

# JOINT FURTHER SUBMISSION ON PROPOSED TE TAI O POUTINI PLAN (TTPP)

## Arnold Valley & Ahaura Watershed

### 1. SUBMITTER DETAILS

- 1.1. The submitter reference name is Arnold Valley & Ahaura Watershed Joint Submission.
- 1.2. The submitter reference number is FS90.
- 1.3. This joint submission is made on behalf of property owners K Bilbrough & J Corner, S & B Grant, A & R Grant and J Grant & M Theurillat relating to the following properties:
  - 1.3.1. 1420 Arnold Valley Road, Arnold Valley
  - 1.3.2. 1338 Arnold Valley Road, Arnold Valley
  - 1.3.3. 1277 Arnold Valley Road, Arnold Valley
  - 1.3.4. 49, 245 & 246 Carters Road, Ahaura
  - 1.3.5. 0 Ahaura-Kopara Road, Ahaura
- 1.4. We will not gain any advantage in trade competition through this submission.
- 1.5. If others make a similar submission, we would consider presenting a joint case with them at a hearing.
- 1.6. This joint submission contact email is [jackshillenterprise@gmail.com](mailto:jackshillenterprise@gmail.com)

### 2. SUBMISSION QUALIFICATION

- 2.1. This submission specifically relates to the TTPP “floodplain” overlay.
- 2.2. This submission is made in support of submissions already made directly pertaining to said floodplain overlay, namely:
  - 2.2.1. Submission Point S197.001 – Whittaker Ventures
  - 2.2.2. Submission Point S197.002 – Whittaker Ventures
  - 2.2.3. Submission Point S368.001 – David Hahn

- 2.2.4. Submission Point S460.004 – T Croft Ltd
- 2.2.5. Submission Point S460.005 – T Croft Ltd
- 2.2.6. Submission Point S460.006 – T Croft Ltd
- 2.2.7. Submission Point S465.002 – Davis Ogilvie & Partners Ltd
- 2.2.8. Submission Point S488.020 – West Coast Regional Council
- 2.2.9. Submission Point S488.021 – West Coast Regional Council

- 2.3. This joint submission is made by *person(s) having an interest in the proposal that is greater than the interest the general public has*, given all parties to this submission own properties directly affected by specific elements of the proposed TTPP, namely the floodplain overlay.
- 2.4. This joint submission is simultaneously made by *person(s) representing a relevant aspect of the public interest*, given a review of all submissions to date show an extensive number of original submissions have been made directly relating to and/or citing the floodplain overlay (or tantamount Natural Hazard overlay).

### 3. ARNOLD VALLEY

#### Floodplain Overlay & Evidential Basis

- 3.1 Prior to the TTPP there was nil floodplain incursion upon the properties at 1420, 1338 and 1277 Arnold Valley Road. Conversely, the TTPP now overlays significant floodplains at said properties. *Appendices I, II, & III refer.*
- 3.2 Direct enquiry with West Coast Regional Council (WCRC) representatives via email interaction on 14 April 2023 confirmed that the basis for the floodplain overlay within Arnold Valley is “***the potential for breakout of the Taramakau River into the Grey catchment, via lake Brunner and then drainage down the Arnold River***”. Said representatives further asserted in said email interaction that this scenario could occur via **overtopping or failure of the stopbank on the true right of the Taramakau at Inchbonnie**. *Appendix VII refers.*
- 3.3 The following two historic WCRC-commissioned reports were provided purporting to corroborate this stop bank-related assertion. *Appendices V & VI refer.*
  - 3.3.1 *Prevention of Breakout of the Taramakau River into the Grey River - 1993*
  - 3.3.2 *Inchbonnie Stopbank Design Flood Levels - 2007*

- 3.4 Nil further evidential material supporting or corroborating the stopbank related assertion was received or referred to.
- 3.5 WCRC also outlined *“As we do not have LiDAR data for Taramakau-Brunner-Arnold River areas we cannot run a hydrodynamic model to accurately map potential flood heights ... and have opted for a low-cost interim solution of conservative mapping ... much of this area has been coarsely mapped as flood plain”.*

Basis Inconsistencies

- 3.6 Observable inconsistencies regarding the evidential basis for the floodplain overlay within Arnold Valley are as follows:
- 3.6.1 The cited areas being considered as a floodplain have nil history of any flooding, anecdotally and as per Greymouth District Council (GDC) records;
- 3.6.2 The level of the Arnold Valley River is directly controlled, and readily manipulated via, the Arnold Valley Dam only 1.7 kms downstream;
- 3.6.3 The floodplain ignores obvious geographical parameters physically precluding flooding. Specifically, topographical data directly shows the majority of the floodplain overlay is placed upon ground that is at such a vertical height above the level of the Arnold Valley River (see quantification hereunder) and the Arnold Valley Dam that this level of flooding is not physically possible.

| PROPERTY                | RIVER LEVEL<br>Metres above sea level | FLOODPLAIN RANGE<br>Metres above sea level | FLOODPLAIN HEIGHT ABOVE RIVER LEVEL<br>Vertical Metres |
|-------------------------|---------------------------------------|--|--|
| 1420 Arnold Valley Road | 84                                    | 86 - 124                                   | 2 - 40   |
| 1338 Arnold Valley Road | 84                                    | 93 - 103                                   | 9 - 19   |
| 1277 Arnold Valley Road | 84                                    | 86 - 139                                   | 2 - 55   |

## WCRC-Commissioned Reports – Related Issues

- 3.7** The 2007 Inchbonnie Stopbank Design Flood Levels Report estimated design flood levels for the right bank of the Taramakau River adjacent to Inchbonnie for 1 in 50-year (2050m<sup>3</sup>/s), 100-year (2240m<sup>3</sup>/s) and 400-year (2620m<sup>3</sup>/s) floods. It ultimately concluded that the stopbank would be breached by all three design flood levels. Conversely, the following observable issues are of note:
- 3.7.1** The NIWA report upon which the modelling was based conceded that those values “appear to have been exceeded in December 1982” with a recorded flow of 2710m<sup>3</sup>/s without any overtopping or failure of the stopbank.
- 3.7.2** The NIWA report also outlined an estimated flow of 2000m<sup>3</sup>/s on 16 December 1997 without any overtopping or failure of the stopbank.
- 3.8** The 2007 report concludes the stopbank should be heightened in order to preclude risk of overtopping. In doing so, it utilises design levels including an allowance of 900mm “freeboard”, which is a factor of safety that compensates for uncertainties in the estimation of flood levels. Of note, the report acknowledges that:
- 3.8.1** The freeboard value used is greater than the standard freeboard value adopted by the WCRC in other rivers, and;
- 3.8.2** The required stopbank crest height increases are all within the 900mm freeboard allowance.
- 3.9** Said report is limited to XP-SWMMv9.0 hydrological software for the related modelling work, being software that has been updated and improved consistently every year since 2007 via upgraded versions.
- 3.10** Both of the historic WCRC-commissioned reports are now outdated, and do not take into account river channel variation since that time, nor any stopbank strengthening and upgrades made since 2007.

## Implementation Inconsistencies

- 3.11** Observable inconsistencies regarding the implementation of the floodplain overlay within Arnold Valley are as follows:

3.11.1 “Coarsely mapping” areas and properties as floodplain via a “low-cost interim solution” is highly questionable, particularly given the significant ramifications (see Section 5 of this submission hereunder);

3.11.2 The floodplain overlay fails to acknowledge obvious alternative natural hazard amelioration options including accurately assessing the stopbank risk and enhancing and/or strengthening it accordingly.

## 4. AHAURA WATERSHED

### Floodplain Overlay & Evidential Basis

- 4.1. Prior to the TTPP there was nil floodplain incursion upon the cited properties at Carters Road & Ahaura-Kopara Road, Ahaura. Conversely, the TTPP now overlays significant floodplains at said properties. *Appendix IV refers.*
- 4.2. Direct enquiry with West Coast Regional Council (WCRC) representatives via email interaction on 25 May 2023 confirmed that the basis for the floodplain overlay within the Ahaura watershed is *“not so clear”*. Said representatives further conceded in said email interaction that uncertainty is present as to *“how much is just rushed / inaccurate mapping due to the tight deadline this work had to be completed on (e.g., flood plain going up the hills in the catchment!) or how much is based on historic records of flooding in the township or on the terrace that are paper or word of mouth-based, and hard to track down”*. *Appendix VIII refers.*
- 4.3. Said representatives extrapolated in stating *“Obviously, the Ahaura/Grey River would not flood the high terrace most of the Carters Road properties etc. are on, as this is >40 m above the river. However, there may be some potential for overland flow from Orwell Creek and related tributaries. ... will have a look at what paper maps we have of historic flood plain mapping, or Ahaura area flooding, and get back to you if I find anything”*.
- 4.4. To date nil further has been received, indicating there is nil such relevant historic flood plain mapping or Ahaura area flooding information relating to these cited properties.

### Basis Inconsistencies

- 4.5. Observable inconsistencies regarding the evidential basis for the floodplain overlay within the Ahaura Watershed are as follows:

4.5.1. WCRC representatives concede critical evidential basis issues as above;

4.5.2. The cited areas being considered as a floodplain have nil history of any flooding, anecdotally and as per Greymouth District Council (GDC) records;

4.5.3. The floodplain ignores obvious geographical parameters physically precluding flooding. Specifically, topographical data directly shows the majority of the floodplain overlay is placed upon ground that is at such a vertical height above the level of the Ahaura River (see quantification hereunder) that this level of flooding is not physically possible.

| PROPERTY                | RIVER LEVEL<br>Metres above sea<br>level | FLOODPLAIN<br>RANGE<br>Metres above sea<br>level | FLOODPLAIN<br>HEIGHT ABOVE<br>RIVER LEVEL<br>Vertical Metres |
|-------------------------|--|--|--|
| 49 Carters Road         | 62                                       | 104 - 106  | 42 - 44  |
| 245-246 Carters Road    | 62                                       | 98 - 137   | 36 - 75  |
| 0 Ahaura Kopara<br>Road | 57                                       | 77 - 83  | 20 - 26  |

## 5. FLOODPLAIN RAMIFICATIONS

5.1. Page 2 of the TTPP Natural Hazards Rules, and as confirmed via direct enquiry with TTPP representatives via email on 14 April 2023, outlines: *"There are no land use rules for the flood plain overlay and this overlay relates to the subdivision rules"*. However, this is incongruent with related Subdivision Rule SUB R13 (c). It states, in relation to any subdivision of floodplain overlay areas, that the controlling bodies restrictions can relate to *"the location and design of proposed buildings, vehicle access and infrastructure in relation to natural hazard risk"*. Observably, these elements are tantamount to future land use rules unto themselves.

5.2. The purpose of the floodplain overlay related Subdivision rules are already operationally present within Section 106 of the Resource Management Act 1991.

- 5.3. The designation of any property containing pre-existing development or infrastructure of value as a floodplain has significant insurance ramifications.
- 5.4. The designation of any property as a floodplain is negatively viewed at a basic human level, including future possible purchasers of said property, and when cumulatively assessed results in an instantaneous devaluation of that property.

## 6. SUMMARY

- 6.1. TTPP Natural Hazard Policies NH-P1 and NH-P2 seek to “*Identify in natural hazard overlays areas at significant risk from natural hazards*” and “*Where ... the natural hazard risk to people and communities is unquantified but evidence suggests the risk is potentially significant, apply a precautionary approach to allowing development or use of the area.*”. However, this submission asserts via the evidential review outlined above that there is **not a significant risk, nor a potentially significant risk, of the (flood) natural hazard in the areas designated via the TTPP overlay as floodplain,** in particular the Arnold Valley, the Ahaura watershed and the cited properties.
- 6.2. The TTPP floodplain overlay has been both conceived and implemented, regardless of a precautionary approach, **without sufficient evidential basis.**
- 6.3. The TTPP floodplain overlay instantaneously represents, for hundreds of West Coast properties, **land use degradation and restrictions, insurance cost increase, negative property market assessment and ultimate devaluation.**
- 6.4. The **floodplain overlay within the Arnold Valley, the Ahaura Watershed and the cited properties should be removed from the TTPP** forthwith.
- 6.5. That this floodplain overlay has continued to be promulgated by an entity, despite being in possession of the above information, necessitates a **level of concern and oversight** that will be considered for pursuit via independent mechanisms.

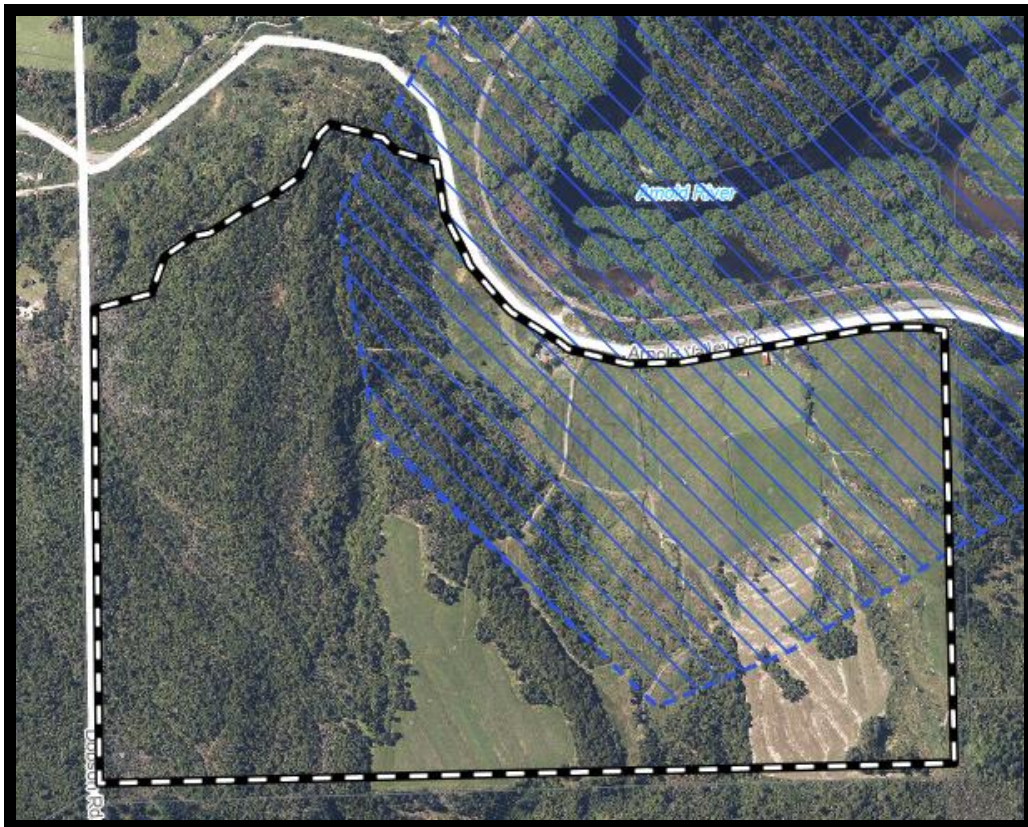
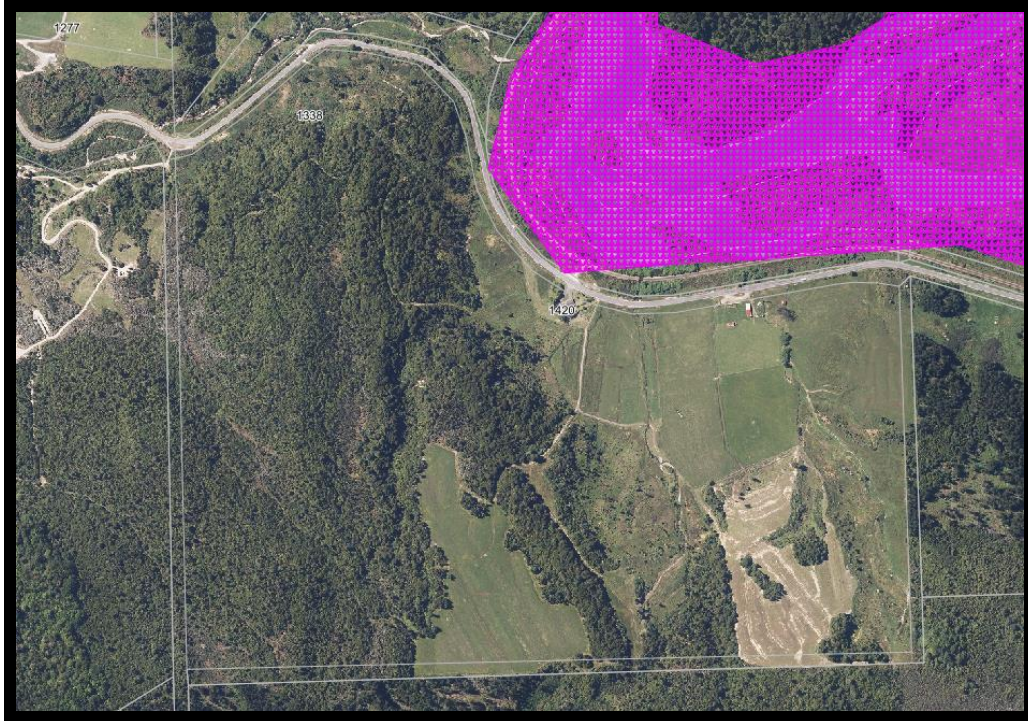
For the Arnold Valley & Ahaura Watershed Joint Submission;

K Bilbrough & J Corner  
S & B Grant  
A & R Grant  
J Grant & M Theurillat

Date: 14 July 2023

Appendix I.

1420 Arnold Valley Road : Current Flood Plain vs  
Proposed Flood Plain





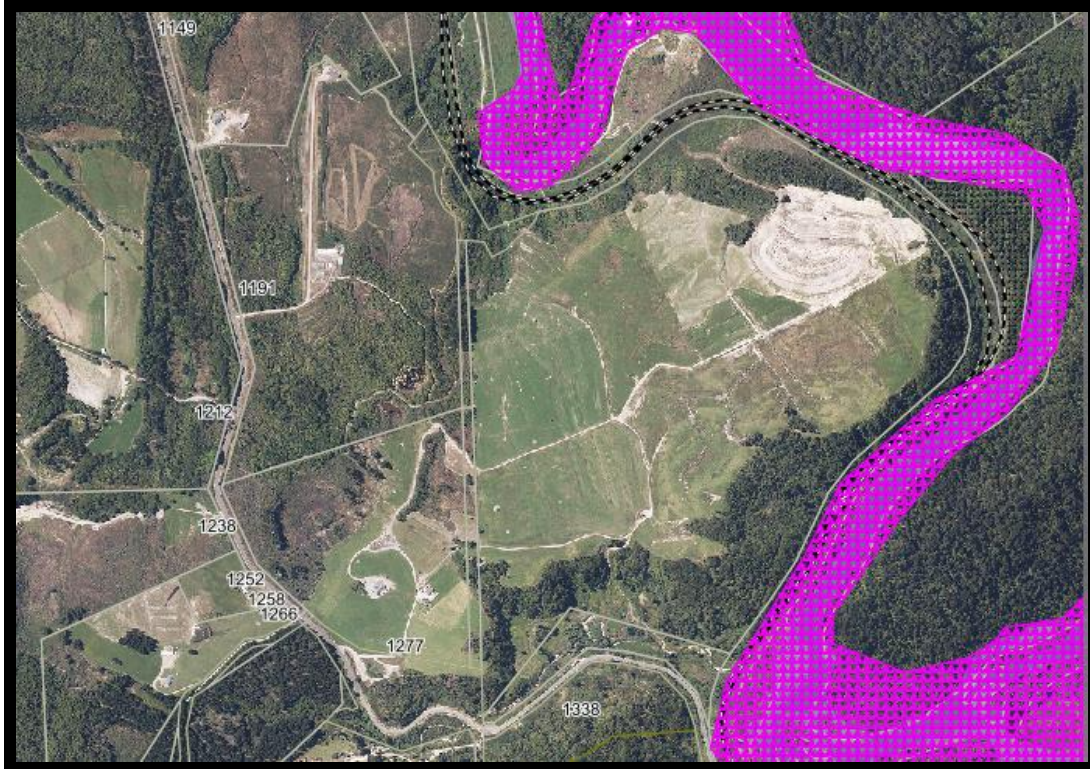
## Appendix II.

### 1338 Arnold Valley Road : Current Flood Plain vs Proposed Flood Plain



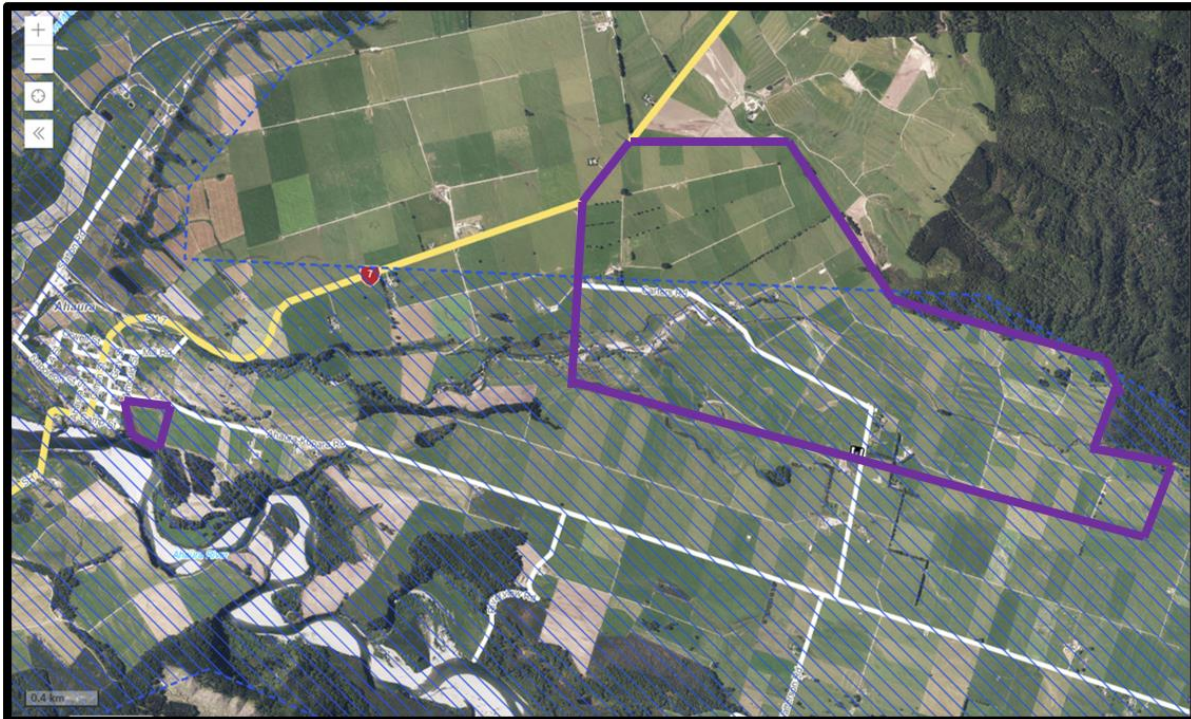
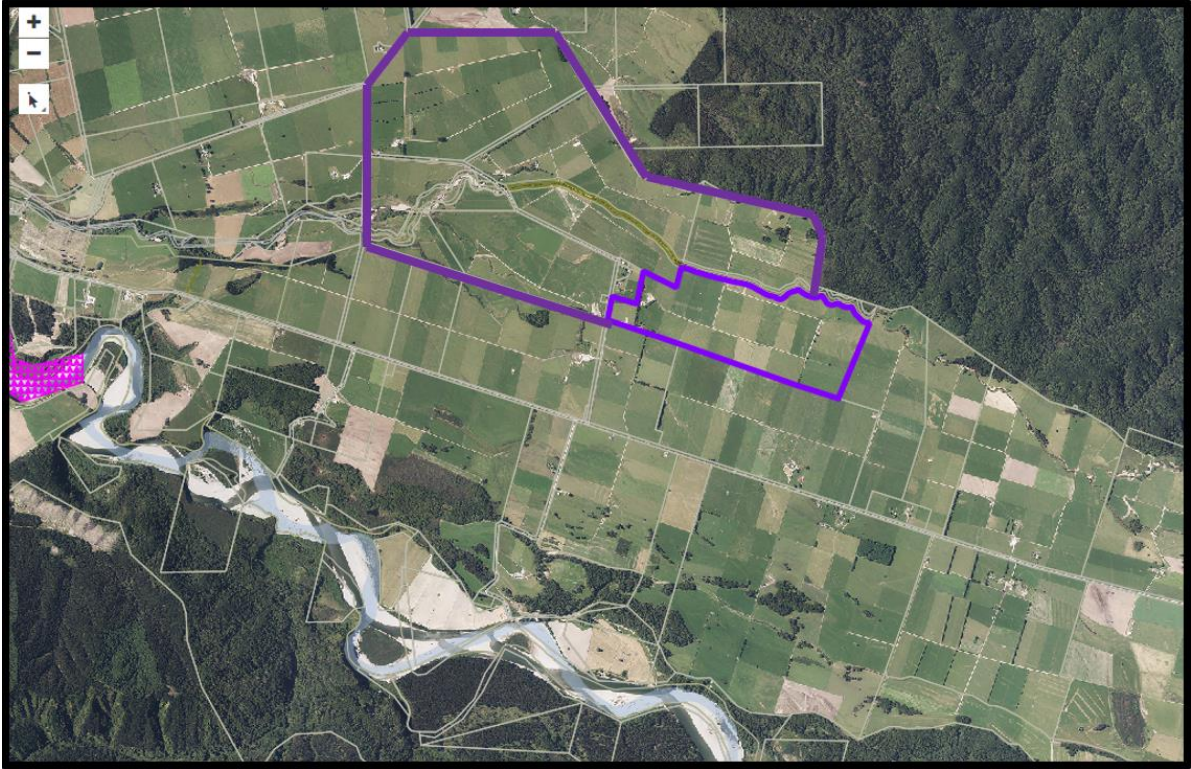
Appendix III.

1277 Arnold Valley Road : Current Flood Plain vs  
Proposed Flood Plain



## Appendix IV.

### Carters Road & Ahaura-Kopara Road, Ahaura Current Flood Plain vs Proposed Flood Plain



Appendix V.

Prevention of Breakout of the Taramakau River into  
the Grey River - 1993

NEW ZEALAND FRESHWATER MISCELLANEOUS REPORT NO. 98

Prevention of breakout of the  
Taramakau River into the Grey River

*by*

G.M. Smart

*prepared for: West Coast Regional Council*

*Information contained within this report  
should not be used without the prior  
consent of the client*

NIWA Freshwater  
PO Box 8602  
Christchurch  
New Zealand

July  
1993

## Appendix VI.

# Inchbonnie Stopbank Design Flood Levels - 2007



**Good Earth Matters**  
Consulting Limited

PO Box 1268  
268 Broadway Avenue  
Palmerston North  
Phone: 64-5-353 7560  
Fax: 64-5-353 7561  
Email: gem@gemco.co.nz

PO Box 2150  
72 Oxford Terrace  
Christchurch  
Phone: 64-3-365 6720  
Fax: 64-3-365 6721  
Email: gem@gemco.co.nz

**WEST COAST REGIONAL COUNCIL**

**TARAMAKAU RIVER**

**INCHBONNIE STOPBANK  
DESIGN FLOOD LEVELS**

**September 2007**

## Appendix VII.

### WCRC Email Interaction – 18 April 2023

**From:** [REDACTED]@wrc.govt.nz>  
**Sent:** Tuesday, April 18, 2023 3:31 PM  
**To:** [REDACTED]  
**Cc:** TTPP Info <info@tpp.nz>; hydrology <hydrology@wrc.govt.nz>  
**Subject:** RE: 1420 Arnold Valley Road, West Coast

Good afternoon [REDACTED]

[REDACTED] has passed this enquiry on to me so that I might provide some technical background as to the mapping of the property at 1420 Arnold Valley Road as within the 'floodplain' layer, and answer your clients' questions. I have attached some supporting material, and technical reports which may be helpful for clarification.

1. Why is this area within 1420 Arnold Valley Road being considered as a "floodplain" given it has nil history of flooding?

I draw your attention to the attached reports on the potential for breakout of the Taramakau River into the Grey catchment (via lake Brunner and then drainage down the Arnold River). The height of the flood bank on the true right of the Taramakau at Inchbonnie is relatively small, and the gradient of the Orangipuku River into Lake Brunner is steeper than the Taramakau riverbed. Therefore capture of some, (or a majority) of Taramakau flood flows via the Orangipuku River and into the Lake, would significantly increase lake outflows down the Arnold River well above normal flood levels.

2. Why is this area within 1420 Arnold Valley Road being considered as a floodplain given the level of the adjacent Arnold Valley River is directly controlled, and readily manipulated, via the Arnold Valley Dam only 1.7 kms downstream?

The Inchbonnie stopbank contains flood flows from the Taramakau River and reduces the risk of it overflowing onto the adjacent rural farmland. However, like any stop bank this has a potential for failure in circumstances of very high river flows or change in erosion patterns during a floor, and overtopping or failure of the bank not only affects the rural Inchbonnie community but also potentially affects the residents adjacent to Lake Brunner, and Arnold River etc. Therefore, flat or low-lying areas such as the land to the TL of the Arnold River and railway line at 1420 Arnold Valley Road are conservatively included as flood plain due to this potential for greater than usual flood flows.

3. Why does the area within 1420 Arnold Valley Road being considered as a "floodplain" ignore obvious geographical parameters physically precluding flooding? As one example alone, topographical information directly shows that circa 80% of the entire area in question is between no less than **4 and 40 vertical metres above the level of the adjacent Arnold Valley River and thus the level of the Arnold Valley**

**Dam** only 1.7 kms downstream. Accordingly, this level of flooding is not physically possible.

As we do not have LiDAR data yet for the Taramakau-Brunner-Arnold River areas we cannot run a hydrodynamic model to accurately map potential flood heights across the river terraces in the area, and have opted for a low-cost interim solution of conservative mapping along the flat floor of the valley.

This naturally will not be to a property-specific metre-accurate scale. As some sections of the property at 1420 Arnold Valley Road are on a level not too far vertically from the adjacent Arnold River, much of this area has been coarsely mapped as flood plain. Note the detail level of floodplain mapping is similar across the region, as this is in areas where LiDAR data are not available to inform more accurate spatial mapping.

4. What are the impacts with regards to permissible land use, development or restrictions should this "floodplain" designation remain?

See [REDACTED] response and TTPP online resources detailing implications of floodplain mapping. I believe this primarily relates to subdivision rules.

I hope this information is helpful,

Noho ora mai,

[REDACTED] | **Natural Hazards Analyst**

West Coast Regional Council

388 Main South Road, Greymouth | PO Box 66, Greymouth 7840

[REDACTED] [www.wcrc.govt.nz](http://www.wcrc.govt.nz)



## Appendix VIII.

### WCRC Email Interaction – 25 May 2023

To: [REDACTED]

25 May 2023 at 17:41

Kia ora [REDACTED]

The info we have on flood hazards in the grey district, historic flood heights, (see the 'natural hazards reports' section of the website for a list if you're interested) and civil defence records on flooding in rural communities is what we have to inform the approximate flood plains that previous staff members working on the TTPP hazards layers have mapped.

I have had a look into your enquiry regarding the 'flood plain' TTPP layer covering the below properties in Ahaura. This one is not so clear to me how much is just rushed/inaccurate mapping due to the tight deadline this work had to be completed on (e.g., flood plain going up the hills in the catchment!) or how much is based on historic records of flooding in the township or on the terrace that are paper or word of mouth-based, and hard to track down.

Obviously, the Ahaura/Grey River would not flood the high terrace most of the Carters Road properties etc. are on, as this is >40 m above the river. However, there may be some potential for overland flow from Orwell Creek and related tributaries. I will have a look at what paper maps we have of historic flood plain mapping, or Ahaura area flooding, and get back to you if I find anything.



[REDACTED]  
[REDACTED]  
PO Box 66, Greymouth 7840

[388 Main South Road](#)

[www.wcrc.govt.nz](http://www.wcrc.govt.nz)