Legislative Council Environment and Planning Committee

Hearing Date: 6 December 2023

Question[s] taken on notice

Directed to: Hon Harriet Shing MLC

Received Date: 31 January 2024

1. **David ETTERSHANK, page 4-5**

   Question Asked:
   I guess there are two subsequent questions that follow on from that. One would be: I think the last report that went to Melbourne Water – Justice Pagone's report – sat with the CEO for a month and a half, roughly, before it was released. So I guess the committee would be very keen, given we have obviously got work coming up, to know: will that be released as soon as it is available?

   Harriet SHING: I am really happy to take that on notice in terms of the work on Rivervue and on that investigation. As I have made really clear to this committee and in response to members of this committee and in response to questions in Parliament, I have been provided with information as it has been released to the public. So I am really happy to take that on notice perhaps and give you a better sense of what the timing might look like.

   Response:

   Melbourne Water maintained transparency and timeliness throughout the process, adhering to the stages and timeframes outlined in the Terms of Reference for the Review.

   In response to Recommendation 13 of the Independent Pagone report into the Maribyrnong River floods, Melbourne Water's investigations into the reduction of flood levels and finished floor levels at Rivervue remain ongoing.

   The history of development decisions related to the site dates back to the early 2000's with multiple parties having been involved, including the developer, Council, VCAT and Planning Panels Victoria. Melbourne Water is only one of the parties involved in the decisions relating to the site and only has access to its own information.

   These matters may ultimately be the subject of legal action and, to ensure there is no prejudice to the rights of impacted parties – including the

residents - it may not be possible for Melbourne Water to release the findings of its review outside of legal processes.

Melbourne Water is progressing work to respond to all 15 recommendations of the Pagone report.

Melbourne Water is developing a new Maribyrnong River flood model which will be complete by the end of April 2024 (Recommendation 9). The new model will be prepared in accordance with the latest standards, including climate change projections and used to guide future planning and building decisions and emergency preparedness. The model methodology includes independent peer review at critical stages.

Of particular relevance to Rivervue, Melbourne Water has requested the Minister for Planning apply an interim LSIO, pending the finalisation of the new Maribyrnong River flood model (Recommendation 12).

Melbourne Water has worked with the VicSES and Moonee Valley Council to ensure Rivervue is included in their emergency management plans. Melbourne Water has also worked with Rivervue management to support their development of a site-specific Flood Risk Management Plan which is enacted by the Village Manager in the event of a flood emergency. The feasibility of one-way valves is being considered as part of this work (Recommendation 14).

Once the new flood model is complete, Melbourne Water will also investigate the viability of long-term sustainable flood mitigation options for the Maribyrnong River (Recommendation 15).

The new Maribyrnong River flood model will enable completion of the assessment of the efficacy of the Flemington racecourse flood wall and associated downstream mitigation measures (Recommendation 6). Melbourne Water will reconvene the Independent Review Panel, chaired by the Hon Justice Pagone to provide an independent assessment of this work once the new model is available. Melbourne Water intends to publicly release the report and will make it available to the Committee.

2. **Samantha RATNAM, page 11**

Question Asked:
...we have had quite significant evidence through this inquiry about questions about reliability of the model. We have had very different views, some of Melbourne Water saying that they believe their modelling was accurate and appropriate, other witnesses suggesting that it was not.

Relating to that body of evidence that is before us, recommendation 3 of the independent reviews panel, the Pagone report, states that:

Melbourne Water should ensure that their rating curves, which represent the relationships between river levels and corresponding river flows, extend also to rare and extreme flood events and have been derived using established best-practice.

You might need to take this question on notice, which is absolutely fine. Regarding that recommendation the committee has heard of a major flood on 18 September 1975 on Deep Creek at Darraweit Guim even higher than the May 1974 flood, which is backed up by the rural water corporation blue books flood data records. We understand that the September 1975 flood at Darraweit was similar in magnitude to the October 2022 event. But Melbourne Water's consultant Jacobs rejected the existence of this flood largely on the basis that there was no data available from the relevant gauge for this data. To resolve that inconsistency, are you able to take it on notice to undertake some sort of inquiry? Because this goes to the integrity of the modelling that we are relying on and looking at the role of the government to oversight that.

Harriet SHING: Let me see what I can do by way of providing a response. I am not sure what you mean by 'inquiry', so I do not want to pre-empt or give you the expectation that this will be a far-reaching inquiry of the magnitude that we are dealing with right now.

Samantha RATNAM: Inquiries – make inquiries.

Harriet SHING: Yes. Let me see what I can provide to you. I will take that one on notice.

Response:

For clarity, we understand the reference to the Jacobs report to mean the *Maribyrnong Flood Event October 2022: Post Event Analysis*. This report was shared with the Committee as part of Melbourne Water's response to Questions on Notice from our appearance on 11 October 2023.

The purpose of the Post Event Analysis was to undertake an assessment of Maribyrnong catchment's flood response to the October 2022 rainfall event. It included an assessment of the antecedent conditions, the rainfall events and the magnitude of the flood event. It was not a flood study and did not produce any flood mapping data.

As part of this report Jacobs reviewed the historic flood levels (also known as stages) at key gauges, including Darraweit Guim. The following unedited

extract from the Jacobs report provides an explanation for the exclusion of the 1975 data from Darraweit Guim:

> "Stage data for Deep Creek at Darraweit Guim (230100A) was obtained from the Bureau of Meteorology Water Data Online website and the annual maxima stage series was extracted from gauged data (Figure 14).

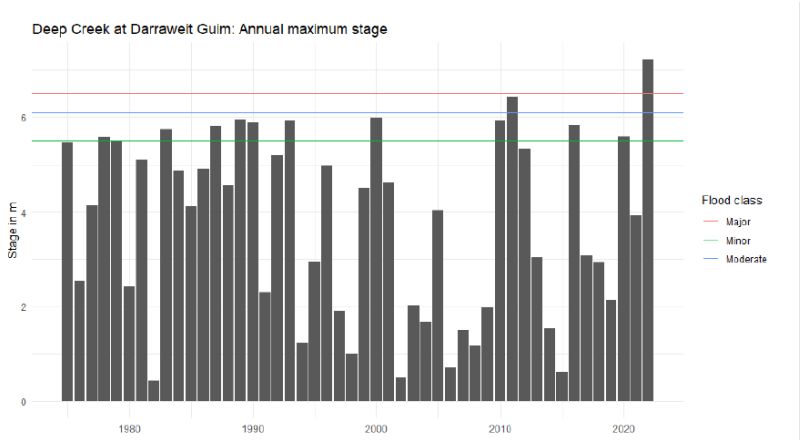

Figure 14: Deep Creek at Darraweit Guim – annual maximum stage data (1975 – 2022) (The Bureau[5], 2022)

The catchment area to this gauge is approximately 500 km^2 and the highest stage was 7.22m, recorded during the recent October 2022 event. This stage is the highest since records began at this location in 1975, and the only event on record to exceed the major flood class level. The second highest stage was 6.43m in 2011, just below the major flood class level, when significant flood damage was reported in the area.

Data from an additional gauge (230208) located approximately 3 km upstream of gauge 230100A was also available from the Bureau of Meteorology Data Online website (period of record 1975 – 1994). The catchment area to this gauge is approximately 350km^2. A review of this data found inconsistencies in the gauges stages and flows recorded at the two locations, which are expected due to the presence of a tributary (Boyd Creek, catchment area approx. 150 km^2) flowing into Deep Creek between the two sites. A significant flow event with a peak of 537 m^3/s was recorded only at the 230208 gauge in 1975 (almost double the peak of the October 2022 event, 280 m^3/s). Confidence in this 1975 estimate at the 230208 gauge is low due to the following:

- Stage data for the same gauge (230208) does not indicate a high flow event of this magnitude occurred on this date (peak stage: 5.18 m). It is possible that the rating curve for the gauge is of low quality for these stages.

- There is no evidence of a high flow event of a similar magnitude from a review of gauged records upstream and downstream along Deep Creek or the Maribyrnong River.
- There are no records of reported flooding in media reports for 1975.
- For these reasons, the 1975 537m^3/s event was discounted from the analysis.
- There is no data available from the 2301100A gauge for this date."

Melbourne Water supports the Jacobs approach to the analysis and their conclusions. See Question 5 for more information.

3. **Rikkie-Lee TYRRELL, page 17**

Question Asked:
Prior to the BOM's heavy rainfall prediction in late September 2022, what were the storage capacities in Hume, Eppalock, Dartmouth and Eildon?

Response:

4. **Samantha RATNAM, page 12**

Question Asked:
That is what we understand – that is what we have been told. That is what was being told by residents, that there were inconsistent messages, and I am wondering whether the government is looking into why those inconsistencies occurred and what can be done in future to prevent them.

Response:

Additional Questions

5. **Samantha RATNAM**

Question Asked:
Recommendation 3 of the independent review's panel report states that "Melbourne Water should ensure that their ratings tables, which represent the relationships between river levels and corresponding river flows, extend also to rare and extreme flood events and have been derived using established best practice".

The committee has heard of a major flood on 18 Sep 1975 on Deep Creek at Darraweit Guim, even higher there than the May 1974 flood, which is backed up by Rural Water Corporation (RWC) "Blue Books" flood data

records. We understand that the Sep 1975 flood at Darraweit was similar in magnitude to the Oct 2022 flood, but Melbourne Water's consultant Jacobs rejected the existence of this flood, largely on the basis "there is no data available from the relevant (MW 230100A) gauge for this data".

Can the Minister help resolve this inconsistency by locating the hard copy station file records for the Deep Creek at Darraweit Guim gauge back to 1975 and other survey information or flood photos they may have on file and report back with their findings about whether a major flood did in fact occur at Darraweit Guim on 18 Sep 1975?

Can the Minister respond to why this inconsistency exists?

Response:

In 1975 there were two gauging sites for Darraweit Guim, gauge 230208 which was owned and operated by the Victorian Government and gauge 230100A which is owned and operated by Melbourne Water. Site 230208 was located upstream of the village until its service was discontinued in 1994. Site 230100A is located downstream of the village and commenced operations on 4 September 1975.

Melbourne Water has reviewed its records for 230100A and the public records for 230208.

For gauge 230100A the data plot below (Figure 1) shows that the highest recorded level for the period is 3.51m on 17 September 1975. As the data is incomplete, we are unable to establish if this was the peak for this event.

We have low confidence in this data because it was coded as poor quality at the time. Our records do not provide details on why this was so, however it is reasonable that this could be because the gauge had only just come into operation (on 4 September 1975) and the rating table may still have been in development for high flows. As a result, we have low confidence in the accuracy of the data from this gauge for that period. The official record for gauge 230100A in the Blue Book did not commence until 1976.

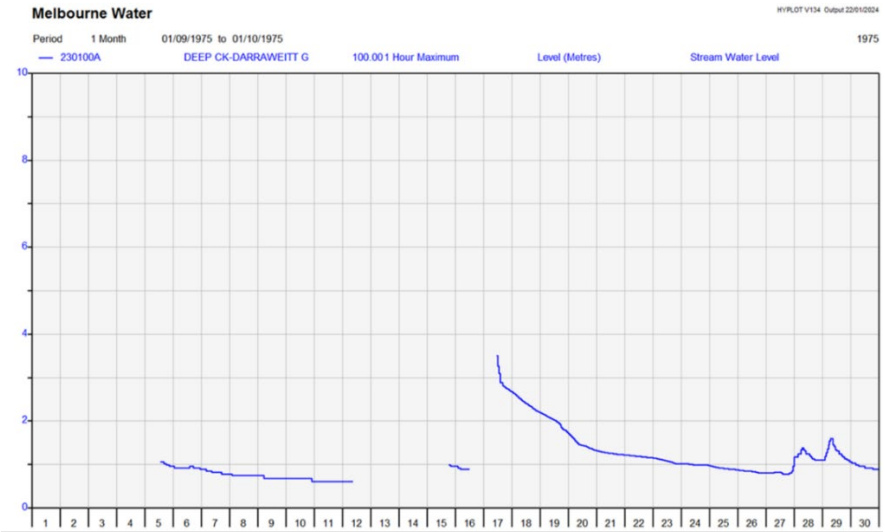

Figure 1: Data plot for Gauge 230100A, September 1975

For gauge 230208, there are hard copy records of flood flows and levels in the *Victorian Surface Water Information to 1987, Volume 2*, Drainage Division 2 River Basins 29-39, Rural Water Commission of Victoria (known as the "Blue Book"). This data was digitised and loaded into DEECA's Water Measurement Information System (WMIS) in 2011. The WMIS is the online website that holds all the water resources data for surface water and groundwater for Victoria including data currently collected through the Regional Water Monitoring Partnership. It includes data from Melbourne Water's gauges. All this data is publicly available.

The WMIS records the peak flow at gauge 230208 as 46,414 ML/day at 2.33pm on 18 September 1975. The peak level for this event was surveyed and a value of 5.148m was recorded. It was noted that the shaft encoder (an instrument for recording water level) was possibly recording slightly off during this period as the site was affected by debris.

It should be noted that the rating table for 230208 had an extrapolation applied above the gauge height of 4.0m. This means that there had been no physical measurement of flow above this height and therefore there is some uncertainty about the peak flow calculated for the level of 5.148m.

There was low confidence in the rating table at gauge 230208 due to the physical location i.e. in a wide part of the floodplain where it is more difficult to measure higher flows. For this reason, post the 1974 flood event Melbourne Water established a new gauge (230100A) approximately 3km downstream.

Melbourne Water is in the process of updating rating tables in the Maribyrnong catchment to enable the flows from more extreme events to be more accurately calculated. We have commenced this work at Darraweit Guim (230100A) by undertaking some surveying of river and floodplain cross sections and drone flights to build a better understanding of how the upstream floodplain operates.

It is not possible to "translate" the data from gauge 230208 to 230100A even though it is downstream due to a number of factors including differences in the width and depth of the river and expanse of the floodplain; additional flow from tributaries (e.g. Boyd Creek); and differences in the roughness and slope of the riverbed.

Flood level classifications (i.e. Minor, Moderate and Major) are defined on the basis of certain impacts upstream and downstream of the location and are based on historical data and relevant local information. There is not a definition for a major flood level at 230208, as it was not part of Melbourne Water's flood warning network. The definition for a major flood at 230100A is 6.5m.

In order to use any data from a gauge for flood modelling purposes it is imperative that there is high confidence in the data. Based on the available information from gauges 230208 and 230100A there is considerable uncertainty about the quality of the data at that point in time and it is prudent to exclude it from further use. Therefore, we support the Jacobs recommendation to exclude the 1975 event from their analysis.

6. **Samantha RATNAM**

Question Asked:
Residents whose homes were flooded by the Maribyrnong were told, several days after wading through the flood waters, that they had been classified as black water due to sewage and heavy metals, and anything which had been touched by them should be thrown away. Others were told that the risk was minimal. Can you explain the inconsistent information given to some residents? What can the government due to ensure timely and consistent information next time there is a flood?

Response:

7. **Samantha RATNAM**

Question Asked:
A number of petrol stations were flooded. Does this create a pollution risk?

Response:

8. **Samantha RATNAM**

Question Asked:
Many of the homes flooded in October had been flooded before, often multiple times. Do we need voluntary acquisition to help people get off floodplains?

Response:

9. **Samantha RATNAM**

Question Asked:
Minister, you mentioned the flood study work that the state government assists local councils with undertaking. We have had many Councils calling for some statewide coordination of the flood plain overlay process to ensure that there is consistency across the state and timeliness given each overlay can take years for a Council to complete and may not adequately address or account for neighbouring LGA. Will the state government play a stronger role to coordinate the statewide flood plain overlay process? Or move towards state wide flood plain overlays so that communities can be better prepared via land use planning for future extreme climate events?

Response:

10. **Samantha RATNAM**

Question Asked:
Will the state government implement point 223 from the Maribyrnong River Flood Review Independent Report?

Response: