

HUMANS ARE PART OF ECOSYSTEMS

“every ecosystem on earth has human drivers, influence, and impacts on both structure and function of the system”

- McDonnell, M., and STA Pickett. 1993. *Humans as Components of Ecosystems: The Ecology of Subtle Human Effects and Populated Areas*

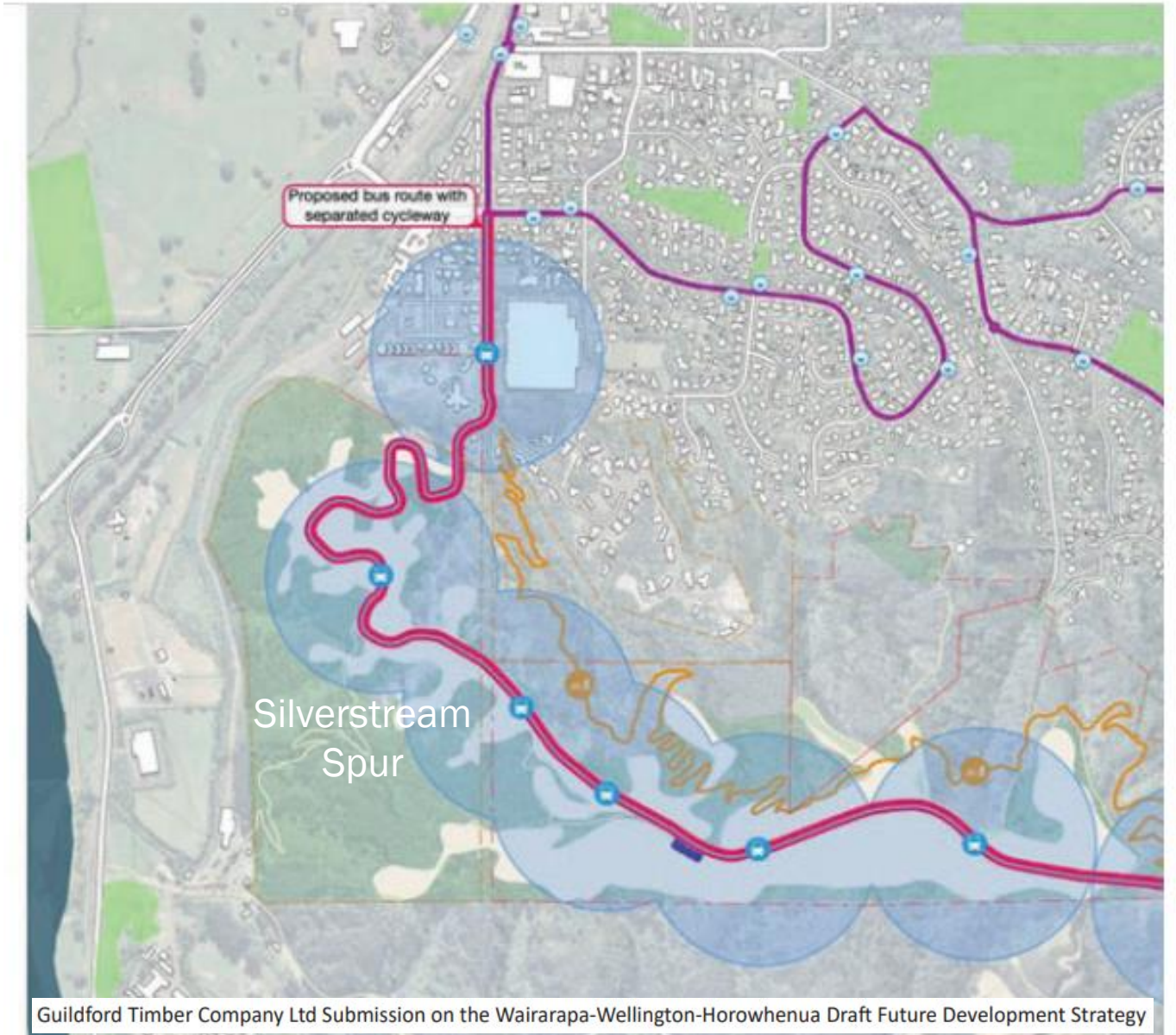
SAVE OUR HILLS (UPPER HUTT) INCORPORATED
UHCC PC49 VARIATION 1 – SILVERSTREAM SPUR
RE-CONVENED HEARING (MINUTE 9)
3RD APRIL 2024

RECONVENED HEARING – ECOLOGICAL ISSUES

... THE PANEL HAS BEEN TURNING ITS MIND TO THE NATURE AND EXTENT OF ECOLOGICAL INFORMATION IT NEEDS TO ENSURE THE COUNCIL FULFILS ITS STATUTORY FUNCTIONS WITH REGARD TO VARIATION 1 AND PC49 ...

VARIATION 1 ... INTRODUCES SITE-SPECIFIC PROVISIONS TO ENABLE INFRASTRUCTURE INCLUDING A TRANSPORT CORRIDOR ... OPENING ACCESS TO POTENTIAL DEVELOPMENT OF THE SOUTHERN GROWTH AREA (SGA).

UHCC s32 Report



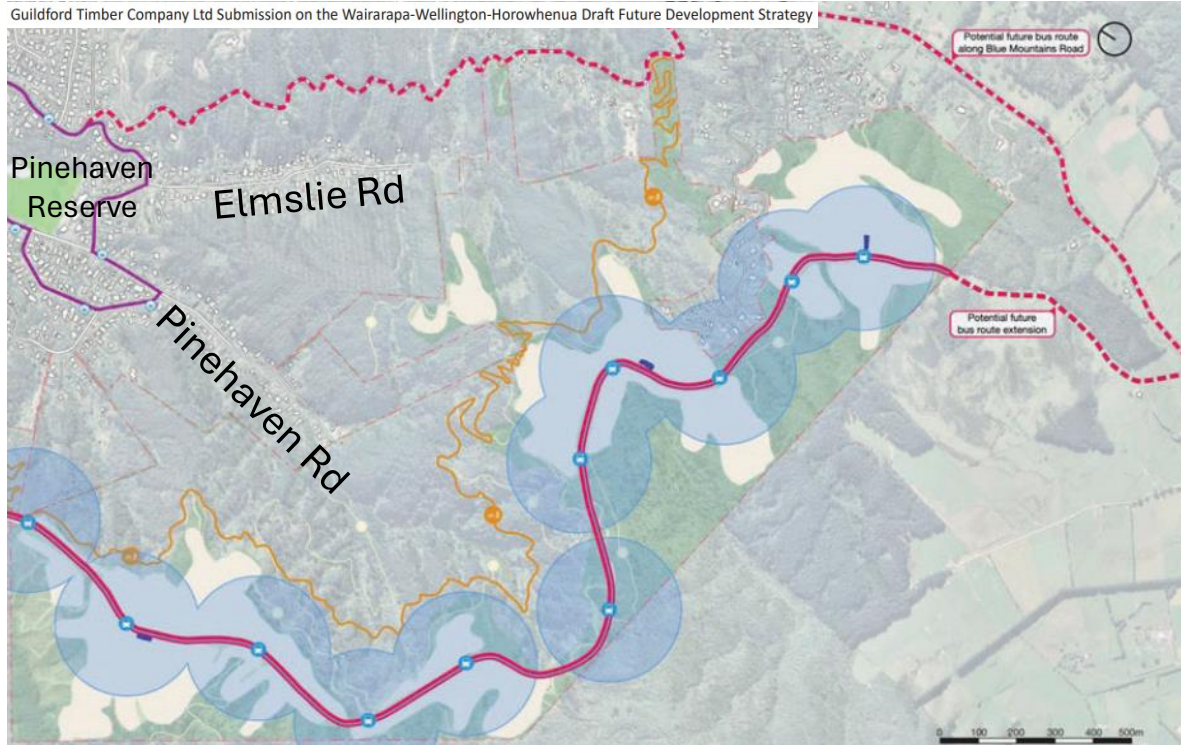
OBJECTIVE 1: NEW ZEALAND HAS WELL-FUNCTIONING URBAN ENVIRONMENTS THAT ENABLE ALL PEOPLE AND COMMUNITIES TO PROVIDE FOR THEIR SOCIAL, ECONOMIC, AND CULTURAL WELLBEING, AND FOR THEIR HEALTH AND SAFETY, NOW AND INTO THE FUTURE.



51 Elmslie Rd, Pinehaven (Storm on 20 December 1976)

R J Hall & Associates Ltd:

“If [there is] the formation and failure of debris dams during major storms then there can be very serious consequences (viz. Blandwood Settlement incident, Peel Forest, South Canterbury January 1975, four lives lost)” – 3 of them were children.



Source: Silverstream Forest website (Guildford Timber Company)

TE HONONGA KI TE TAIAO

Living with nature

Source: Silverstream Forest website (Guildford Timber Company)



Water sensitive urban design

We will be using 'water sensitive urban design' principles when we plan for residential development. We are fully committed to ensuring that the development is sensitive to its surroundings and the existing communities in Pinehaven and Silverstream.

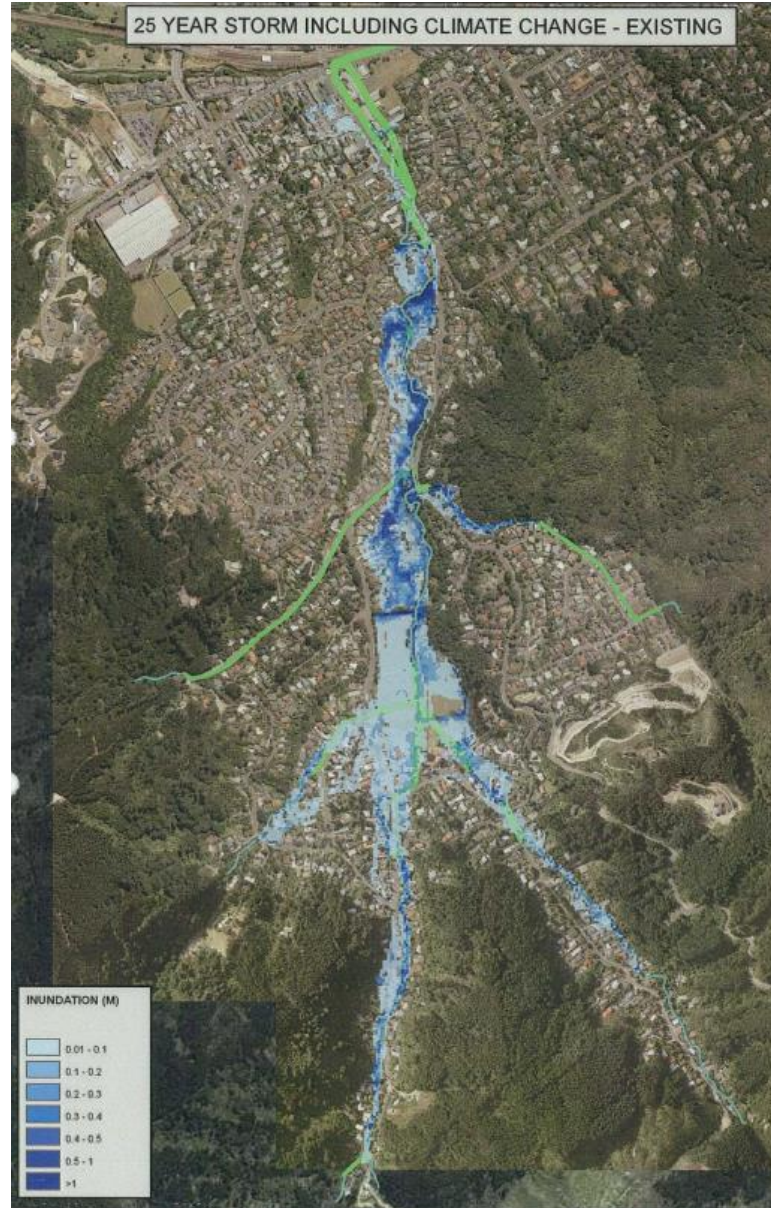
“IT’S A GOOD MATCH”

Peter Kinley

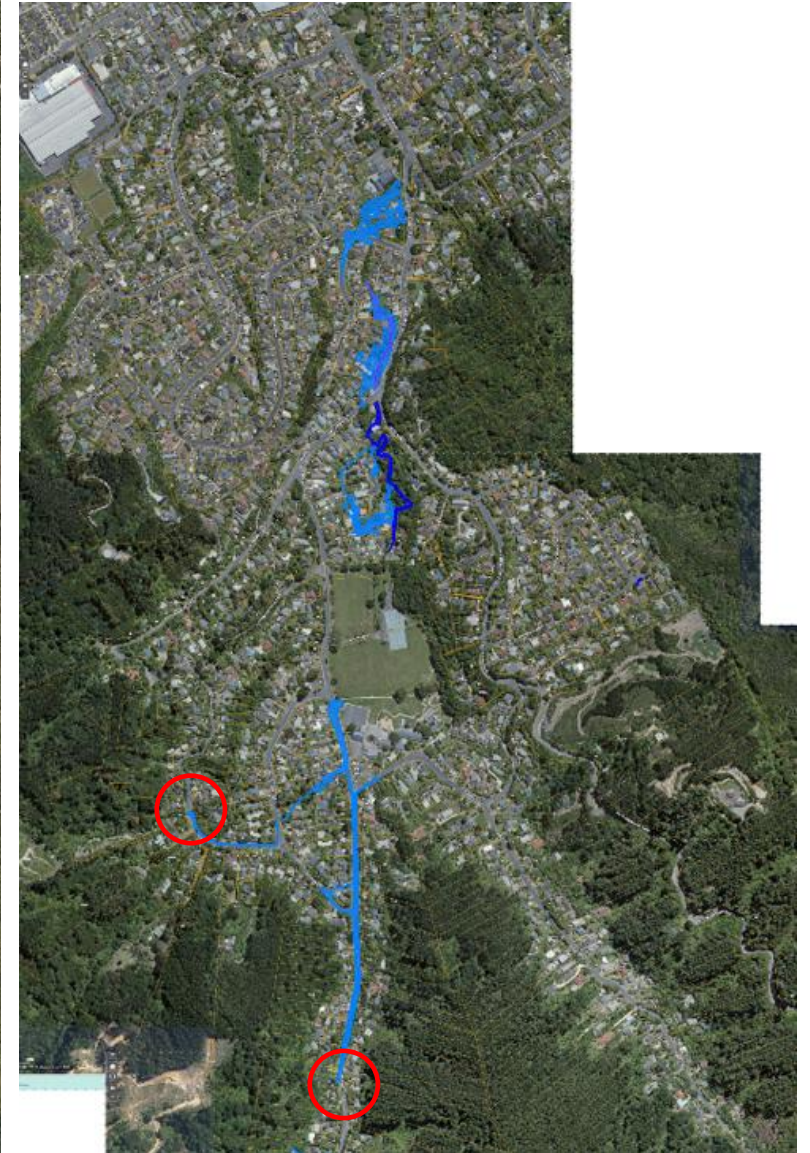
GWRC flood expert

Pinehaven Stream Improvements Hearing

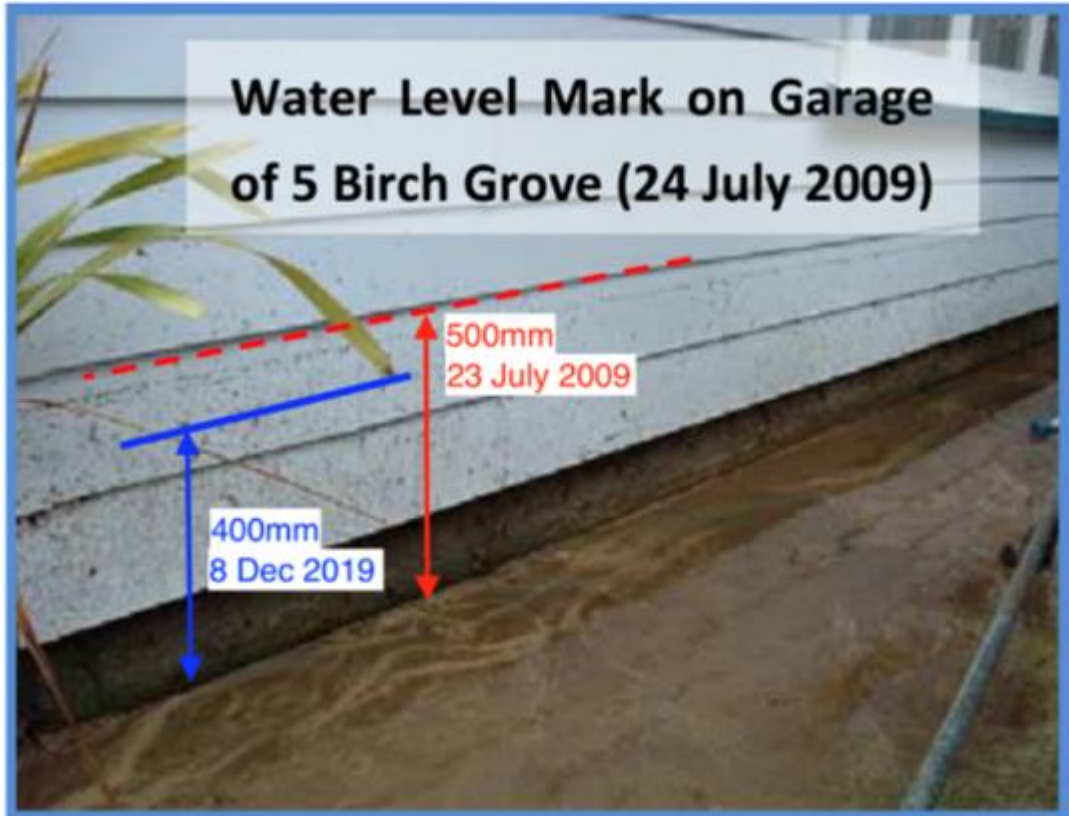
Mr Kinley agreed with SOH that the December 2019 storm was a 1 in 30 year event. ... Mr Kinley advised that he has reviewed the model outputs and compared them to the available data for this event. He found that the modelled flood extents are a good match for the observed flood extents. [Independent Hearing Panel Report, 4-9-20, 7.5.5, 7.5.6]



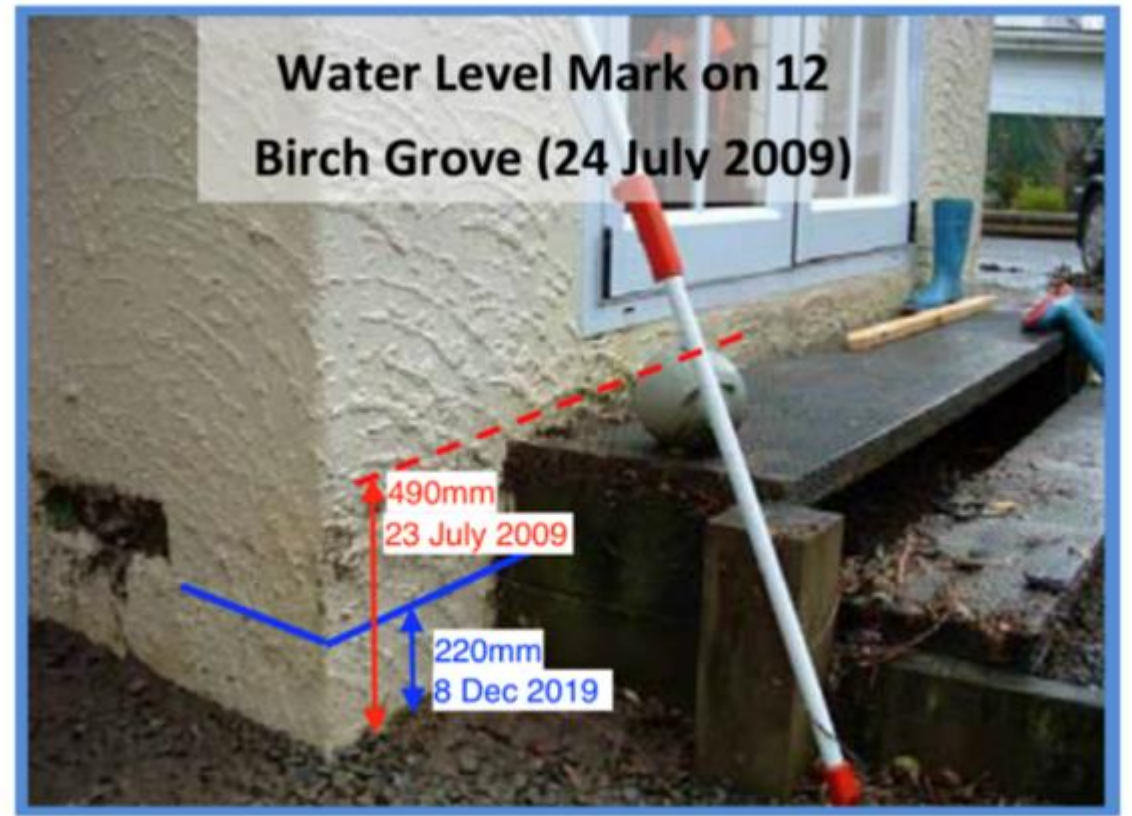
Actual 30 Year Storm 8 December 2019



23 JULY 2009 FLOOD WAS BIGGER THAN 30-YEAR EVENT ON 8 DECEMBER 2019 YET GWRC'S EXPERTS SAY IT WAS ONLY A 5-10 YEAR EVENT



5 Birch Grove – 23 July 2009 event was bigger than 8 December 2019 event

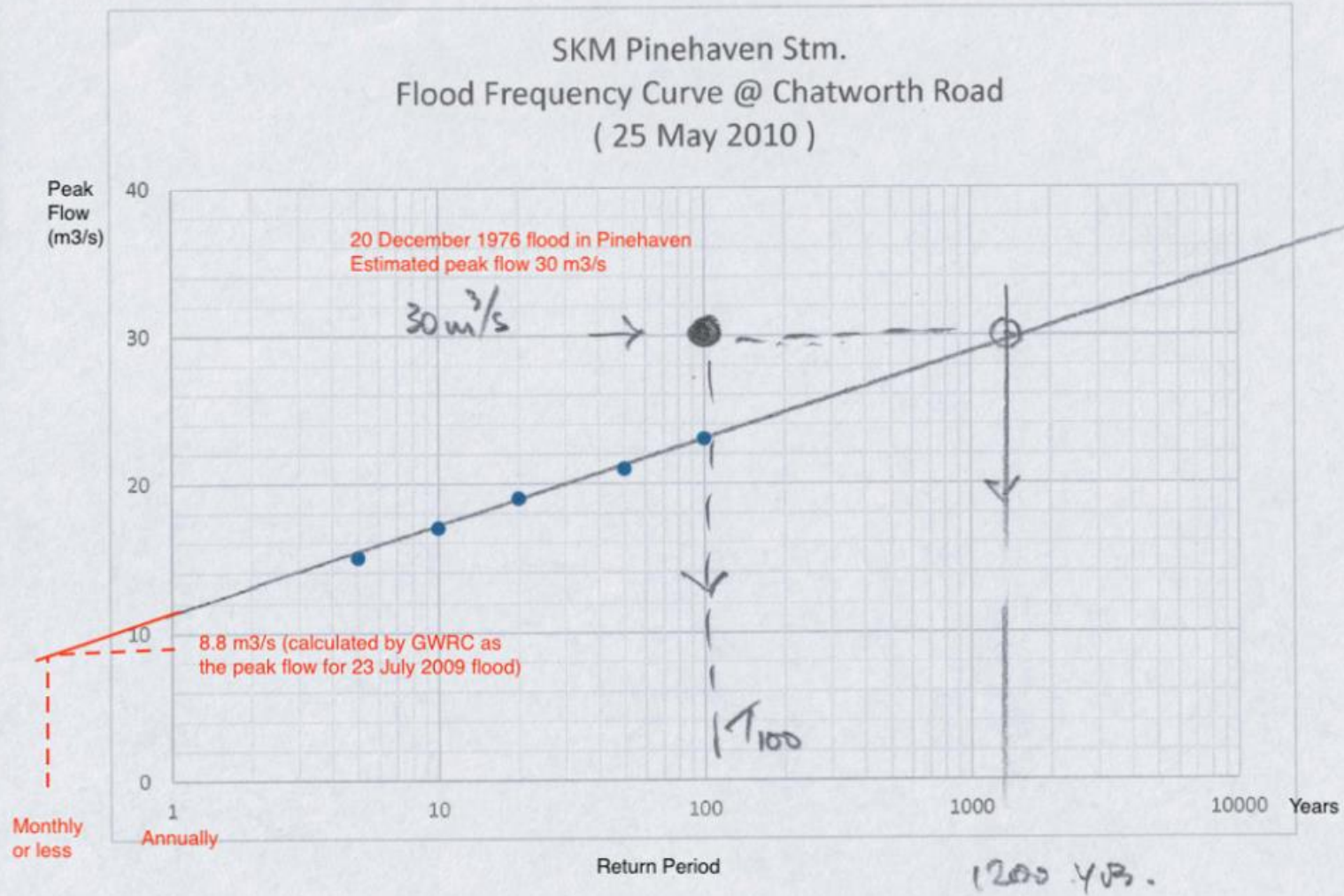


12 Birch Grove – 23 July 2009 event was bigger than 8 December 2019 event

Pinehaven Stream Flood Frequency Curve (Chatworth Road)

C.F. SKM report "Pinehaven Stream Flood Hazard Assessment : Flood Hazard Investigation Report: Vol 1 Rev E 25 May 2010 "Table 1. Sec 3.2 Page 12

T (yrs)	Q (m3 / s)
5	15
10	17
20	19
50	21
100	23
PMF	86



Key events on SKM's Flood Frequency Curve (R J Hall & Associates Ltd)

From: **Michael Law** [mailto:Michael.Law@beca.com]
Subject: RE: Pinehaven Stream hydrology - Existing and Future Development
Date: 11 June 2015 at 5:05 PM
To: **Kristin Stokes** [mailto:Kristin.Stokes@mwhglobal.com]
Cc: **Mike Harkness** [mailto:Mike.Harkness@gw.govt.nz], **Mark Hooker** [mailto:Mark.Hooker@gw.govt.nz]

Hi Kristin

Thanks for getting back to me. If the initial and continuing losses are the same in both models, then the flood volumes will be the same (so long as there isn't another % impermeable area parameter that negates the losses). So that could explain the volumes. Other parameters within the model could possibly speed up the runoff response to reflect that aspect of development.

As you can see, I have copied **Mike H** in on the email. It might be worth the two of you having a chat to confirm our understanding.

Regards

MIKE LAW
Associate - Water Resources
Becca
OO: +64 3 371 3686
Mob: +64 27 508 8972
www.becca.com

From: Kristin Stokes [mailto:Kristin.Stokes@mwhglobal.com]

Sent: Thursday, 11 June 2015 4:15 p.m.

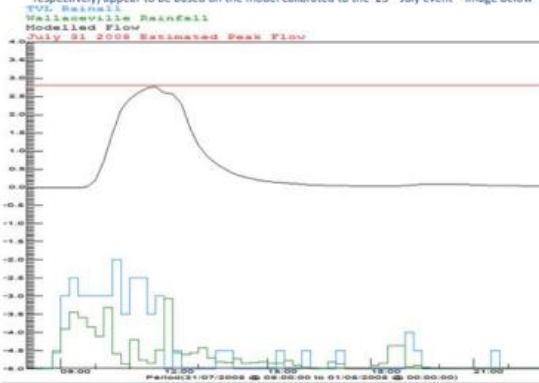
To: Michael Law

Subject: RE: Pinehaven Stream hydrology - Existing and Future Development

Hi Mike,

Both Tom and I have looked at the model, but the approach that Mike has used for the development model is a bit difficult to tell, and we don't have time in the next few days to try and unravel them fully.

The new alpha and N values given in the appendix B, Revision of our report (2 and 1.7 respectively) appear to be based on the model calibrated to the 23rd July event – image below



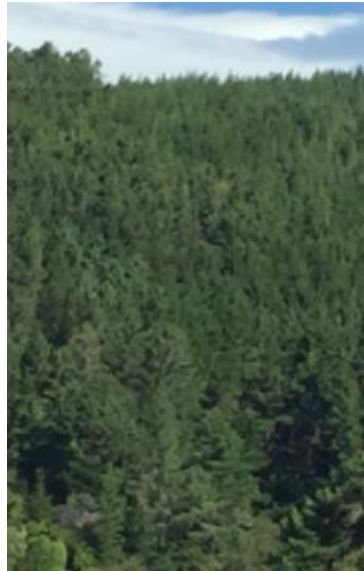
As far as we can tell the initial Loss and continuing losses used are the same in both models (5mm and 2mm).

The Hydrol model doesn't take any further excess out apart from the initial and continuing losses so that could explain why the volume is the same.

The model that gives the future results I have located the output file and it matches your graph. But I cannot find the model file to be sure of the inputs used.

Would sending the model files to Mike Harkness to interpret be helpful? Otherwise if you give me a call tomorrow maybe we can discuss further

Cheers,
Kristin



INCORRECT HYDROLOGY

GWRC's Pinehaven flood model represents this ...

... as if it's something like this

Save Our Hills (Upper Hutt) Incorporated – Oral Submission

Upper Hutt City Council - PC49 Variation 1 – Silverstream Spur

Re-convened hearing (Minute 9)

3rd April 2024

Tēnā koutou, tēnā koutou, tēnā koutou katoa.

Ko Stephen Pattinson ahau. I'm representing Save Our Hills (Upper Hutt) Incorporated [SOH], a community group advocating for our local environment and for appropriate and sustainable urban development in our local environment.

Submission Powerpoint:

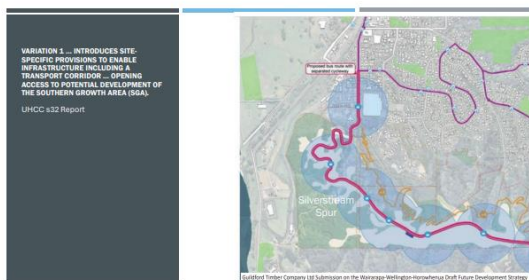
Slide 1 - Humans Are Part of Ecosystems - “every ecosystem on earth has human drivers, influence, and impacts on both structure and function of the system”, which in turn can sometimes have serious impacts back on people.



Independent Hearing Panel’s Minute 9: “The Panel has been turning its mind to the nature and extent of ecological information it needs to ensure the Council fulfils its statutory functions with regard to Variation 1 and PC49.”

The National Policy Statement on Urban Development (NPS-UD) forms part of the Council’s statutory obligations to provide urban environments that ensure the health and safety of the community now and into the future. When considering the impacts of a proposed transport corridor and infrastructure through the Silverstream Spur [the Spur], we want the Panel to also consider the impacts on ecosystems beyond the Spur that will impact Pinehaven, and in particular, “environmental wellbeing” through flood protection.

Slide 2 – PC49 Variation 1 – Silverstream Spur



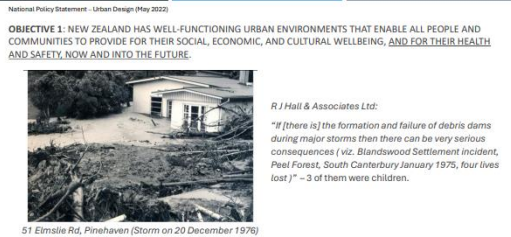
Variation 1 introduces provisions to enable infrastructure, including a transport corridor, through the Spur opening up access to potential development of the Southern Growth Area (SGA), which is the proposed Guildford Timber Company (GTC) development.

This recent plan by GTC [from GTC’s submission to the Wellington Regional Leadership Committee (WRLC) – draft Future Development Strategy (FDS) consultation 2023] shows the proposed transport corridor meandering up through the Spur, including a bus stop about halfway up the Spur servicing urban development on the Spur proposed by GTC (indicated by the large creamy-white blob on the Spur), and a blue-shaded circle indicating a 200m-radius pedestrian catchment area for the bus stop.

In addition to the merits or otherwise of GTC’s proposed transport corridor and urban development on the Spur and its impact on the immediate environs of the Spur, we ask that the

Panel also consider the impact that the proposed transport corridor will open up on the ecology of the wider environment. Clearly, the impact is not restricted to the Spur but continues along the proposed transport route and creamy-white urban development blobs shown along the ridgeline. The 15 blue bus stop catchments along the ridgeline (Slides 2 and 4) suggest that the potential ecological impact that the transport corridor through the Spur will open up will be at least 15 times bigger on the wider environment than what it will be on just the Spur, and this must be taken into consideration in any decision about the proposed transport corridor.

Slide 3 – NPS-UD (May 2022): Objective 1



The first objective of the NPS-UD is that “New Zealand has well-functioning urban environments that enable all people and communities to provide for their social, economic, and cultural well-being, **and for their health and safety, now and into the future.**”

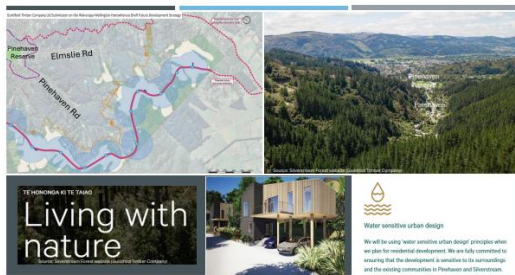
This photo shows an example of a disastrous ecological impact resulting from human-driven activity in our local environment in Pinehaven in 1976. Slashings and logs from pine forest harvesting in the 1970’s washed down the steep slopes forming a debris dam 6m high in a gully in Elmslie Road. When the debris dam burst, the slashings, logs, rocks, mud and other debris charged down the gully and over the road and smashed into the house at 51 Elmslie Road. This happened in my street, just a few doors up from where my wife and I live at No. 27 Elmslie Road. As far as we know, no one was ever held accountable for the widespread damage in Pinehaven in 1976 caused by slashings and debris from the poorly managed pine forest harvesting.

Pinehaven is fairly unique in that Pinehaven community is situated immediately downhill and downstream of a commercial pine forest which, along with bush, makes up about 80% of the Pinehaven Stream catchment in which we live. Our community is vulnerable to commercial forestry activity, yet there is nothing in the National Environmental Standard for Commercial Forestry (NES-CF) to protect us from forest harvesting activities.

If we were native fish, or native birds, or native trees, then the NES-CF would provide us some protection from forest harvesting activities. But because we are just humans in the ecosystem the NES-CF provides us no protection. SOH has lobbied UHCC and GWRC for protection for Pinehaven community from forestry activities. But the Regional Policy Statement provides no protection, nor GWRC’s Pinehaven Floodplain Management Plan (PFMP), nor the District Plan.

Fortunately during the massive storm in Pinehaven on 20 December 1976 nobody was killed. However, in a severe storm in South Canterbury in 1975, 4 lives were lost when a debris dam burst – 3 of them were children. We don’t want that to happen in Pinehaven. But it could happen during future storms due to poorly managed forestry activities that are not required by any legislation to protect human communities downstream, coupled with the SGA and a flawed and unreliable baseline flood model of the Pinehaven catchment.

Slide 4 – Living With Nature



We want to show the Panel today what we can see which potentially threatens the health and safety of Pinehaven community and our environment if the proposed transport corridor through the Spur is approved and opens up the development of the SGA by GTC.

These images are all from GTC’s “Silverstream Forest” website and their submission last year on the WRLC’s draft FDS. The map shows GTC’s proposed urban development along the ridgeline. The photo on the right is looking from the ridge down along Pinehaven Road towards Pinehaven Reserve, with Silverstream in the distant valley in the background.

The map shows the part of the GTC vision that will affect Pinehaven community and our local environment. Stormwater will run off the development down into Wyndham, Jocelyn and Pinehaven Roads on the one hand, and down into Elmslie Road on the other.

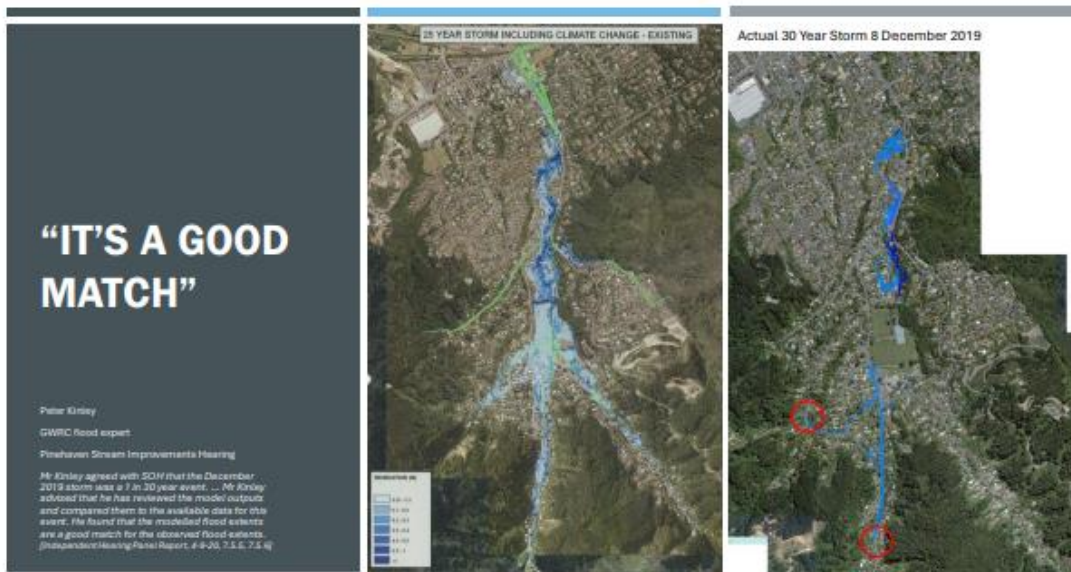
You can see from these images that the development will cause an increase in stormwater runoff due to the change from soft bush and forest to hard roofs, roads and driveways. Hence the need for “hydraulic neutrality” (stormwater neutrality), an important ‘Water-Sensitive Urban Design’ requirement ensuring that stormwater is managed in such a way that post-development runoff and peak flow does not exceed pre-development runoff and peak flow.

Appropriately, the GTC website states that: “We [GTC] are fully committed to ensuring that the development is sensitive to its surroundings and the existing communities in Pinehaven and Silverstream.” However, that commitment will fail to be carried out as long as the Council’s flawed Pinehaven baseline flood model remains in place.

The achievement of hydraulic neutrality depends on accurate flood modelling of the pre- and post-development situations.

What we can see is that the Council’s baseline flood model of the existing pre-development situation is grossly flawed and unreliable. We can see it, and we thought it would be obvious to others. But apparently it is not obvious to the Councils [GWRC and UHCC] or their consultants. It’s not obvious, for example, to GWRC’s flood expert from Jacobs, Mr Peter Kinley. Here is Mr Kinley’s view given at the Pinehaven Stream Improvements hearing in 2020 (see Slide 5).

Slide 5 – “It’s a good match” [not!]



*“Mr Kinley agreed with SOH that the December 2019 storm [flood map on the right] was a 1 in 30 year event ... Mr Kinley advised that he has reviewed the model outputs and compared them with the available data for this event. He found that the modelled flood extents [flood map on the left] are **a good match** for the observed flood extents [flood map on the right].” Independent Hearing Panel Report, 4 September 2020, 7.5.5, 7.5.6] (Emphasis mine)*

The flood map on the right provides a reliable record of flood extents on 8 December 2019. It was prepared by SOH, based on our on-the-spot observation of the event from about 5am to 5:30pm on Sunday 8 December while the event was happening. The heavy rainfall occurred from 3-5am and the flood flow peaked in Pinehaven and Silverstream at about 6:30am.

According to Mr Kinley, Jacobs’ flood map of a 25-year event in Pinehaven is “a good match” with actual observed flood extents in a 30-year storm event. It does not look like a good match to us!

As an aside, GWRC and SKM (Jacobs) claim that the stream channels in the upper catchment (i.e. upstream from Pinehaven Reserve (in the centre of the flood maps, Slide 5) have less than a 5-year flood flow capacity. The storm on 8 December 2019 demonstrated that all the stream channels in the upper catchment have at least a 25-30 year flood flow capacity, not 5 years!

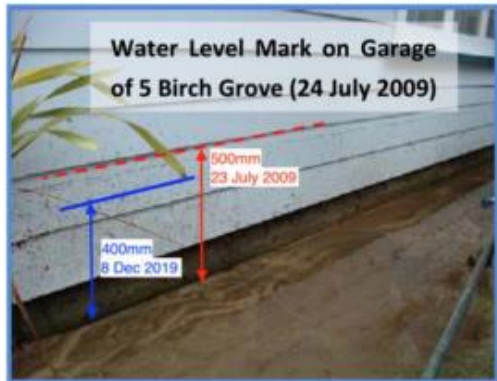
The only reason the flood map on the right shows flooding down Pinehaven Road is because of a privately-owned and undersized driveway culvert at 122 Pinehaven Road (which, by the way, is not being fixed by Council in the Pinehaven Stream improvements programme).

The only reason that the flood map on the right shows flooding down Wyndham Road and Jocelyn Crescent is because of Council’s undersized road culvert at 108A Wyndham Road (which, by the way, is also not being fixed in the Pinehaven Stream improvements programme).

The important and obvious point on this slide is that Council’s flood model is unreliable for predicting flood extents. Council’s 25-year flood extents grossly exceed actual flood extents observed on the ground in a 30-year storm event. Even Council’s 10-year flood map exceeds the flood extents observed in the 30-year storm on 8 December 2019! These maps are an obvious indicator that Council’s flood model of the existing situation in Pinehaven is grossly unreliable!

Slide 6 – Photos of peak flows in 2 flood events at Nos. 5 and 12 Birch Grove, Pinehaven

23 JULY 2009 FLOOD WAS BIGGER THAN 30-YEAR EVENT ON 8 DECEMBER 2019 YET GWRC'S EXPERTS SAY IT WAS ONLY A 5-10 YEAR EVENT



5 Birch Grove – 23 July 2009 event was bigger than 8 December 2019 event



12 Birch Grove – 23 July 2009 event was bigger than 8 December 2019 event

Council claims that the 23 July 2009 flood was a 5-10 year event yet these photos are proof that it was bigger than the 30-year storm event on 8 December 2019, another clear indicator that Council's flood model (which is based entirely on the 23 July 2009 event) is unreliable.

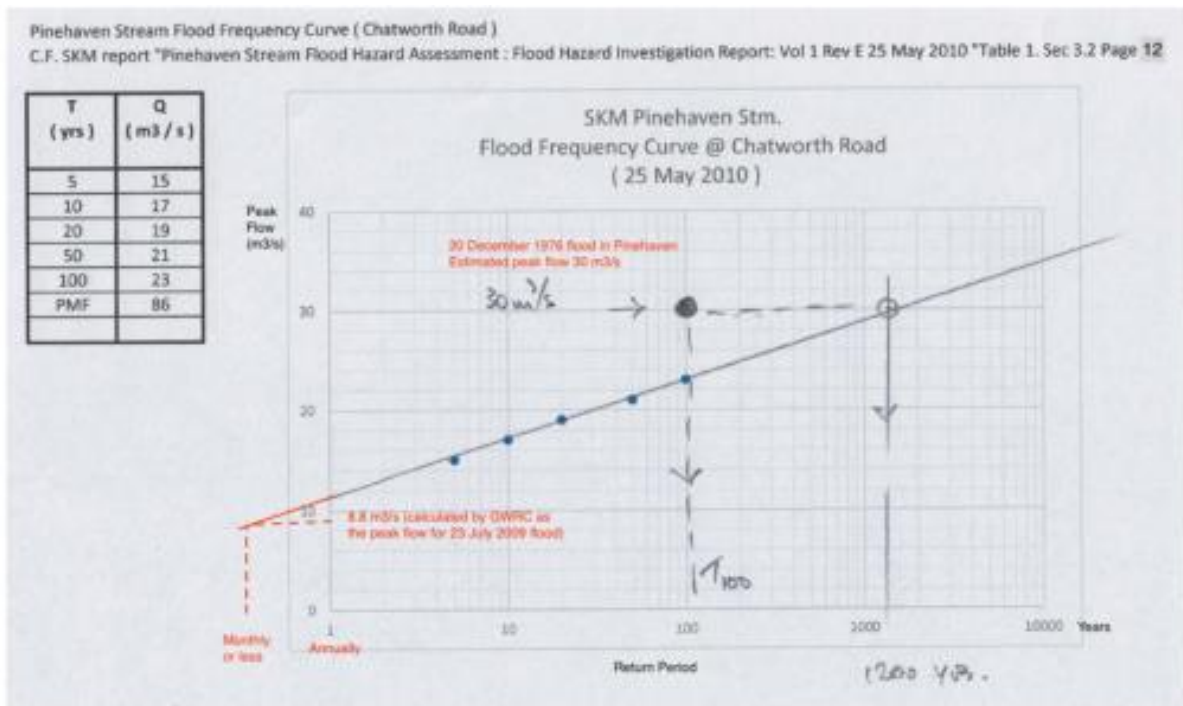
These photos were published by GWRC [SKM:2010, Vol. 1, Fig. 29). They show the peak flood tide marks at Nos. 5 and 12 Birch Grove, Pinehaven, in the event on 23 July 2009. This is the only flood event on which Council's Pinehaven flood model is based, and the model has never been recalibrated or updated using data from any other flood events.

Council's flood model is based solely on the 23 July 2009 flood event, which neither the Councils nor their experts witnessed first-hand. That's why the date on these SKM photos is "24 July 2009" and not 23 July 2009, because the Council and their experts never visited Pinehaven until the day after the 23 July 2009 event.

SOH has added the depths of the flood levels onto these two photos based on interviews and the written statements of the owner-occupiers of the two residences who were first-hand witnesses of the flooding on their properties for both of these flood events – the flood on 23 July 2009 (the red line and text) and on 8 December 2019 (the blue line and text).

Clearly, the 2009 flood was bigger than the 25-30 year 2019 flood, but Council's flood model assumes (wrongly) that it was a lot smaller than the 2019 flood. Consequently there is no way that such a flawed flood model can reliably predict future flood volumes and extents!

Slide 7 – Council’s Flood Frequency Curve (FFC) for Pinehaven Stream catchment.



Key events on SKM's Flood Frequency Curve (R J Hall & Associates Ltd)

This graph illustrates just how absurd and unreliable is Council’s Pinehaven flood model!

This graph was prepared by flood expert R J Hall & Associates **using GWRC/SKM’s published flood data**. The inclined line on this graph is through plots (the blue dots) of GWRC/SKM’s predictions of the frequency of certain size floods in Pinehaven.

The vertical axis is the size of a flood’s peak flow (Q) in m³/s (cumecs) at the bottom of the catchment (at the Reformed Church opposite Chatsworth Rd, Silverstream). Q = peak flow.

The frequency of a flood is shown on the horizontal axis using a logarithmic scale, ranging from 1-year (i.e. occurring annually) to 10,000 years. T = Time.

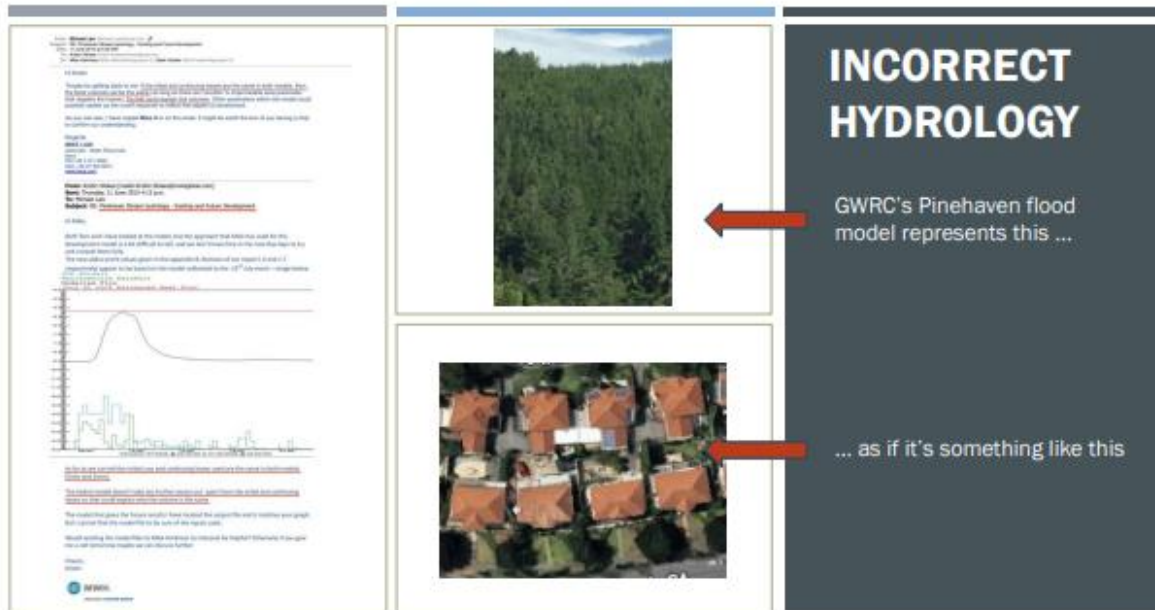
The plots (the blue dots) are taken from SKM’s report published 25 May 2010 by GWRC, and they’re predicting that a flood of 15 cumecs will occur on average every 5 years, a 17 cumec flood will occur every 10 years ... a 23 cumec flood will occur on average every 100 years.

The Council’s flood model is based on only one storm – the 23 July 2009 event (which they never witnessed). GWRC/SKM’s report (2010) states that they calculated the peak flow for the flood on 23 July 2009 to be 8.8m³/s (8.8 cumecs). They state that it was about a 5 to 10 year flood event.

But according to GWRC/SKM’s Flood Frequency Curve above, an 8.8 cumec flood is way off the left-hand side of the graph, showing that this size flood will occur at least monthly, maybe fortnightly! That’s absurd and contradicts their report which states it was a 5 to 10 year event!

This is yet another strong indicator that Council’s flood model is majorly flawed and unreliable!

Slide 8 (final slide) – Why Council’s flood model is fatally flawed.



We now know why Council’s flood model is fatally flawed. **Council’s model represents the existing forested hills as if the future GTC development (SGA) is already built on the hills!**

That’s what the emails on this slide explain. (These emails are from a chain of emails between GWRC and its flood experts MWH, SKM and Beca, obtained in response to SOH’s OIA request).

Consequently, when it comes time to assess future SGA development against Council’s baseline flood model for hydraulic neutrality [i.e. to calculate extra stormwater runoff caused by all the hard roofs, roads and driveways replacing soft forest and bush – extra runoff that must be fully and properly managed by the developer to ensure that the development doesn’t make current flooding any worse] then hydraulic neutrality will be prevented from happening because of the flawed baseline flood model!

The reason hydraulic neutrality will not happen will be because Council’s baseline flood model of the current situation already has the parameters for something like the future GTC/SGA development built into it! This means the extra post-development stormwater runoff will not be detected and therefore will not have to be fully and properly managed! Very large volumes of extra runoff will run off down the steep slopes onto Pinehaven community, potentially causing landslides and serious damage to the environment and endangering the community!

In other words, GWRC and their flood experts, through their seriously flawed flood model, are changing a future 25-year flood extent to look like their flood map on the left in Slide 5 – which is certainly much worse than current 25-year flood extents shown in the flood map on the right in Slide 5, meaning hydraulic neutrality for the SGA will have failed!

It is imperative and urgent that Council’s flood model MUST be rectified.

No decision should be made by this Panel to recommend allowing a transport corridor through the Spur to open up GTC’s SGA development on the Pinehaven hills while Council’s flawed baseline flood model remains.

Relief Sought

The Panel must not recommend approval of a transport corridor and infrastructure through the Silverstream Spur while Council's flawed and unreliable baseline flood model remains in place.

If the Panel does recommend approval of transport corridor through the Spur then the Panel will be failing to ensure that the Council meets its statutory obligation to provide for the health and safety of Pinehaven community now and into the future.

Therefore, SOH seeks the following from the Panel that –

- 1) the Panel acknowledge that the proposed transport corridor through the Spur to open up development of the Southern Growth Area will have ecological impacts beyond the Spur;
- 2) the Panel acknowledge, based on evidence presented in slides 5 to 8, that Council's flood model for the current situation in Pinehaven cannot be relied upon to ensure hydraulic neutrality will be achieved for any future development in the Southern Growth Area assessed against this flawed and unreliable baseline flood model, which means that;
 - the adverse consequences of SGA development for the environment could potentially be widespread and destructive [see also Sue Pattinson's submission today regarding impacts of forestry clearance, landslides and debris volumes in historic flood events in Pinehaven Rd and Moonshine Rd and Upper Hutt]
 - the future health and safety of Pinehaven community cannot be ensured due to foreseeable adverse consequences of using the unreliable baseline flood model for assessing hydraulic neutrality of the proposed SGA development
 - it is imperative and urgent that Council's flood model be rectified using parameters that represent correctly the current characteristics of the catchment
- 3) the Panel **REJECT** the proposal for a transport corridor and infrastructure through the Spur because of foreseeable consequential damage to the Pinehaven environment threatening the safety of Pinehaven community.

Stephen Pattinson

President

Save Our Hills (Upper Hutt) Incorporated