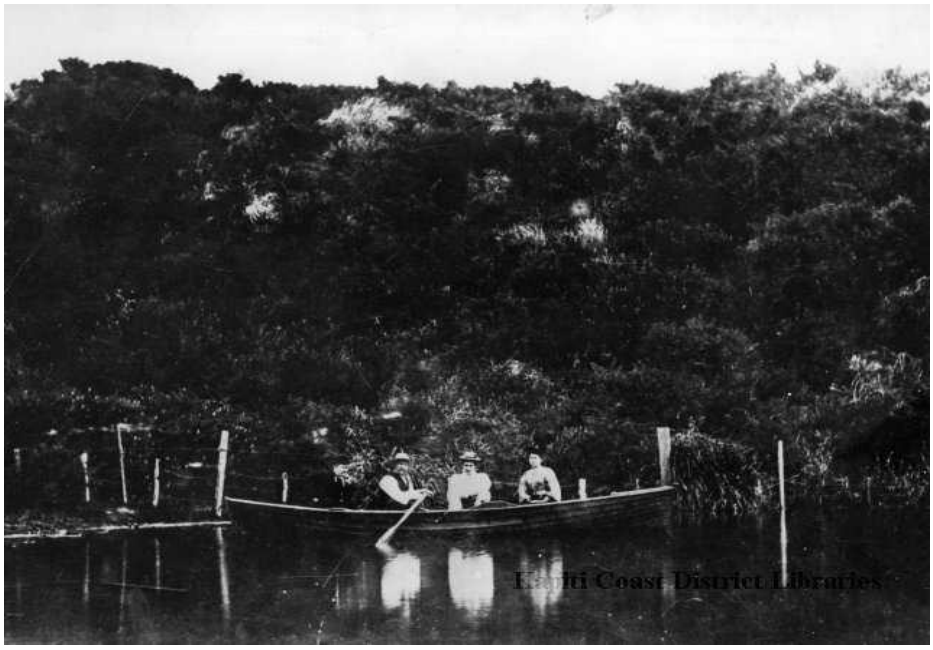
Paekākāriki Lake Hollow Flood Protection



1902 – boating on the lake at the site of the present bowling green[1]

May 18 2017

By Paul Hughes

Paekākāriki Lake Hollow

Much of Paekākāriki village sits in a natural hollow behind the dunes, once filled by a lake that was able to be boated on.

The young children manufactured and sailed their own craft on the lake. When the lake was drained around 1918, some wooden weapons - spears were found in the bed.[1]

From the south

From the east
1929 – remains of the lake between Wellington Road, tennis courts and the Post Office.

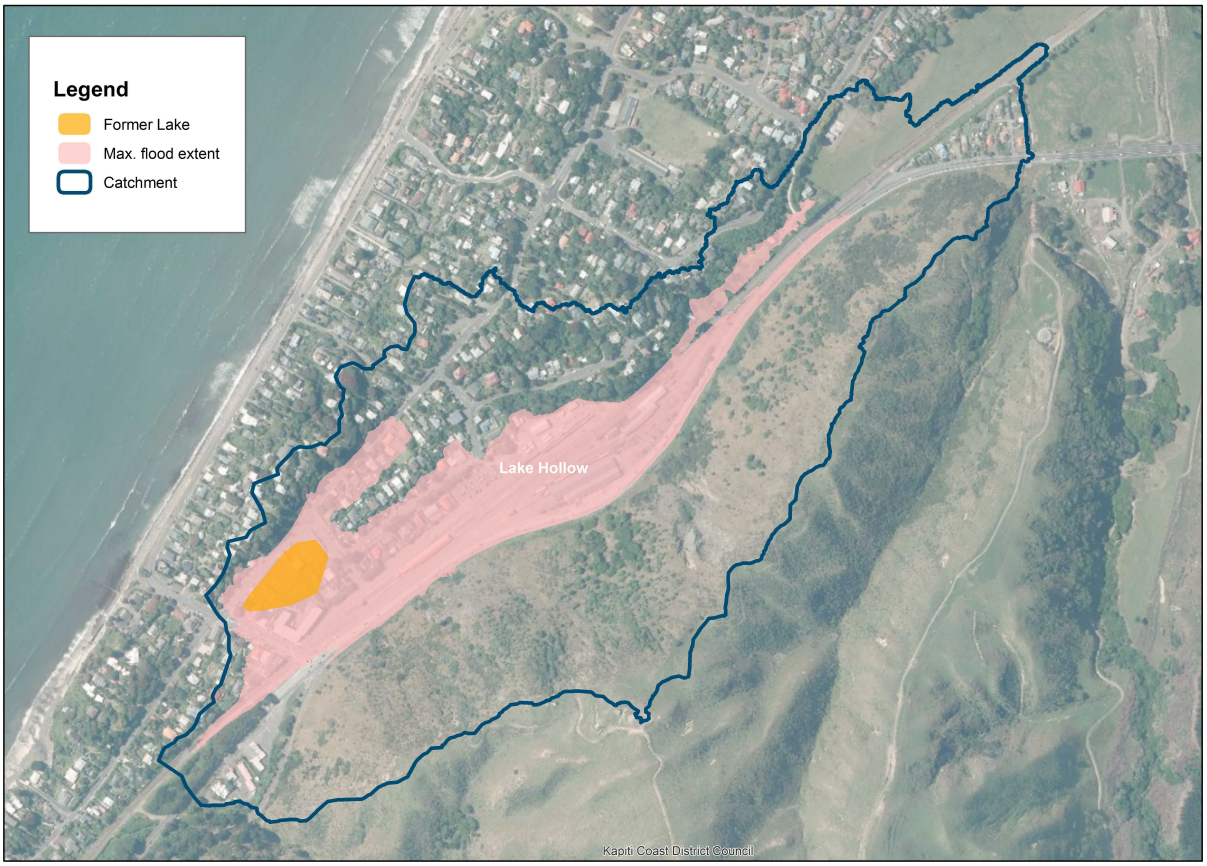
This lake has since been drained by a stormwater pipe to the beach south of Beach Rd, but this drain has limited capacity to clear flooding.

Wellington Road was legalised in 1906 and formed prior to these photos.

By 1934 the bowling green had been developed on the site of the former lake.

Lake Hollow catchment

The Lake Hollow catchment includes some of the village and a significant portion of the prominent scarp opposite the railway station.



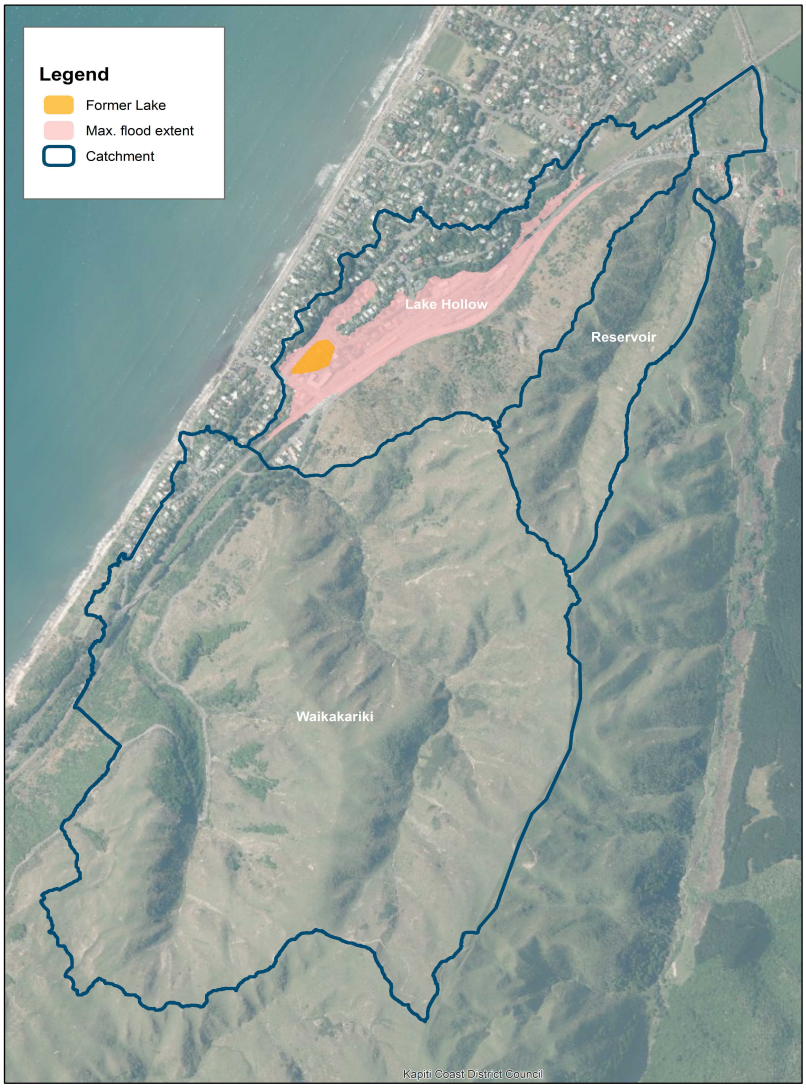
Lake Hollow catchment

Overflowing catchments

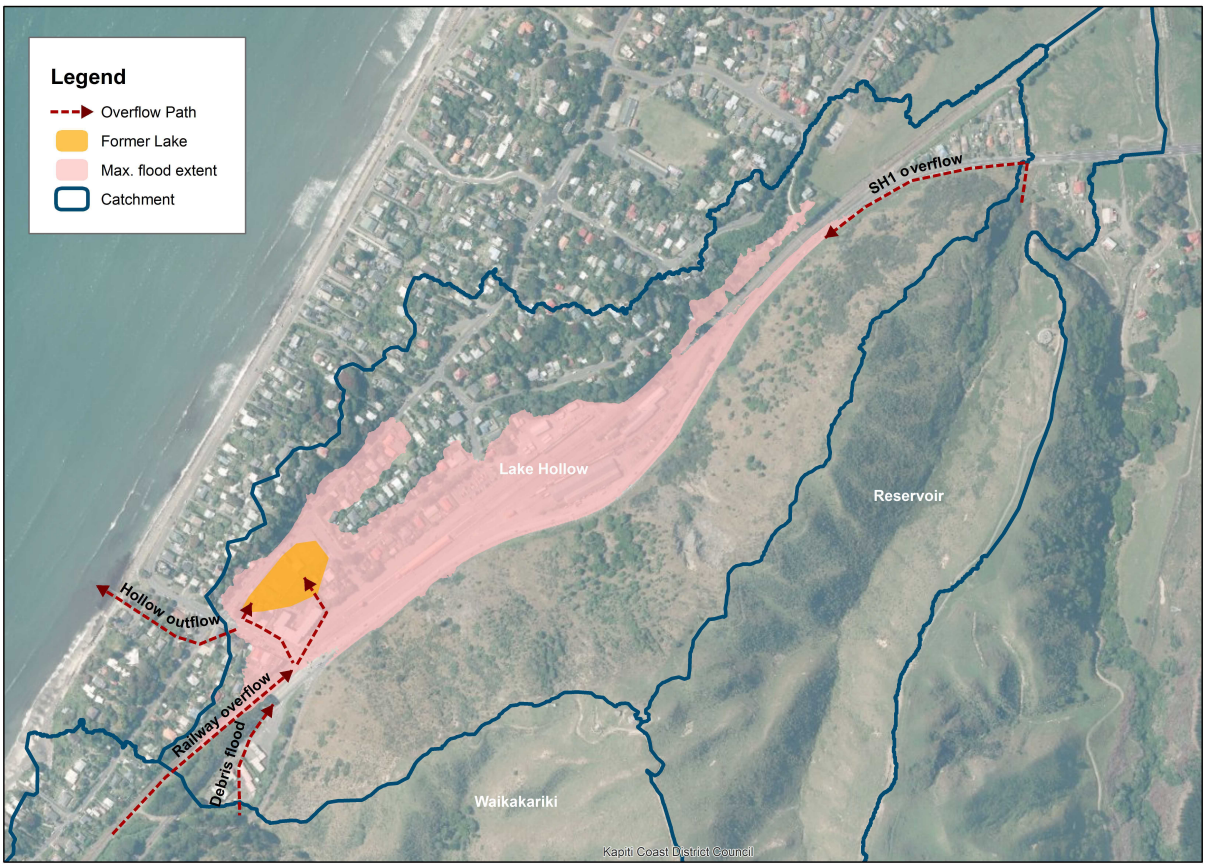
Council have modelled high rainfall events and established that a one in one hundred year rainstorm will flood Lake Hollow, particularly from neighbouring catchments overflowing into the Lake Hollow catchment.

In the north, the Reservoir catchment high flows are caught by the camber of State Highway 1 and are directed south along SH1 and into Lake Hollow.

In the south, the Waikakariki catchment high flows are directed north into Lake Hollow by two means; Overflow at the railway line culvert, or debris overflow beside the Belvedere Motel.
Overflows at the railway line travel north alongside the railway line to the crossing, where it crosses the tracks and enters shops and travels beside Finns Hotel.
When debris floods occur the stream banks are overtopped and debris flood waters travel north through the Belvedere Motel to the crossing.

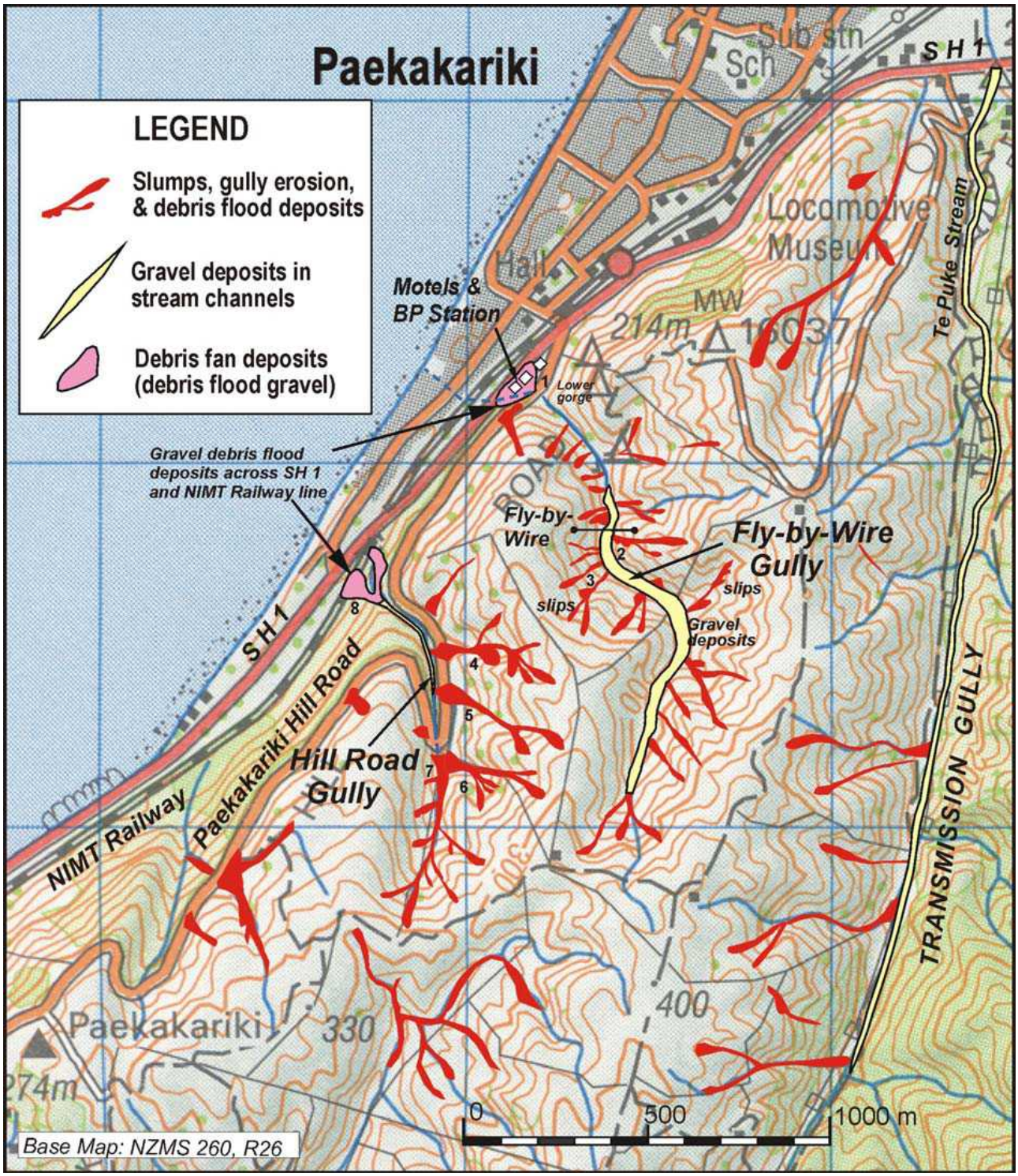


Lake Hollow and adjoining overflowing catchments



Overflow paths into and out of the Lake Hollow catchment

Debris floods are now more likely since the 2003 floods as extensive debris sources were unsettled at that time and will continue to disgorge debris unless revegetated. This has been further exacerbated by the recent 2016 Kaikoura quakes. Debris floods cause streams to burst their banks and spread out away from the normal and predictable streambed.



Sources of 2003 debris flood material in both the Waikakariki (Fly by Wire) and Reservoir catchments [2]

Flooding damage

There has been quite a history of flooding in the village, only some of which is recorded.

1979

1979 floods – SH1 traffic diverting through rail yards and across the turntable

2003

This storm exent caused about $3 million of damage and cost Council $400,000 in cleanup costs. It displaced about 20 families from their homes, closed businesses, and blocked the railway and SH1.
The main flooding started from the catchments where much debris mobilised.

Waikakariki catchment

Council's Paekākāriki Hill Rd was severly impacted

It flowed through the Belvedere Motel area.

Debris flood through motel

Burying cars

It progressed through the railway crossing area.

Blocking trains

Inundating the heart of our village

Beach Rd shops and village store

Continuing on to flood our residential areas

Robertson Rd houses flooded

20 families were evacuated.

Catchment Protection

The first rule of hazard management is risk reduction.

The source of the risk is the deforested catchments which now have limited ability to retain rainfall and hold the soil with tree roots, and are now producing maximised runoff and debris floods that render any stormwater works ineffective.

With climate change predictions the risk of flooding from these catchments will only increase, particularly as they are steep, and there is little vegetation to hold the soil and slow the flow of rainfall.

NZTA have retired the land from grazing and it is starting the long journey of restoration back to mature and stable native forest. This land retirement needs to be secured from the threat of future grazing and/or development, and encouragement provided to speed up natural regeneration to maximise the flood protection and soil conservation values sooner rather than later to minimise flood risk to the village.

Securing the three catchments should be by Council acquiring them as a Reserve for Flood Protection and Soil Conservation purposes from the stormwater and roading budgets.
There is the added advantage that much of this land has value for:

- outstanding landscape and ridgelines
- recreational track development
- landslide protection for the current SH1 (soon to be a Council road), Hill Rd and railway
- biodiversity restoration and corridors linking with Mt Wainui, QE Park and Pukerua Bay
- historic heritage comprising numerous kumera pits and a pa site
- Permanent Forest Sink Initiative carbon sink to offset Council carbon emissions

Further reading

Soil Conservation

In about 2013 the community project GROW PAEKAKARIKI recommended in its report that this area become a Soil Conservation Reserve.
See http://www.opengeo.co.nz/GrowPaekakariki/info.htm
for the project and http://www.opengeo.co.nz/GrowPaekakariki/GrowPaekakarikiFinal.pdf for the final report.

Ecological restoration

Ngā Uruora https://kapitibush.org.nz/ have prepared an ecological restoration Concept Plan for this area. See https://ngauruora.files.wordpress.com/2015/06/perkins-farm-restoration-28-november-final.pdf

Flood risk

Around 2012 Kāpiti Coast District Council prepared a map showing the potential flooding areas in the village, and potential upgrade options. See
http://www.kapiticoast.govt.nz/contentassets/e970762ce5e24db996a0772d09a92e93/paekakariki-community-consultation-long-term-upgrades.jpg
and
http://www.kapiticoast.govt.nz/services/A---Z-Council-Services-and-Facilities/Stormwater/stormwater-flooding/
The potential upgrade options for Lake Hollow Catchment indicated that our Town Centre was at risk of $1.5 million in potential damage including a threat to business, and warranted $1.5 million in pipe upgrades to handle a 1 in 100 year flood.

After floods throughout the Kāpiti Coast District in 2013, Council reprioritised stormwater upgrade work away from our Town Centre and onto other areas in the district flooded at that time.

References

1. The 1st 100 years – Paekakariki School 1886 – 1986.
2. Preliminary report on Landslides, Gully Erosion and Debris Flood Effects in the Paekakariki area as a result of the 3 October 2003 flood, G.T Hancox, IGNS, 20 October 2003 - http://www.opengeo.co.nz/GrowPaekakariki/flooding2003.pdf