Guidance on using Schedule 10A.4 of Proposed Water Permits Plan Change (Plan change 7)

This guidance is solely to assist users in preparing an application for resource consent under proposed Rule 10A.3.1.

Users must note that under proposed Rule 10A.3.1.1, the Council reserves control over (among other things) the volume and rate of water taken, dammed, discharged or diverted.

It follows that the Council is not required to grant a water permit for the volume or rate of take calculated in accordance with this guidance nor for the volume or rate of take contained in an application. The Council can grant a water permit for a lesser volume and/or lower rate of take.

Calculating the 'Rate of Take Limit' (Schedule 10A.4.1)

Step 1

a. In Excel, open the spread sheet supplied by ORC labelled "Flow."

b. Remove any records at or below 0 litres per second (l/s)

c. Sort your data set from smallest to largest based on the rate of take.

d. Delete any rows which contain a negative value or a zero value.

Step 2

Any measurement that exceeds the authorised (consented) rate by less than the margin of error of the water meter is rounded down to the authorised rate.

a. Check your margin of error. This will be specified on your consent or on your latest verification.

b. Round the margin of error to either 5% or 10%, whichever is closer (0-5 = 5%, 6-10 = 10%.). If you can't find this specified anywhere, use 5% when the meter is located at or measuring a piped take and 10% where the meter is located in an open channel.

c. Sort your data from largest to smallest and round any measurements where the value is above the consented limit but within the margin of error, down to the consented limit.

> *For example*
>
> *On a consent with a rate of take limit of 55 l/s and a margin of error of 10%, the margin of error would be 5.5 l/s. So anything that is between 55.1 l/s and 60.5 l/s (which is the sum of the consented take of 55 l/s + margin of error of 5.5) is rounded down to 55 l/s.*

Step 3

Any measurement that exceeds the authorised rate of take by more than the margin of error of the water meter will be removed from the data and not considered further.

So for the above example, anything greater than 60.5 l/s should be removed

To do this:

a. Sort your data again from largest to smallest.

b. Any values which are more than the margin of error above your consented take should be deleted.

Step 4

Find the highest remaining single rate of take in each water year. A water year runs from 1 July to 30 June.

There are a number of ways to do this. Methods include separating the data for each water year and sorting to find the maximum value, or creating a pivot table to select the maximum rate in each month and selecting the maximum rate in each water year from that list.

If you've followed the steps above your maximum rate of take in each year cannot be higher than your current consented rate of take.

Step 5

Take the maximum rate of take for each water year (values identified under step 4). If you have a full set of data then you will have five numbers at this point.

To apply the methodology outlined in proposed Schedule 10A.4.1, add these numbers together and divide them by the number of years for which you have data. The resulting number will be the instantaneous rate of take limit that is likely to be stated on your new water permit.

For example

Year	Max Rate
2012/13	55 l/s
2013/14	55 l/s
2014/15	45 l/s
2015/16	43 l/s
2016/17	50 l/s
(55 l/s + 55 l/s + 45 l/s + 43 l/s + 50 l/s)/5 = 49.6 l/s	

Calculating Daily Volume Limit (Schedule 10A.4.2)

Use the spread sheet labelled "Daily V". Your filtering for daily volume will be used to calculate monthly and annual volumes.

Step 1

a. Remove any records at or below 0 m^3/day

b. Sort your data set from smallest to largest based on the volume. Delete any rows which contain a negative value or a zero value.

Step 2 - Any day that exceeds the authorised (consented) or calculated daily volume by less than the margin of error on the water meter is rounded down to the consented volume.

a. Check your margin of error. This will be specified on your consent or on your latest verification.

b. Round the margin of error to either 5% or 10%, whichever is closer. If you can't find this specified anywhere, use 5% for piped takes and 10% for open channels.

c. Check your authorised or consented daily volume limit. If there is a daily volume limit specified in your consent use that. If your consent does not have a daily volume limit you will need to calculate one. This is calculated based on taking your consented rate of take for 24 hours in a day, using the following formula:

Daily Volume m^3 = ((Consented Rate of Take in l/s) x 86,400)/1,000

Sort your data from largest to smallest in Excel and round any measurements where the value is above the consented limit but within the margin of error, down to the consented limit.

> For example
>
> For a consent with a rate of take limit of 55 l/s and no consented daily volume, the calculated daily volume should be calculated as follows:
>
> (55 l/s X 86,400)/1000 = 4,752 m^3.
>
> If the margin of error on the water meter for this consent was 10%, any values between 4,753m^3 and 5,227 m^3 should be rounded down to 4,752 m^3.

Step 3 - Any day where the volume taken exceeds the authorised (consented) or calculated volume by more than the margin of error of the water meter will be removed from the data and not considered further.

Sort your data again from largest to smallest. Any values which are more than the margin of error above your consented take should be deleted.

> *Example*
>
> *In the example above this means that any values of 5,227 m^3 or higher should be deleted.*

Step 4 – Find the highest remaining single day in each water year. A water year runs from 1 July to 30 June.

There are a number of ways to do this. Methods include separating the data for each water year and sorting to find the maximum value, or creating a pivot table to select the maximum daily volume in each month and selecting the maximum daily volume in each water year from that list.

If you've followed the steps above and filtered your data correctly then your maximum day in each year cannot be higher that your current consented or calculated daily maximum.

Step 5 – Take the maximum value from each water year. If you have a full set of data then you will have five numbers at this point.

Add them together and divide them by the number of years for which you have data. The resulting number will be the daily volume limit that is likely to be stated on your water permit applying the methodology outlined in proposed Schedule 10A.4.2.

Calculating Monthly Volume Limit (Schedule 10A.4.3)

Step 1 – Use the same filtered data set you used to calculate your daily maximum.

Step 2 – Calculate the water used in each month.

There are a number of ways to do this. Methods include separating the data for each month and summing to find the maximum value, or creating a pivot table to select the sum of daily volumes in each month.

Step 3 – Remove any month where the volume of water used is greater than your consented monthly volume. If you don't have a consented volume, then your use (Consent Daily Volume or Calculated Daily Volume) x 30.4

For example

In the example used for daily volume the calculated monthly volume would be:

4,752 m^3 x 30.4 = 144,460.8 m^3

Step 4 – Select the highest remaining month in each water year.

Step 5 –Take the highest month in each water year. If you have a full set of data then you will have five numbers at this point.

Add them together and divide them by the number of years for which you have data. The resulting number will be the monthly volume limit that is likely to be stated on your water permit applying the methodology outlined in proposed Schedule 10A.4.3.

Calculating Annual Volume Limit (Schedule 10A.4.4)

Step 1 – Use the same filtered data source you used to calculate your daily volume.

Step 2 – Calculate the water used in each water year (1 July to 30 June).

Step 3 – Remove any year where the water used exceeded your consented annual volume or your calculated annual volume. Where your consent does not specify an annual volume, you will need to calculate one. To do this use whichever of the methods below gives the lower result.

Annual Limit = (Consent Daily Volume or Calculated Daily Volume) x 365.25

Annual Limit = (Consented Monthly Volume) x (Months where water can be taken refers to consents and permits which specify a time of year where water can be abstracted)

Example

In the example used for calculating Monthly Volume Limit this would be Calculated Daily Volume X 365.25

4,752 m^3 X 365.25 = 1,735,668 m^3

Step 4 – Add the water used in each remaining water year together and divide it by the number of water years. The resulting number will be the yearly volume limit that is likely to be stated on your water permit applying the methodology outlined in proposed Schedule 10A.4.3.