

From: [Claudia Button](#)
To: [Peter Christensen](#)
Cc: [Saskia Wilson](#)
Subject: RE: CRC221240 --> CRC221244 - Ohoka Mill Road SMA groundwater clarification
Attachments: [image005.png](#)
[image006.png](#)
[image007.jpg](#)
[image001.jpg](#)

Hi Peter,

Awesome, thanks very much for that! Sentence again but with NZVD written into it:

This report also states that the top water elevation is to be at RL 13.44m (NZVD), and described the operational depth to be 0.5m given the range of groundwater levels. Therefore I have used 13.44m (NZVD) as top water level across the site & as my ground level datum, and used the 0.6m BGL (12.84m) and 0.40m BGL (13.04m) as my two groundwater depths. Realistically the detention basin has a higher existing surface elevation than the first flush basin, which means groundwater would be intercepted at a lesser depth. With this in mind I checked the basin would function even when groundwater is on the higher side (0.45m BGL). The average existing surface is RL 13.64m, so the 0.2m of storage will still be available (RL 13.24-13.44m).

Kind regards,
Claudia

Claudia Button | Graduate Engineer

Project Delivery Unit
Phone: 0800 965 468 (0800 WMK GOV)
Mobile: +64276227457



From: Peter Christensen <peter.christensen@stormenvironmental.co.nz>
Sent: Thursday, 3 February 2022 10:09 AM
To: Claudia Button <claudia.button@wmk.govt.nz>
Cc: Saskia Wilson <Saskia.Wilson@ecan.govt.nz>
Subject: RE: CRC221240 --> CRC221244 - Ohoka Mill Road SMA groundwater clarification



Hi Claudia

Thanks for that additional information regarding volumes in the basins – having two datums certainly does add a bit of confusion. Based on the additional data I am satisfied that sufficient information has been provided to determine that the basins are adequately sized to provide detention storage. However, it would be helpful if you could repeat the highlighted paragraph below back in the same datum as the design plans (NZVD) so that it is easier for future auditing. Otherwise it may still cause some confusion when compared against the design plans.

Regards
Peter

From: Claudia Button <claudia.button@wmk.govt.nz>
Sent: Thursday, 3 February 2022 9:11 am
To: Peter Christensen <peter.christensen@stormenvironmental.co.nz>
Subject: RE: CRC221240 --> CRC221244 - Ohoka Mill Road SMA groundwater clarification

Hi Peter,

Just following up on my email from last week, I was wondering if you still wanted to discuss the design for Ohoka Mill Road SMA?

I am away next week, but am pretty free over the next couple of days if you wanted to squeeze something in ☺

Cheers,
Claudia

Claudia Button | Graduate Engineer

Project Delivery Unit
Phone: 0800 965 468 (0800 WMK GOV)
Mobile: +64276227457



From: Claudia Button
Sent: Thursday, 27 January 2022 3:55 PM
To: peter.christensen@stormenvironmental.co.nz
Subject: CRC221240 --> CRC221244 - Ohoka Mill Road SMA groundwater clarification

Hi Peter,

I heard you are assessing the size of the Ohoka Mill Road SMA basins for ECan for resource consents CRC221240 to CRC221244, and you were after a bit more information about the groundwater...

I've had a quick look through the different documents, to see where the numbers might vary and thought I would try explain my process for calculating the volumes I have provided and my interpretation of the groundwater information.

The CEC design report – there are a few of these that provide information. The one that provided the most information about groundwater was the Site Investigation Report (February 2019), which I have attached to this email. This is where the depth to groundwater is described as being 0.6m below ground level 80% of the time and shallower than 0.45m 20% of the time. I have assumed that 20% of the time groundwater is at 0.40m BGL for the detailed design/RFI calculations.

This report also states that the top water elevation is to be at RL 13.8m (Lyttelton 1937), and described the operational depth to be 0.5m given the range of groundwater levels. Therefore I have used 13.8m as top water level across the site & as my ground level datum, and used the 0.6m BGL (13.2m) and 0.40m BGL (13.4m) as my two groundwater depths. Realistically the detention basin has a higher existing surface elevation than the first flush basin, which means groundwater would be intercepted at a lesser depth. With this in mind I checked the basin would function even when groundwater is on the higher side (0.45m BGL). The average existing surface is RL 14.0m, so the 0.2m of storage will still be available (RL 13.6-13.8m).

The design report's level information was all in NZVD, instead of Lyttelton 1937 – which is what the CEC reports, resource consent and RFI are in. Sorry, if that added to the confusion.. I forgot to adjust the RFI to the same datum as the design report before I sent it through to Saskia.

To calculate the volume stored within the basins I initially tried using stage storage in Civil 3D, however I was unable to figure out how to work this properly. Instead, I went for a more manual approach of measuring the widths and heights of the basins on autocad and calculating the volume in excel. Then after calculating the gross volume, I deducted 10% of the first flush volume to allow for vegetation growth. The volume tables in the RFI show the volume with the vegetation allowed for.

I hope that makes sense, sorry the explanations are so long! I am happy to meet with you over teams so I can show you the spreadsheet and explain my thought process slightly better if that would help...

Let me know when suits you for a call, and I can work my calendar around you ☺

Kind regards,
Claudia

Claudia Button | Graduate Engineer

Project Delivery Unit
Phone: 0800 965 468 (0800 WMK GOV)
Mobile: +64276227457

