the timing and techniques used for revegetation, and
- the long term management of the land cleared, and
- the provision of appropriate resources to ensure that adverse effects arising from emergency or unforeseen circumstances are controlled or mitigated, and
- the values set out in Appendix 6, Table 6.1 for any river, and
- the matters in Appendix 4 (marine ASCV overlay).

[23] Where works are to occur within streams (such as the Kākā Stream), the works will likely trigger consent as a discretionary activity or non-complying activity under Appendix 28 Freshwater of the NRMP, including Rules FWr.1.3 (disturbance), FWr.5.3 (bridges and culverts) and FWr.10.3 (realignment). Notwithstanding the full discretion of those applications, assessment criteria include the following matters relevant to construct effects:

- the degree to which the activity affects the existing classification and values of the waterbody (refer to Appendix 28.4 and Appendix 6).
- disturbance of the bed.
- the method and timing of works.
- effects on aquatic ecosystems
- effects on fish passage
- effects on water quality

- duration of consent
- monitoring and reporting requirements
- the scale, extent and design (curved rather than straight) of the realignment or piping
- effects on the natural functioning of aquatic ecosystems
- effects on natural character

[24] Such applications would also be assessed under the relevant objectives and policies, such as:

- DO17.1.1 (disturbance of river and lake beds, and wetlands)
- DO17.1.2 (protection of natural character)
- DO17.1.6 (structures in and under the beds of rivers, lakes and wetlands)
- DO17.1.11 (realignment and piping)
- DO19.1.10 (new development)

#### *Permitted Activities*

[25] Various permitted activity rules address earthworks within different zones. Residential Rule REr.61.1 provides the typical list of permitted standards, which include:

- maximum cut or fill heights (1.2m unretained or 3m if retained); and
- minimum proximity to boundaries, rivers, streams and coastal environments; and
- stabilisation of exposed soil; and
- meeting an outcome imposed by s70 of the RMA (no conspicuous change in the colour or visual clarity in any water body or coastal water as a result of undertaking the activity); and
- use of surface water controls to avoid erosion; and
- avoidance of adverse effects on adjoining properties or any waterbodies.

#### *Resource Management (National Environmental Standards for Freshwater) Regulations 2020*

[26] The following works, which are anticipated during the proposed development of the Kākā Valley portion of PPC28, would trigger consent under the Resource Management (National Environmental Standards for Freshwater) Regulations 2020 (NESFW).

- Vegetation removal and earthworks within 10m of a natural wetland (non-complying activity).
- Damming, diversion, or discharge of water within a 100 m setback from, a natural wetland, including diversion and discharge of water through sediment control devices (non-complying activity).

- Reclamation of the bed of a river (discretionary activity)
- New culverts (permitted or discretionary activities, subject to conditions).
- a non-complying activity under the).
- Other works, such as the construction of culverts, will trigger

#### *National Policy Statement for Freshwater Management*

[27] Earthworks triggering resource consent under the NRMP, and those under the NESFW, will engage the provisions of the National Policy Statement for Freshwater Management (NPSFM).

#### *New Zealand Coastal Policy Statement*

[28] Earthworks areas that discharge to Nelson Haven will require consideration under the provisions of the New Zealand Coastal Policy Statement (NZCPS). Given the values of Nelson Haven and the proximity of the confluence of the Kākā Stream with the Maitahi / Mahitahi River to that coastal receiving environment, I consider the NZCPS could reasonably be considered relevant to all consent applications for earthworks within the PPC28 area i.e. including those within the Kākā Stream catchment. The discretionary activity classification of earthworks proposals would engage consideration of such national planning instruments.

#### *Erosion and Sediment Control*

[29] Earthworks across the PPC28 area will be required to implement best-practice erosion and sediment control. At the present time, and as a minimum, that requires the works to be undertaken in accordance with *Nelson Tasman Erosion and Sediment Control Guidelines*; July 2019 (Nelson Tasman Guideline), co-authored by Mr Ridley. The requirements and outcomes sought in this guideline are consistent with the other leading ESC guidelines adopted by various regional councils e.g. Auckland Council Guideline Document 2016/005 *Erosion and Sediment Control Guideline for Land Disturbing Activities in the Auckland Region* (GD05) the *Erosion and Sediment Control Toolbox for Canterbury*, and the Waka Kotahi NZ Transport Agency *Erosion and Sediment Control Guidelines for State Highway Infrastructure*.

[30] The Nelson Tasman Guideline imposes locally specific sizing requirements for sediment retention ponds, based on the receiving environment and duration of works, as shown in Table 1 below. For the PPC28 area, likely sizing would be

based on the 20 yr to 40 yr 1-hour duration rainfall event (estuaries and streams; greater than 6 months duration). This is at the upper end of the sizing requirements imposed by the guideline.

### *Catchments and Receiving Environments*

#### *General Site Description*

[31] The PPC28 area is described generally in the AEE and Mr Lile's evidence, and in more detail in various technical reports prepared in support of the plan change. I adopt those descriptions and summarise my understanding of the site as follows.

[32] The PPC28 area covers a total of 287.8ha. Of that, 201.4ha lies within the Kākā Stream catchment and drains via that stream to the Maitahi/Mahitahi River at Dennes Hole swimming site. An area of 16.8ha of the south-eastern portion of the area drains to a separate unnamed tributary of the Maitahi/Mahitahi River. Another 20.1ha to the south-west of the Kaka Valley drains by another tributary system, discharging to the Maitahi/Mahitahi River downstream of Dennes Hole. The approximately 49.5ha balance of the PPC28 area is located along and on the north side of the Bayview Ridge, and falls north to the coastal marine area (CMA) of Nelson Haven. The sub-catchments are shown on Figure 1 below, provided to me by Tonkin & Taylor.

[33] The Geology and Geotechnical Report Hazards Report<sup>1</sup> splits the site into four broad areas; the north-west facing Atawhai hill slopes, the Bayview ridge, moderate to steep Kākā Valley hill slopes, and the Kākā Valley floor.

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<sup>1</sup> *Private Plan Change Request - Geology and Geotechnical Hazards Report*; Tonkin & Taylor, March 2021

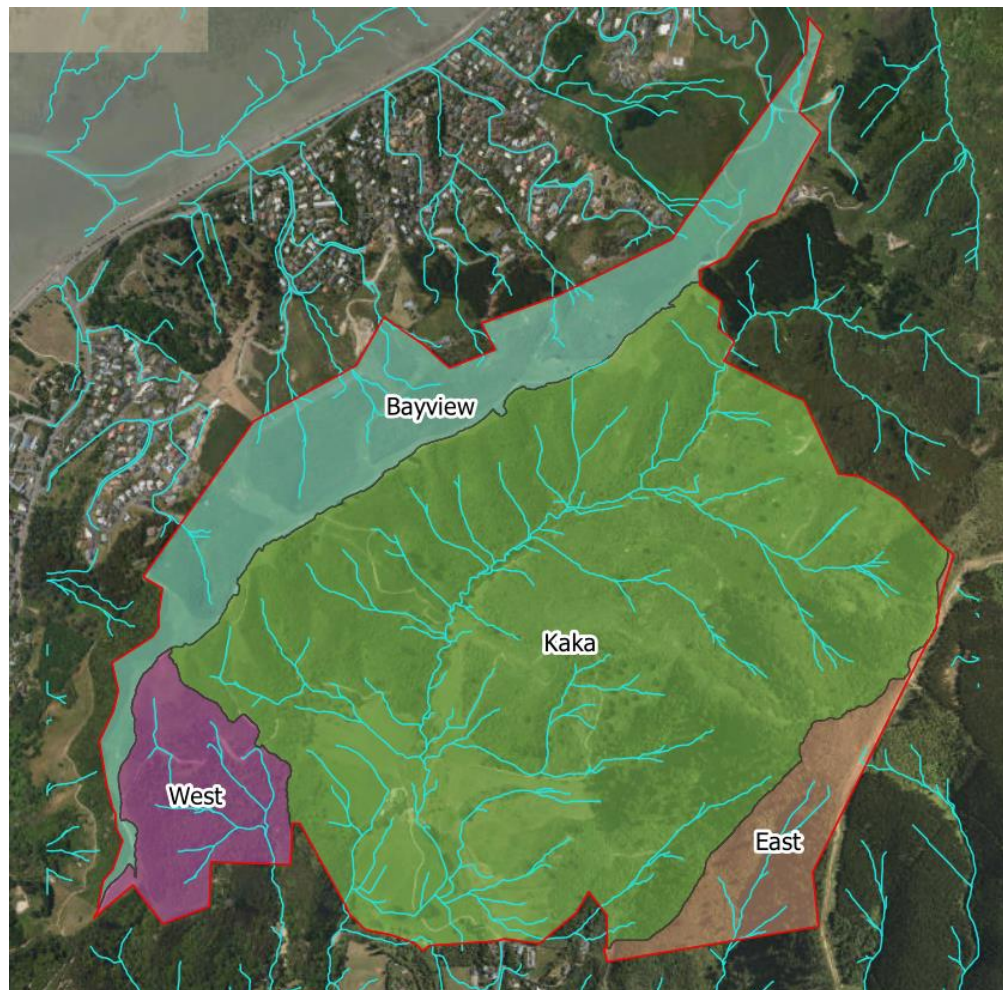


Figure 1: PPC28 sub-catchments.

[34] Section 3 of the Geology and Geotechnical Report Hazards Report summarises the site's geological and geotechnical environment as follows.

- *The basement rock is highly weathered and moderately closely jointed in track cut batters formed across the PPCA. The weathered and closely jointed rock is susceptible to small, localised instability.*
- *Surface soil deposits, consisting of colluvium, alluvium, fan deposits and residual soil overlie bedrock. They are products of bedrock weathering, erosion and shallow mass movement formed predominantly during the Pleistocene epoch.*
- *The active Flaxmore Fault is mapped to the west, beyond the western boundary of the PPCA.*
- *The active Waimea Fault is mapped approximately 2 kilometres to the east of the PPCA.*

[35] The Maitai River enters the Nelson Haven approximately 3.5km channel length downstream of Dennes Hole.

### *Kākā Stream*

[36] Table 3-1 of NIWA 2017<sup>2</sup> identifies the Kākā Stream as having a catchment area of 267ha, being 3% of the Maitahi/Mahitahi River catchment and is estimated to contribute 18.6% of the Maitahi-Mahitahi catchment sediment load. Section 3.1 of the Ecological Opportunities and Constraints Assessment<sup>3</sup> summarises the Kākā Valley as follows.

- *Ridgelines of the hills surrounding Kaka Valley, vegetated with open grassland on the western side of the valley and open matagouri scrubland on the eastern side of the valley.*
- *Moderate to steep hill country (generally between 22° and 40°) forming the upper slopes of Kaka Valley, vegetated in a mix of scrub, grass and scattered mature native and exotic trees.*
- *Rolling to strong rolling downlands, fan and hill country (generally between 5° and 22°) west and east facing slopes forming the sides of Kaka Valley and vegetated in a mixture of grass, and native and exotic scrub.*
- *Gently undulating to flat inclined slopes (generally less than 5°) forming the current flood-plain of the Maitai River and Kaka Hill Tributary. These areas are vegetated predominantly by grazed pasture grass with isolated exotic mature trees.*

[37] The Cawthron Institute December 2021<sup>4</sup> reports on monitoring of water quality and flows within the Kākā Stream from 27 November 2020 to 26 October 2021. Flows were reported as highly variable, but very low post summer, with some parts of the stream in the lower reaches stream lacking flow during April 2021. Mr Donaldson has also provided me with photos of the stream bed being dry during summer.

[38] Water quality was reported as variable but overall poor with respect to suspended solids and turbidity, as a reflection of existing land use.

### *Maitahi/Mahitahi River*

[39] The Maitahi/Mahitahi River has a catchment area of some 90km<sup>25</sup>. A water supply reservoir is located in its upper reaches. Relief within the catchment is generally steep. Land uses comprise plantation pine forest, native forest, high country grassland/pasture, and gorse and broom on replanted forestry blocks

<sup>2</sup> CSSI-based sediment source tracking study for the Maitai River, Nelson; NIWA, June 2017

<sup>3</sup> Private Plan Change Request - Ecological Opportunities and Constraints Assessment; Tonkin & Taylor, March 2021

<sup>4</sup> Report No. 3728, Kaka Stream Water Quality Monitoring: 27 November 2020 – 26 October 2021; Cawthron Institute, 7 December 2021

<sup>5</sup> NIWA 2017, page 8

before canopy closure and un-replanted harvested forestry blocks. Pastoral farming and urban development is located lower in the catchment. Approximately 150ha of urban development is located with the Brook Stream sub-catchment.

[40] Multiple sediment sources have been identified, including:

*Earth works, associated with unsealed roading infrastructure, walking and mountain biking tracks, the installation of a new water pipeline and deep scouring of the steep hill faces during harvesting of pine forests, are obvious potential sources of soil that could contribute to the sediment loads in the Brook Stream catchment. Less obvious sources include diffuse soil sources inputting sediments directly into the Maitai River from the catchments between tributaries, and bank erosion along the length of the Maitai River<sup>6</sup>.*

[41] Sediment movement within the river is described as follows:

*‘Even in the reaches downstream of the Sharland Creek confluence [lower gradient], little sediment settles until the freshwater encounters the tidal reach where flocculation with the salt water aids settling. Consequently, at low flow, the Maitai River appears clear with a slight yellowish tint, which probably comes from the Maitai reservoir as that water appears to be dystrophic i.e., ‘tea stained’. At high tide the lower river has a substantial cyanobacteria bloom.’<sup>7</sup>*

Sixteen to 20 flow events per year exceed 3 times the annual median flow. This limits the accumulation of fine sediment in the river bed. These ‘flashy’ events result in highly turbid water that generally flushes through the system to the coastal environment.

#### *Nelson Haven*

From information provided to me by the applicant<sup>8</sup>, it is my understanding that Nelson Haven is classified as a shallow intertidal type estuary with high ecological and human use values. Notwithstanding “significant historical reclamation and modification and consequent habitat loss (principally saltmarsh vegetation from its

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<sup>6</sup> Ibid

<sup>7</sup> Ibid

<sup>8</sup> Response to request for information - *Coastal Receiving Environment - Response to Nelson City Council's request for further information, RM205043 (discharge permit) Bayview Subdivision, Nelson; Dr Ben Robertson, 6 August 2020.*

margins), the estuary still supports a variety of important intertidal/subtidal habitats (e.g. saltmarsh, seagrass/macroalgal beds, unvegetated mud/sand flats) and inhabitant biological communities (e.g. macroinvertebrates, fish and birds)". That same information states that "The overall ecological vulnerability of Nelson Haven has been assessed as 'moderate-high' (Stevens and Robertson 2017) with the main pressure identified as elevated fine sediment (grain size <63 um - mud) from catchment runoff".

### *Discussion*

[42] The following discussion incorporates my responses to Mr Ridley's report<sup>9</sup>, which is Appendix L of the Council's s42A Report prepared by Ms Sweetman<sup>10</sup>. I note that at the time of completion of his report, Mr Ridley had not had the opportunity to review the additional provisions that I have recommended and the applicant has adopted. He has subsequently done so and has verbally indicated that the additional provisions are useful additions, but are not sufficient to change his overall conclusions.

[43] Mr Ridley and I have also discussed the opportunity to add extra provisions that reinforce the need to implement best-practice erosion and sediment control for permitted activity earthworks. I comment on that later.

[44] Having carefully considered the site characteristics, proposed PCC28 provisions (including my recommended additions), the existing NRMP rule and policy framework, the Nelson Tasman Guideline and my experience with earthworks consenting in Nelson, I am satisfied that from a potential sediment effects perspective, no additional information is necessary to approve the plan change. Future earthworks that would be necessary to develop the PCC28 area can be designed and implemented such that potential adverse sediment-related effects will be acceptably minimised and temporary. My reasons for forming this conclusion are as follows.

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<sup>9</sup> *Section 42A Report of Graeme Ridley – Erosion and Sediment Control*

<sup>10</sup> *Private Plan Change 28 – Maitahi Bayview by CCKV Dev Co LP & Bayview Nelson Limited, Section 42A Report*; prepared by Gina Sweetman, 3 June 2022

*Best-practice erosion and sediment control*

[45] Best-practice erosion and sediment control principles and methods are well understood and proven within New Zealand, including in Nelson. The Nelson Tasman Guideline is a recently promulgated document that represents industry best practice within the local context. It is consistent with other best practice guidelines adopted throughout the country, including GD05 which has been adopted by several other councils.

[46] The principles and performance of the measures presented in these guidelines are now well understood and proven. For example, I am aware that on-site sampling of discharges from sediment retention ponds on the Ara Tuhono Puhoi to Warkworth motorway extension (Ara Tuhono) have confirmed that the actual sediment yield from the works is typically less than that predicted in USLE<sup>11</sup> and GLEAMS<sup>12</sup> modelling undertaken during the consenting of the project. For that project, extensive modelling was undertaken to predict construct sediment yields for two hill country sectors and one of moderate to low gradient sector of the project. Those values were used to assess the likely effect of the works on the receiving environments through a range of storms up to the 50 year ARI event<sup>13</sup>. The receiving environment comprises marine and estuarine including coastal protection areas, natural wildlife area and an area of significant conservation value. The proposal was found to acceptable minimise adverse sediment effects, based on the predicted sediment yields.

[47] Table 1<sup>14</sup> below provides the range of actual measured sediment yields compared to the predicted for the three project area types.

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<sup>11</sup> Universal Soil Loss Equation

<sup>12</sup> Groundwater Loading Effects of Agricultural Management Systems

<sup>13</sup> Section 10 of *Final Report and Decision of the Board of Inquiry into the Ara Tuhono - Puhoi to Wellsford Road of National Significance: Puhoi to Warkworth Section*, Volume 1 of 4: Final Report and Decision, September 2014.

<sup>14</sup> Table 3 of *Te Abu a Turanga: Technical Assessment A: Erosion and Sediment Control*; Campbell Stewart, SouthernSkies Environmental, 2020. Data sourced from Ara Tuhono monitoring reports.

Table 1: Sediment yield ranges

Catchment	Lowest range (best case) (t/ha/yr)	Highest range (worst case) (t/ha/yr)	Predicted (t/ha/yr)
Mahurangi flat country	0.41	6.18	22.9
Mahurangi hill country	2.99	16.9	49.1
Puhoi hill country	1.05	17.61	49.1

*Rule and policy framework*

[48] Consistent with various sections of the s42A Report, Mr Lile's evidence, and Mr Ridley's report<sup>15</sup> and I agree that the majority of the earthworks that will be necessary to develop the area will require consents with restricted discretionary status, or streamworks consents with discretionary or potentially non-complying status under the existing NRMP rules. It is my view that all the bulk earthworks and the stream works required to establish subdivisions across the PCC28 area will trigger consents. I also note that while earthworks necessary to establish dwellings on various individual lots may comply with permitted rules and standards, some of those works may also require consent subject to the extent that building platforms are established during the subdivision stage, and the depth of excavation and filling proposed with a given lot.

[49] I agree with the list of relevant matters of discretion for earthworks applications provided in paragraph 30 of Mr Ridley's Report. It is consistent with list I provided earlier in my evidence.

[50] The matters of discretion that the NRMP imposes for restricted discretionary activities allows NCC to take a broad and rigorous assessment of earthworks applications, and provides scope for any level of assessment, modelling and investigation necessary to understand and manage potential sediment-related effects associated with any given proposal. Through that discretion, NCC can require estimates of sediment yield, ecological assessment of receiving environments, staging of works and any other measure related to the management of erosion and sediment during construction. The discretion also engages the full suite of potentially relevant policies (at all levels), including those relating to tangata

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<sup>15</sup> Section 42A Report of Graeme Ridley – Erosion and Sediment Control, [29]

whenua, natural values, riparian and coastal margins, coastal environment, soil erosion and sedimentation, subdivision and development, activities in the beds of rivers and wetlands, and discharges to freshwater and freshwater quality.

[51] I acknowledge that at the time of completing his report, Mr Ridley had not had an opportunity to consider the additional provisions now proposed by the applicant. However, I do not agree with his statement in paragraph 34 of his report that:

*“Overall, I conclude that the current NRMP provisions and the identified PPC 28 Schedule X.9 principles that apply provides negligible certainty of achieving an appropriate outcome in managing erosion and sediment control for the PPC 28 area. This conclusion is reached due to the current NRMP provisions having no direct linkage to the PPC 28 specific circumstances that exist and the principles themselves providing no mention of earthworks or erosion and sediment control and hence no future consenting guidance”.*

[52] The principles and techniques of erosion and sediment control, in combination with the overall principles of low impact design / water sensitive design, are the means by which the listed matters of discretion and policies are satisfied through the plan change. In my opinion, the specific techniques do not need to be listed in the provisions. In my experience the current approach taken by Council in consenting earthworks supports this conclusion.

[53] As noted, in response to feedback from Council and Mr Ridley, the applicant has adopted additional provisions throughout the plan change to explicitly focus planning and assessment on the effects of earthworks and the principle of best-practice erosion and sediment control<sup>16</sup>. Those provisions include the following statements:

- Best-practice erosion and sediment control measures, including staging, will be assessed and confirmed through resource consents and adopted for the duration of earthworks within the Structure Plan area
- The adoption of best-practice erosion and sediment control design to ensure that construction sediment yield is consistent with freshwater and

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<sup>16</sup> Those not sighted by Mr Ridley when preparing his report.

recreational outcomes, and in particular, impacts on the Kākā Stream, Maitai River and swimming holes.

- Avoiding or minimising earthworks on steepest slopes, and staging and progressively stabilising all earthworks to minimise the risk of erosion during development.

[54] A new Schedule is proposed that explicitly requires the adoption of seven key sediment management principles under the following policy purpose:

- To ensure that that development within the Structure Plan area acceptably minimises adverse sediment effects, and is consistent with the relevant ecology, water quality and recreation provisions of the NRMP and NPSFW, the following principles shall be adopted during the design, consenting and implementation of earthworks. These principles are complimentary to, and shall be adopted in conjunction with, the permitted standards, matters of control and discretion listed in Rules REr.60.2, REr.60.3, REr.61.2 and REr.61.3.

[55] These provisions in conjunction with the existing NRMP provisions will be engaged for all consent applications for earthworks in the PPC28 area. Consequently, at the point of consenting and from a sediment management perspective, I consider that the existing and proposed provisions provide a comprehensive and rigorous framework for managing sediment-related effects.

[56] I agree with Mr Ridley at his paragraph 35, that “if earthworks were to occur to facilitate the PPC 28, then erosion and sediment control within the PPC 28 will require attention to specific locations and erosion and sediment control approaches”. The applicant is offering additional policies to reinforce sediment management as a key assessment matter. I do not agree with Mr Ridley’s subsequent opinion in paragraph 36 that there is a need for additional “matters of discretion, rules or standards that require specific staging and earthwork open area limits, maximising the use of highly efficient chemically treatment sediment retention ponds, over design of dirty and clean water diversions and a detailed adaptive monitoring programme”. As I understand it, the plan change does not purpose to seek even tacit approval for any particular extent of earthworks.

Moreover, as I have expressed above, the existing rule, assessment criteria and policy framework, buttressed with the additional provisions offered, provides the necessary scope to require any or all of those additional specific matters to be considered and adopted at the time of consenting. This is consistent with other plan change processes that I am familiar with, and discuss later in my evidence.

*Permitted activity earthworks*

[57] In paragraphs 47 and 48 of his report, Mr Ridley identifies the potential for sediment effects to occur from secondary earthworks i.e. those undertaken on individual lots after the subdivision is created. I agree with him that those will rely on future resource consents or permitted activity rules.

[58] I also agree with his suggestion that provisions could be added to strengthen the identification of best practice erosion and sediment control for these secondary earthworks that do not require a resource consent. The proposed new Schedule principles apply to all consented earthworks. In my opinion, an additional provision could be included to explicitly state that permitted activity earthworks must implement best-practice erosion and sediment control measures (which is the Nelson Tasman Guideline). That provision would complement the existing permitted activity earthworks standards.

*Sediment yield modelling*

[59] For the reasons I have expressed above, I do not agree with Mr Ridley<sup>17</sup> that estimating sediment yield is necessary at this plan change stage. I am confident that the existing and proposed provisions provide an assessment framework that will allow for the potential downstream effects to be assessed at the consenting stage. In my opinion, there is no mystery or great uncertainty on whether earthworks can be successfully designed, staged and managed to ensure that potential adverse downstream effects are acceptable minimised. As noted, the performance of best-practice EC measures is well understood. The Nelson Tasman Guideline is a current best-practice document. Therefore, the rule, assessment criteria, policy framework and guideline do, in my opinion, provide an

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<sup>17</sup> Section 42.A Report of Graeme Ridley – Erosion and Sediment Control, [38, 39]

appropriate approach to managing those effects when the scale of any given earthworks proposal has been defined.

[60] I do not agree that the plan change assessment needs to determine “the suitability and adequacy of the earthworks and erosion and sediment control measures”<sup>18</sup>. Those matters can be appropriately considered and controlled through the resource consent process. Moreover, development layouts, earthworks footprints and subdivision staging will invariably be refined by the roading and subdivision design process. To that extent, and additionally, there is no need for, or greater certainty provided by, sediment yield modelling at this plan change stage of the urbanisation process.

[61] I agree with Mr Ridley in his paragraph 40 that

*“...the greatest benefit and most effective erosion and sediment control outcomes are achieved when focus is placed on the non-structural elements of erosion and sediment control. Non-structural methodologies include items such as sequencing of works, limitation on areas of earthwork open, having an appropriately experienced erosion and sediment control team, and working in appropriate “weather windows”.*

[62] I also agree with Mr Ridley in his paragraph 42 that these elements are of particular importance for steep sites and clay soils (noting my earlier observation of the material likely to be exposed), and with his paragraph 44 that sediment retention ponds should be chemically treated, and diversion channels and bunds be specifically sized. Under the existing NRMP framework, those matters are addressed through the resource consent process. For example, I have been involved in the ESC design and consenting earthworks in Nelson, including chemically treated sediment retention ponds. NCC requires specific discharge consents for the use of chemical within those ponds, and undertake rigorous assessments of potential water quality and ecology effects.

[63] It is also pertinent that the measures noted above have been required through the consenting of various projects within the Auckland region, even though the Auckland Unitary Plan: Operative in Part (AUP:OP) does not make specific mention of them. Rather, and not unlike the NRMP, the AUP:OP identifies through objectives E11.2 and policies E11.3, and matters of discretion

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<sup>18</sup> Section 42.4 Report of Graeme Ridley – Erosion and Sediment Control, [39]

E11.6.2, the outcomes to be achieved on a regional basis for earthworks including water quality, soil retention, staging, Mana Whenua values, and biodiversity. I acknowledge that permitted standard 11.6.2(2) of the AUP:OP requires the implementation of ‘best practice erosion and sediment control measures’ and notes that that is “generally deemed to be compliance with” GD05. While that ‘sets the bar’ in terms of best practice, strictly speaking the standard only applies to permitted activities. Nonetheless, the consenting process relies on GD05 as the minimum ESC approach to achieve the outcomes of the less specific objectives and policies of Chapter E11 and the water quality and biodiversity provisions of other chapters. Sometimes consents require more stringent requirements, including additional measures noted by Mr Ridley. In some instances, consents approve deviation from GD05 if sufficiently justified.

#### *Adaptive monitoring*

[64] In his paragraph 45, Mr Ridley promotes the benefits of adaptive monitoring. He states:

*“I assess that such a monitoring programme is a key aspect of ensuring that sediment yields remain within an accepted effects envelope, and a range of qualitative and quantitative monitoring will apply. This includes the ability to assess sediment yields during construction through monitoring and with adaptive management of the erosion and sediment control measures to be employed as necessary in response to this monitoring. This approach is an accepted practice on the majority of earthworks activities and is assessed for this PPC 28 as a critical item that needs to be a specific matter of discretion for future resource consents”.*

[65] I do not agree that this approach is an accepted practice on “the majority of earthworks activities” but it is a management component of some consented earthworks, typically for significant projects and development areas, or higher risk sites. It may well be deemed appropriate and necessary during the consenting of earthworks for the PPC28 area and can be considered and required through the existing and proposed provisions, which now proposes include specific recognition of adaptive management as a tool to be considered on a case by case basis.

[66] Despite being the author of the Auckland Council earthworks Adaptive Management Plan template, I offer some caution against the presumption of the need for widespread adoption of ‘adaptive management’ or ‘adaptive monitoring’ on earthworks activities.

[67] The concept of ‘adaptive monitoring’ has been a somewhat bespoke derivation of the more common concept of ‘adaptive management’ in resource management. Traditionally, adaptive management requires the progressive implementation of an activity and monitoring of its effects to ensure that those are within the anticipated envelope before the full scale of the activity is undertaken. However, for earthworks, the approach has been to undertake the full extent of works allowed for by the consent and carry out additional monitoring over and above the day to day site management that is required on all sites to ensure compliance with the consent and certified ESC Plans. That additional monitoring is usually in response to rainfall trigger events. Where an unanticipated effect or reduced level of treatment device performance is identified, then further investigation is undertaken and modifications of the management system may be implemented, possibly including a reduction of open earthwork areas. Those trigger events and responses are typically confirmed during consenting and sometimes via a consent condition that requires an adaptive management plan / adaptive monitoring plan to be submitted for certification before works commence. The consenting process may also require baseline monitoring of receiving environments as part of the plan, to inform the ongoing monitoring and responses during construction. My company has prepared and / or managed such plans for sites within the Auckland region.

[68] Secondly, in my experience the most important aspect of ensuring that the effects of earthworks remain within the consented envelope is diligent construction and maintenance of controls in accordance with the certified design. That is managed through day to day site monitoring and maintenance and is not part of any additional adaptive management system. In my experience, when an effect is identified that is outside the consented or anticipated envelope, it is typically because something is not operating in accordance with the certified plan. These matters are all aspects of consenting and compliance monitoring, undertaken by the contractor on a daily basis and by the Council at some regularity.

*Approaches adopted for other plan changes*

[69] In paragraph 49 of his report, Mr Ridley raises comparison with the Okura Holdings Limited appeal against the Auckland Council decision on the AUP zoning of land on the southern side of the Okura estuary. That appeal involved significant

modelling of sediment yield and hydrodynamic characteristics of the estuary, consistent with the decades of litigation that have occurred in relation to proposed up-zoning of that location. In that appeal, I acted for the Auckland Council. Despite considering there to be some inconsistency on the modelling assumptions and outcomes, I did consider that sediment discharges could be adequately managed and did not consider sediment effects to be a deal breaker to the proposed re-zoning. I also note that that proposal was for a bespoke precinct for the up-zoned area, comprising specific policies, rules and standards.

[70] Likewise, I am familiar with other plan change processes in the north of Auckland, including PCC25 for 99ha of rezoning of Future Urban land to the west of Warkworth, and PPC40 for rezoning of 102ha of Future Urban land to the north of Warkworth. Both sites are hilly, and within the catchment of the Mahurangi River and Mahurangi Harbour, which are Significant Ecological Areas under the AUP:OP. Both sought precincts for the development areas, with bespoke policies, rules and standards. Both precincts sought to rely on various existing AUP:OP provisions including those that manage earthworks. Neither process included sediment modelling or specific identification of earthworks areas. Both plan changes were approved. Earthworks have commenced on the PPC40 area, with an earthworks consent being granted for an initial 7ha of enabling works and separately for a 42ha earthworks area. The latter consent imposes staging and the requirement for an adaptive management plan, that is now being implemented. These requirements were delivered through the existing AUP:OP earthworks provisions, separately to the plan change provisions.

[71] I consider the same approach is appropriate and can be successfully implemented for PPC28.

*Likely extent of earthworks and expose of soil*

[72] I have viewed the revised Structure Plan which reduces the overall development area and provides greater definition on the likely extent of area likely to be earthworked, based on various site constraints. I acknowledge that this revision was not available to Mr Ridley at the time he prepared his report. The revision proposes a reduction in residential zoned area and the deletion of the Rural – Small Holdings Area (formerly 35.4ha). The overall zoned land that could be

subject to development is now approximately 108ha, including the area within the Bayview ridge that falls directly to Nelson Haven. The area of potential development within the Kākā Valley will be about 70ha. Approximately half the PPC28 land area within the Kākā Valley is proposed for revegetation and retains a rural zoning.

[73] Structure Plan revision reinforces my confidence that sediment related effects can be appropriately assessed and managed during the consenting phase. The extensive areas set aside for revegetation also indicates that long term sediment yield from the PPC28 area within the Kākā Valley is likely to be reduced from that which occurs under the existing land use.

[74] I have also been advised by Mr Foley of Tonkin & Taylor that various areas that will be exposed during the stripping of relatively shallow surficial soil will comprise material that has a significant rock component. Such material has a significantly lower risk of elevated sediment loads compared to clay/silt/sand soils. This may be addressed in his evidence, which I have not yet received.

#### *Timing of Kākā Stream Diversion*

[75] The applicant has advised me that they are considering forming and stabilising / planting the proposed relocated section of Kākā Stream while flows continue through the existing channel. This is a recognised technique that significantly reduces the risk of elevated sediment discharges during stream works. Having viewed the site I am confident that that can be achieved.

[76] A further option is to complete these works and divert the stream into the new stabilised channel before other earthworks occur. This further reduces risk. These are methodologies that can be confirmed through specimen design and consenting, and then finalised through detailed design and certification of final erosion and sediment control plans.

#### *Nelson Haven*

[77] As noted earlier, I have reviewed the information provided in the s92 RFI response prepared by Mr Robertson for the existing Bayview Subdivision earthworks being undertaken by BNL, and the corresponding consent decision

report<sup>19</sup> prepared by Mr Ramage of NCC. That development is analogous to the proposed Atawhai hill slopes portion of PPC28 in that it comprises similar geology and falls to the Nelson Haven. Those documents conclude that if undertaken as proposed, adverse sediment related effects will be acceptably minimised.

[78] The consent<sup>20</sup> includes conditions that require visual inspections at stormwater outlets in the coastal marine area and Oldman Creek after rainfall trigger events, and periodic sampling at the discharge point of sediment retention ponds after larger trigger events.

[79] I have not identified any reason why the PPC28 area that is north-west of the Kākā Stream catchment cannot be equally managed to ensure that potential effects are acceptably minimised. Details of staging, monitoring and responses can be determined during consenting.

#### *Matters Raised by Submitters*

[80] Broadly, my evidence above has addressed the submission points that relate to concerns about sediment related water quality and recreation effects within the Maitahi/Mahitahi River during the earthworks phase of development with the Kākā Stream catchment. For the reasons I have expressed, I am satisfied that those effects can be appropriately assessed and managed through future consenting processes.

[81] I have given particular consideration to potential effects on recreation with Dennes Hole swimming site. From the information currently available, it is clear that Dennes Holes is subject to elevated sediment loads from the Kākā Stream and the Maitahi/Mahitahi River during various storm events. It is also apparent that the Kākā Stream ceases to flow in some drier periods.

[82] During the earthworks phases of development, all runoff from exposed earthworks areas will be treated by, and discharge via, sediment retention devices. Those devices only discharge during and immediately after rainfall events. Also, during drier periods, some smaller rainfall events may not be of sufficient intensity

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<sup>19</sup> Resource Consent Decision Report – Resource Consent number: RM205043 & RM205332, 2 December 2020

<sup>20</sup> RM205043

or duration to trigger a discharge from sediment retention devices. Typically, where discharges via the Kākā Stream have elevated sediment loads, so will the Maitahi/Mahitahi River. In addition, the Maitahi/Mahitahi River flows will continue to flush sediment loads through the system. So while I am not suggesting that the earthworks will cause an unacceptably high sediment yield during storms, it will continue to combine with the river flow and flush as it does in the current scenario. If adaptive management / monitoring is required through future earthworks consenting, sediment accumulation within Dennes Hole could be a matter considered for monitoring. However, I caution that that should only be considered if any accumulation of sediment can be distinguished between the Kākā Stream source and the Maitahi/Mahitahi River source. Furthermore, under an active development scenario, the Kākā Stream will have other sediment sources from existing land uses and potential stream bank erosion in upper reaches.

[83] Overall, I am confident that the earthworks can be consented and managed to ensure that the current level of recreational access to Dennes Hole and other swimming locations within the Maitahi/Mahitahi River is maintained<sup>21</sup>. In the longer term, the sediment load may further reduce as the PPC28 reaches a mature development stage with reduce extent of erodible soil, revegetation of slopes and enhanced stream and riparian areas.

[84] As noted above, I am also confident that earthworks can be managed to ensure that potential adverse effects on the Nelson Haven are acceptably minimised.

#### *Council Report*

[85] In addition to my review of Mr Ridley's report, I have reviewed the relevant sections of the Council s42A Report<sup>22</sup> prepared by Ms Sweetman, which is helpfully structured and referenced.

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<sup>21</sup> There may be temporary limitations on access during the tie in of the upgraded Kaka Stream channel at the confluence with the Maitai River.

<sup>22</sup> *Private Plan Change 28 – Maitahi Bayview by CCKV Dev Co LP & Bayview Nelson Limited, Section 42A Report*; prepared by Gina Sweetman, 3 June 2022

[86] I note at paragraph 365 that Ms Sweetman agrees with Mr Ridley's following conclusions:

*Overall, I conclude that the current NRMP provisions and the identified PPC 28 Schedule X.9 principles that apply provides negligible certainty of achieving an appropriate outcome in managing erosion and sediment control for the PPC 28 area. This conclusion is reached due to the current NRMP provisions having no direct linkage to the PPC 28 specific circumstances that exist and the principles themselves providing no mention of earthworks or erosion and sediment control and hence no future consenting guidance.*

*In my assessment, if earthworks were to occur to facilitate the PPC 28, then erosion and sediment control within the PPC 28 will require attention to specific locations and erosion and sediment control approaches. These are assessed as over and above those measures implemented for earthworks as detailed within the NRMP provisions.*

[87] In paragraph 370 Ms Sweetman provides a tabulated summary of her position on matters relating to potential effects on water quality and quantity, and at page 87 of her report she specifically addresses erosion and sediment control. Below I provide that section of the table with my responses added in a third column.

Issue raised by Mr Ridley	Ms Sweetman's response	My response
<p><i>"To achieve the certainty and allow for an informed assessment of the earthworks and erosion and sediment control, the following information must be provided:</i></p> <ul style="list-style-type: none"> <li><i>• expected earthworks locations and extent.</i></li> <li><i>• sediment modelling to determine sediment yields, comparative analysis with current land use yields and the areas of higher sediment yield risk."</i></li> </ul>	<p><i>"I agree to the extent that this should be done at a conceptual rather than detailed level, in an integrated way with the stormwater management plan, given the direct relationship between sedimentation and stormwater. The provision of such information is consistent with contemporary best practice."</i></p>	<p>I acknowledge Ms Sweetman's nuanced approach to this matter in recognising that detailed analysis is not necessary at this stage of the planning process. However, I do not consider any sediment yield modelling is required to determine the appropriateness of the plan change. My reasons are expressed throughout my evidence.</p>

<p><i>“The PPC 28 must contain matters of discretion, rules or standards:</i></p> <ul style="list-style-type: none"> <li><i>• that specify an open area limitation for earthworks that is determined based on the sediment yield modelling.</i></li> <li><i>• that specifies completed and/or inactive earthwork areas be stabilised as soon as practicable with a specific matter of discretion allowing future consents to specify such a period.</i></li> <li><i>• that commit to maximising the use of highly efficient chemically treatment sediment retention ponds, over design of dirty and clean water diversions and a detailed adaptive monitoring programme.”</i></li> </ul>	<p><i>“I agree. This is a large greenfield site that is sought to be rezoned for future urban development with a sensitive receiving environment. There is potential for all of the site to be opened at once, given the applicant has not specifically provided for any staging to occur through the structure plan or Schedule X. I agree with Mr Ridley that the current NRMP earthworks and freshwater provisions are not suitably robust to ensure that these matters are addressed. I also do not consider that proposed Policy RE6.3 and Rule X.9 are sufficiently robust to provide for these matters to be addressed.”</i></p>	<p>I do not agree. The additional provisions proposed provide a clear direction for the assessment of consent applications for earthworks.</p> <p>While future land ownership cannot be predicted, it is also relevant that the PPC28 area within the Kākā Valley is predominantly owned by CCKV with a small area owned by BNL, integrated with the balance of its holding across the Bayview ridge. It is apparent that subdivision (including completion of earthworks for roads, services and lots) will need to be given effect before significant fragmentation of ownership occurs. This allows a high level of control across the PPC area.</p>
<p><i>“The key principles as specified in Schedule X.9 must be expanded to include reference to erosion and sediment control for both bulk and secondary earthworks.”</i></p>	<p><i>“I agree.”</i></p>	<p>Additional provisions have been proposed, including a new Schedule that specifically addresses erosion and sediment control.</p>

### Conclusions

[88] The proposed PPC28 provisions build on the existing NRMP provisions under which earthworks consent applications are considered. The earthworks necessary to give effect to the zoning and subsequent subdivision of the land will trigger consents as restricted discretionary activities.

[89] In my opinion, the suite of existing and proposed provisions provide an appropriate assessment and decision making framework to ensure that the sediment related effects of development with the PPC28 area can be acceptably minimised. I do not consider that modelling of sediment yield is necessary during this plan change process.

[90] Additional provisions have been proposed to explicitly require consideration of erosion and sediment control principles and tools for all earthworks within PPC28.

[91] Best-practice erosion and sediment control measures are required through the Nelson Tasman Guideline. The performance of the measures and other management tools are well understood and proven. The need for additional measures, including staging and adaptive monitoring and management, can be assessed and confirmed during the resource consent phase, and do not need to be incorporated into the plan change. This approach is consistent with development in other plan change areas with which I am familiar. Additional measures are already imposed on earthworks consents within Nelson.

[92] An additional provision that reiterates the need for permitted activity earthworks to implement best-practice erosion and sediment control measures would be appropriate.

Dated 15 June 2022

A handwritten signature in black ink, appearing to read 'M Parsonson', with a stylized 'M' and a trailing flourish.

Michael Parsonson