

Well Demo Instructions

The purpose of this exercise is to get students to thinking about what might be important to consider when selecting the location of a new well.

1. How does pumping from a well affect the water table?
2. What will be the impact on nearby wells?
3. What will be the impact on surface water?
4. How much water can I take out of it?
5. What locations are accessible for placing a well?

Background

The demonstration is a Jupyter Notebook with interactive widgets. It shows a draggable map of Christchurch with three wells placed randomly.

Students can pick up and drag the wells to new locations. They can increase the amount of water taken from each well with the slider bars at the bottom.

The goal is to fill up the “Total Water Bar” in the bottom left and get it to turn green. This can be done by pumping more water from the wells.

HOWEVER pumping a groundwater will cause the water table to drop. Do this too much, and water will start to drain out of rivers and streams. You might even draw some salt water in from the coast.

To do

Navigate to the folder containing the Python notebook well_demo.ipynb

Open a command prompt in this folder. Activate the ‘wells’ conda environment by typing

```
conda activate wells
```

Open the Jupyter notebook server by typing

```
jupyter notebook
```

The notebook server will open automatically in a web browser. It is being run locally and should not time out.

Open the well_demo.ipynb notebook by clicking it on the list of files. The notebook will open in a separate screen.

On the notebook screen, use the ‘view’ dropdown menu to toggle off Headers and Toolbars (more space on the screen). If you are in Google Chrome, toggle full screen with F11

Run the wells demo by highlight the topmost cell with code written in it and hitting ‘Ctrl+Enter’

Zoom as required so that title instructions, map and widgets are clearly visible without scrolling.

Goal is to get the lowermost bar green, without getting any red (BAD drawdown) on the Ōtakaro/Avon river.