

Helen Ellams

From: Josie Burrows <Josie.Burrows@gw.govt.nz>
Sent: Wednesday, 6 November 2019 4:13 PM
To: Anderson, Helen
Cc: Skowron, Eric; Kinley, Peter; James Beban; angela.penfold@wellingtonwater.co.nz; Tristan Reynard; Jude Chittock; Sharyn Westlake; Michael Law
Subject: RE: Pinehaven - Climate Change Factor - our proposed approach

Hi Helen

In response to your questions below:

1. GWRC are comfortable with using a **20% factor** for increase due to climate change (to 2120), which is consistent with both GWRC and Wellington Water policies.
2. GWRC considers that climate change is a design factor and that the modelled water level would include the allowance for climate change. **We would not support** it being accommodated within the full design freeboard. A change in the design freeboard (if less than 300mm) or a change to the design return period is something that would need to be discussed (and accepted) as part of the design standard.

Mike's initial review is due with us on Friday so I'll be in touch again after we've received that. The outcome of the model rerun and when this is available for review may determine whether we proceed with notification on the 19th November.

Kind regards

Josie

Josie Burrows | Kaitohutohu / Resource Advisor
GREATER WELLINGTON REGIONAL COUNCIL
Te Pane Matua Taiao
Shed 39, 2 Fryatt Quay, Pipitea, Wellington 6011

T: 04 830 4435
www.gw.govt.nz

From: Anderson, Helen <Helen.Anderson@jacobs.com>
Sent: Monday, 4 November 2019 9:13 AM
To: Josie Burrows <Josie.Burrows@gw.govt.nz>
Cc: Skowron, Eric <Eric.Skowron@jacobs.com>; Kinley, Peter <Peter.Kinley@jacobs.com>; James Beban <james@urbanedgeplanning.co.nz>; angela.penfold@wellingtonwater.co.nz; Tristan Reynard <Tristan.Reynard@wellingtonwater.co.nz>; Jude Chittock <Jude.Chittock@gw.govt.nz>
Subject: Pinehaven - Climate Change Factor - our proposed approach

Hi Josie

Sharyn in her review comments has asked two questions regarding climate change being:

#1

The 2008 MfE recommendations have been used for climate change of 2 degrees warming by 2080 and 16% increase in rainfall intensities. Given the report is dated September 2019, the latest MfE recommendation should be used. Why have they not been, and what are the design impacts?

#2

I would expect that the projected timeframe for climate change would be to 2120 rather than 2080. Why is it not the case, and what are the impacts on design and capacity of the design if you extend the timeframe to 2120?

In order to respond to Sharyn's questions, we propose to take the following approach:

We recommend completing model runs with an updated climate change factor to quantify increases in water surface elevation due to 2120 climate change factor.

- To accommodate this, we urgently require confirmation of the following:
 - GWRC interpretation of 2120 climate change factor:
 - We understand GWRC recommends the use of HIRDSv4 data for RCP4.5. Data was extracted for a location in the Pinehaven catchment (in Pinehaven Reserve), and the rainfall depth data for the current climate, the 2031-2050 period and the 2081-2100 period was used to calculate increases as a percentage. Three extrapolation methods were then applied to find the expected change at 2120 for both the 25-year (design event) and 100-year event. As HIRDSv4 did not provide data for the 25-year event, 25-year values were determined by averaging values for the 20-year and 30-year events. This showed that the percentage increase to 2120 is between 15.6% and 20.5% for the 2-hour 100-year ARI event and between 14.7% and 20.0% for the 2-hour 25-year ARI event. It was observed that the highest values come from an extrapolation method that is the most conservative (i.e. does not allow for the "tailing off" effect seen in RCP4.5)
 - It is therefore recommended that the modelling proceed with a 2120 climate change factor of **20.5%** (Please confirm if GWRC accepts this interpretation and application of a 20.5% climate change factor)
 - Accommodation of Climate Change impact in Design Freeboard
 - Wellington Water has advised that it is expected that increases due to climate change will be accommodated in the design freeboard (300mm). If impacts due to climate change are greater than 300mm, the design freeboard will need to be increased to accommodate the climate change increase. We therefore require confirmation if GWRC agrees with this approach.

Could you please confirm GWRC's position on these two questions so that we can proceed with updating the modelling.

Regards
Helen

[Helen Anderson](#) | [Jacobs](#) | Principal Planner | Environment, Planning and Spatial | Buildings & Infrastructure New Zealand | T +64 4 914 8462 | M +64 29 4963768 | Level 8, 1 Grey Street, Wellington 6011 | P.O. Box 10-283, Wellington 6143 | Helen.Anderson@jacobs.com | www.jacobs.com

NOTICE - This communication may contain confidential and privileged information that is for the sole use of the intended recipient. Any viewing, copying or distribution of, or reliance on this message by unintended recipients is strictly prohibited. If you have received this message in error, please notify us immediately by replying to the message and deleting it from your computer.