Question on Notice

12 October 2023 Public Hearing - Inquiry into the 2022 Flood Event in Victoria

Q. Gaelle BROAD: Now, warnings are something that has been talked about so much, because it is just foundational to people's response and reaction, getting that information right. We had Jan Beer, who is an expert in water, appear at the Seymour hearing. She gave the committee a list of flood warning gauges and locations but was not sure which ones had actually been installed. Again, you could take this on notice, but perhaps it is a question for Emergency Management Victoria. If you could provide, in response to that list, which ones have actually been installed as far as flood gauges, because there seem to be a number of areas that are not covered.

Kate FITZGERALD (DJCS): I am happy to discuss that one. Though the responsibilities for the flood gauge network are responsibilities of DEECA, the department of environment, so we would probably have to defer to them on that matter.

DEECA response

As part of the Victorian Constraints Measures Program[1], 11 new telemetered river and/or rainfall sites are being installed. These 11 new telemetered sites are not flood gauges and their location was not selected for the purpose of flood warnings.

The primary purpose of installing new gauging sites in the Constraints Measures Program is to assist in the operation and future planning of relaxed constraints environmental watering actions in the Goulburn system by providing an improved level of information for rainfall and streamflow data and forecasting.

The Department of Energy, Environment and Climate Action (DEECA) has informed the Bureau of Meteorology (the **Bureau**) of these additional sites and they were consulted in site selection and the specifications for the equipment being installed.

While the Constraints Measures Program is installing gauges for flow monitoring and future planning purposes, other than for informing flood warnings, all gauges in the network, regardless of their primary purpose can contribute intelligence to a flood warning and the Bureau can access any gauge to inform their flood warning models.

Overview of the sites

The 11 sites include:

- **3 streamflow and rainfall gauges**:

[1] Victorian Constraints Measures Program (water.vic.gov.au)

        - Goulburn River at Molesworth
        - Yea River at confluence with Goulburn River
        - King Parrot Creek at confluence with Goulburn River
    - **7 rainfall gauges**:
        - Major Creek upper catchment
        - Dabyminga Creek and King Parrot Creek – Upper catchment
        - Acheron River at Murrindindi Rivers – Upper catchment
        - Rubicon River upper catchment
        - Rubicon River lower catchment
        - Spring Creek upper catchment
        - Murrindindi upper catchment
    - 1 site where **telemetry** will be added to an existing site Murrindindi River at Murrindindi.

- Of the 11 sites listed above, two are yet to be installed:
    1. Goulburn River at Molesworth – the site required 2 separate approvals from Vic Track and the local council. These approvals have now been received and construction will begin shortly. It is expected to be complete and operational by December 2023.
    2. Yea River at confluence with Goulburn River – construction of the streamflow gauge is yet to start due to access. The rainfall site has been completed.

- The other 9 sites have been constructed and installed and are currently going through various stages of the commissioning process. Data is being collected at these sites and we are working on making this data publicly available via the Victorian Government's Water Measuring Information System (found at Water Measuring Information Site WMIS).

Background Information – Developing a flood warning service

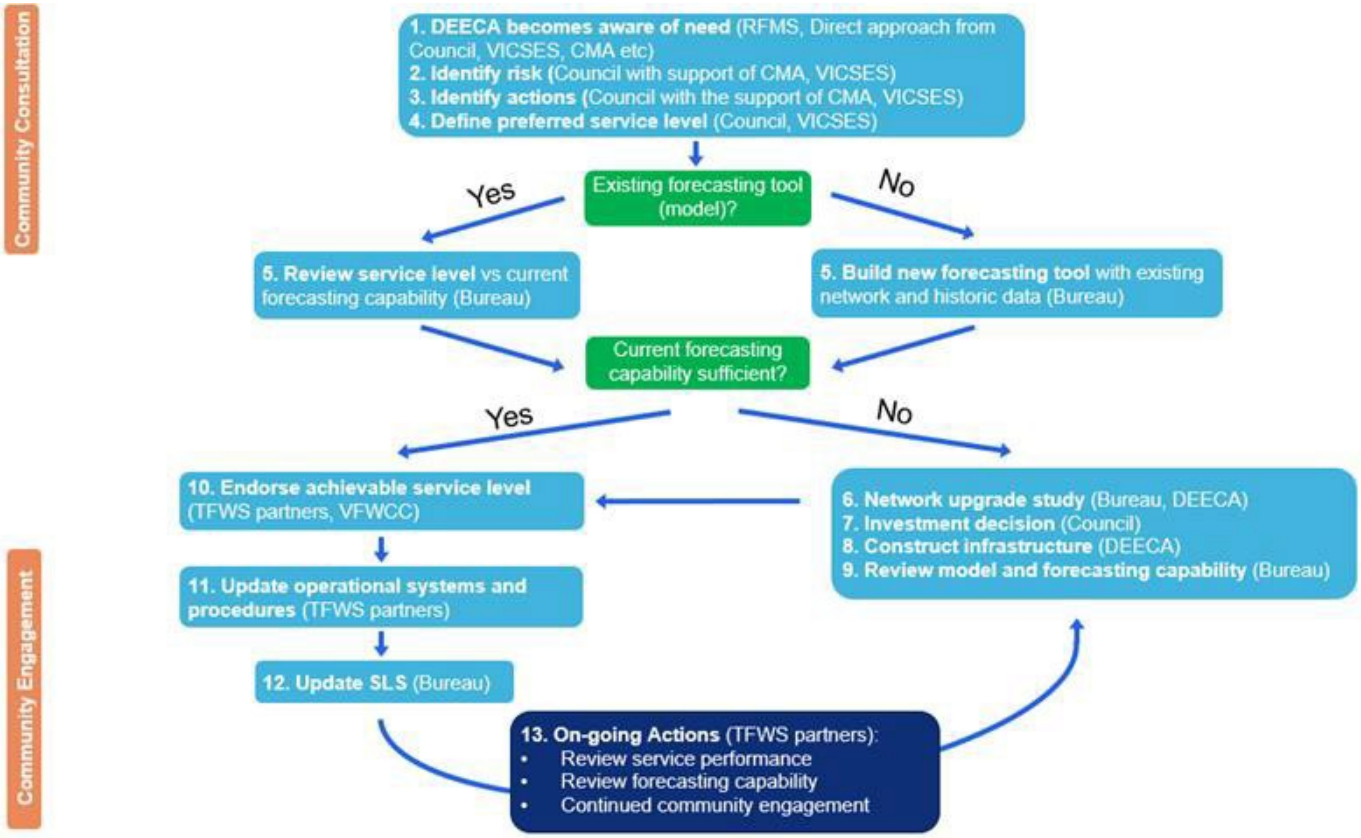
(previously provided to the Committee secretary via email)

What is the process for deciding where and if a new gauge is needed?

- The aim of a flood warning is to manage flood risks and communicate timely information to the public. A floodwarning service is developed to suit the needs of individual towns and communities.
- New gauges are installed if a detailed assessment shows that it will improve the flood warning service and the community will benefit.
- A fit for purpose gauge network begins with a clear, locally understood level of required service. The process starts with an assessment of the flood risk and how is this best informed during a rain event.
- The first step is a local flood study to assess flood risks. Any flood study completed with government funding is expected to include an assessment of flood warning service needs for the study area. This assessment can be later used to inform the design and implementation of a locally specific Total Flood Warning System (TFWS).
- While this assessment can include suggestions for installing additional gauges, the decision on if or where new equipment is constructed depends on further steps to make sure the

community agrees that they will benefit - we only install what the community needs. One way we ensure this on-going need is that the asset ownership and on-going maintenance is the responsibility of local council.

- In regard to upfront capital to install gauges Victorian policy outlined in the Victorian Floodplain Management Strategy is that the capital works are shared between the Commonwealth and Victoria.
    - Victorian and Commonwealth funds are readily available for capital costs subject to the following.
    - Community, through their local council confirms that they are prepared to pay the ongoing maintenance costs of new equipment. Council joins the regional water monitoring partnership, if they are not already a member. This approach ensures council will not need to have any specialist in-house technical knowledge or expertise.
    - When a request for a new flood warning service is received, VICSES will work through developing a flood response action plan with the applicable council. That considers questions such as, what actions will be taken if a flood is forecast, how long will those actions take to implement and what river levels will trigger those actions? The flood study provides flood maps and other data to inform this work.
    - The Bureau is then able to advise if it is technically possible to provide the warning the proposed flood warning action plan shows is needed by the community. The Bureau will check what gauges already exist and if new equipment would be needed to provide the service requested - including where exactly to locate the equipment.
    - If additional gauges are needed to provide the warning the community has asked for, and have agreed to maintain, the Victorian government will pay the capital costs of installing new gauges.
    - This all takes time, with councils managing competing priorities. DEECA has access to a pool of portable monitoring gauges known as Portable Automated Loggers, (**PALs**). These temporary gauges can be deployed to collected data in the interim while the permanent equipment is constructed. The steps are summarised and illustrated in the figure below.



Requests received outside this process

How do we deal with ad-hoc requests from individuals to install a new gauge?

- We would follow the process outlined above.
- We recognise that people who live on a floodplain know their area and often have good knowledge of the gauge network and potential gaps. If an individual tells us they believe there is a gap, they are asked to discuss with their local council. We do this because the local council will cover the maintenance costs of any new equipment, and so we need to be sure the council agrees with the suggestion that additional gauges may be beneficial.
- If the local council supports investigating the need for a new gauge, we will follow the same process as above – beginning with a flood study.
- Flood studies are often focused on a single township. It is less common for a flood study to focus on large rural agricultural land areas. If a flood study has not been completed or is not likely to be completed for the location (the person may be a farmer for example, not living in a town) the council can ask the Bureau to look at the suggestion and provide advice about whether a gauge at the proposed location would benefit or improve an existing service. DEECA can coordinate on council's behalf if they prefer.
- Based on the Bureau's advice VICSES, the Bureau and DEECA will support the local council to decide if the costs of maintaining the suggested new gauge would be good value for their community.

What about people living on the floodplain between towns who just want to be able to monitor river levels?

- Most existing gauges can be viewed on the Bureau's web pages, and if this is not the case the Bureau is generally able to make them available, provided a suitable communication network (telemetry) is available.
- If rural residents believe additional gauges need to be constructed to allow them to monitor river levels and implement their personal flood preparations, then this can be considered. A similar process would be followed, where the beneficiaries will need to agree through their local council to pay the cost of maintaining the equipment.

Managing the network

How many monitoring sites are there in Victoria?

- Altogether, there are around 1000 rain and river gauges in Victoria, co-ordinated on behalf of 54 organisations, including local councils, under Victoria's Regional Water Monitoring Partnerships.
- These gauges can be accessed on DEECAs Water Measurement Information System website (www.data.water.vic.gov.au).
- This does not include gauges that Melbourne Water use for their water management purposes – Melbourne Water manages its own maintenance arrangements.
- There are also gauges used by other water corporations to manage their water resources that are maintained by those agencies directly.

How many are used for flood warning?

- There are 197 gauges that the water monitoring partnership has flagged as being either a forecast location (location where the Bureau provides a forecast of future water level) or as providing data being used by the Bureau's suite of flood forecasting and warning models for Victoria. But all gauges in the network, regardless of their primary purpose can contribute intelligence to a flood warning as the Bureau can access any gauge to inform their flood warning models.
- The Bureau's website has live information relating to these gauges which can be found on http://www.bom.gov.au/vic/flood/index.shtml
- The overall number of gauges in our catchments, that are contributing data to our warning services, is of course important: ensuring that we have the right equipment in the right location is just as important if not more so. Victoria has a strong working relationship with the Bureau, we have developed a process for making sure any new equipment that is installed is located with technical advice from the people who build and use the flood forecasting models.
- Officers from DEECA, VICSES and the Bureau meet at least quarterly to keep track of any requests from local councils to look at developing a new service for their communities. The same officers maintain communication outside of these meetings as well.