

## Melbourne Water's Summary of Forecasts and Warnings issued by Melbourne Water and the Bureau of Meteorology for the October 2022 Flood Event in the Maribyrnong

Melbourne Water provided the first major flood warning for the Maribyrnong catchment at 8.15am on 13 October 2022.

The issuing of this major warning triggered Melbourne Water and the Bureau of Meteorology to move to a cycle of 6 hourly updates. The service level agreement between the Bureau of Meteorology and Melbourne Water requires 6-hourly updates for major warnings, 12-hourly updates for moderate warnings and 24-hourly updates for minor warnings.

Subsequent updates for the Maribyrnong River were provided in alignment with the timeframes for a major flood warning. Updates provided separate warning information for the upper and lower catchments as detailed below.

We appreciate that warnings include technical language and can pertain to specific parts of the river or the whole river catchment. As part of transitioning riverine flood modelling and forecasting services to the Bureau we will seek to make this language simpler and clearer.

Date and time	Agency/Data source	Action or warning type	Comment
Prior to 11 October at 12:11pm	Melbourne Water	Consulting with Bureau	Melbourne Water consulted with the Bureau about the need for an initial flood watch to be issued.
11 October at 12:11pm	Bureau of Meteorology	Flood Watch	Includes wording that minor to moderate flooding is expected across the flood watch areas, and that major flooding is likely in some catchments. Maribyrnong River is specifically listed as likely to be affected.
After 11 October at 12:11pm	Melbourne Water	Increased forecasting modelling and daily flood watch updates	Increased flood forecasting, modelling and flood outlook scenario development.
11 October at 4:57pm	Bureau of Meteorology	Severe weather warning for heavy rainfall	Issued for districts including Maribyrnong River catchment. Warning included wording that heavy rainfall may lead to flash flooding.

12 October at 12:03PM	Bureau of Meteorology	Flood Watch	Includes wording that minor to moderate flooding is expected across the flood watch areas, and that major flooding is likely in some catchments. Maribyrnong River is specifically listed as likely to be affected.
13 October at 8:15am	Melbourne Water	Flood warning to Bureau	Issued the first Major Flood Warning (1) for Maribyrnong catchment to Bureau. It stated: <ul style="list-style-type: none"> <li>• The upper catchment was expected to peak around the Major Flood Level.</li> <li>• The lower catchment was not mentioned in the warning as the river levels were normal and steady at that time.</li> </ul>
13 October at 8:24am	Bureau of Meteorology	Flood Warning	Major Flood Warning issued for the Maribyrnong River.
From 13 October at 8:24am to end of event	Melbourne Water	Provision of 6-hourly updates to the Bureau	Melbourne Water continued to monitor and regularly update modelling and forecasting over course of event.
13 October at 12:50pm	Bureau of Meteorology	Flood Watch	Includes wording that minor to major flooding occurring or expected across several Victorian catchments.  Major flood warning current for Maribyrnong River.
13 October at 2.24pm	Melbourne Water	Flood warning to Bureau	Issued Major Flood Warning (2) for Maribyrnong River to Bureau, based on revised forecast rainfall data. It stated: <ul style="list-style-type: none"> <li>• The upper catchment was exceeding the Moderate Flood Level and expected to peak around Major Flood Level; and</li> <li>• The lower catchment was expected to peak around Moderate Flood Level.</li> </ul>
13 October 3:24pm	Bureau of Meteorology	Flood Warning	Updated Major Flood Warning issued for the Maribyrnong River.  Maribyrnong River expected to peak around Moderate Flood Level on morning of 14 October
13 October at 3:42 pm	Bureau of Meteorology	Flood Warning	Issued revised Major Flood Warning (3) for the Maribyrnong River. It added:  <i>"Maribyrnong River catchment has recorded rainfall averaging about 56mm since 9.00 am Wednesday 12 October 2022. Rainfall totals of</i>

			<i>60 – 100 mm are forecast for the catchment today (Thursday 13 October 2022)".</i>
13 October 8:12pm	Melbourne Water	Flood warning to Bureau	Issued Major Flood Warning (4) to Bureau. It stated: <ul style="list-style-type: none"> <li>The upper catchment was exceeding the Major Flood Level and rising; and</li> <li>The lower catchment was expected to peak around the Moderate Flood Level.</li> </ul>
13 October 8:24pm	Bureau of Meteorology	Flood Warning	Updated Major Flood Warning issued for the Maribyrnong River.  Maribyrnong River expected to peak around Moderate Flood Level on morning of 14 October.
13 October at 11:06 pm	Keilor gauge	Exceeded Minor Flood Level	
14 October at 12:30am	Melbourne Water	Initiated update to predictions	Noted that river was rising faster than model prediction and began updated model runs.
14 October at 2:01am	Keilor Gauge	Exceeded Moderate Flood Level	
14 October at 2:16am	Melbourne Water	Major Flood Warning to Bureau	Issued Major Flood Warning (5) to Bureau. It stated: <ul style="list-style-type: none"> <li>The upper catchment was exceeding the Major Flood Level and falling; and</li> <li>The lower catchment was exceeding the Moderate Flood Level at Keilor and rising. It was expected to peak above the Major Flood level Friday morning at both Keilor and Maribyrnong.</li> </ul>
14 October at 2.25am	Bureau of Meteorology	Flood Warning	Updated Major Flood Warning issued for the Maribyrnong River.  Maribyrnong River expected to peak above Major Flood Level on morning of 14 October.
14 October at 2.51 am	Melbourne Water	Major Flood Warning to Bureau	Issued revised Major Flood Warning (6) to Bureau for the Maribyrnong River. It stated: <ul style="list-style-type: none"> <li>The upper catchment was exceeding the Major Flood Level and falling; and</li> <li>The lower catchment was exceeding the Moderate Flood Level at Keilor and rising. It was expected to peak above the Major Flood level Friday morning at both Keilor and Maribyrnong.</li> </ul>

14 October at 2.53 am	Bureau of Meteorology	Flood Warning	Revised updated Major Flood Warning issued.
14 October at 2.55am	Keilor gauge	Exceeded Major Flood Level	
14 October between 8:00am and 9:00am	Keilor gauge	Flood peak	Peak at more than 2.5m above Major Flood Level.
14 October at 8:05am	Melbourne Water	Flood warning to Bureau	Issued Major Flood Warning (7) to Bureau. It stated: <ul style="list-style-type: none"> <li>• The upper catchment was exceeding the Moderate Flood Level and falling; and</li> <li>• The lower catchment was exceeding the Major Flood Level and rising.</li> </ul>
14 October at 8:10am	Bureau of Meteorology	Flood Warning	Updated Major Flood Warning issued for the Maribyrnong River. Maribyrnong River expected to peak above Major Flood Level on morning of 14 October.
14 October at 1:47pm	Bureau of Meteorology	Flood Watch	Includes wording that minor to major flooding occurring or expected across several Victorian catchments. Major flood warning current for Maribyrnong River.
14 October at 2.12pm	Melbourne Water	Flood warning to Bureau	Issued Major Flood Warning (8) to Bureau. It stated: <ul style="list-style-type: none"> <li>• The upper catchment was below the Minor Flood Levels and falling; and</li> <li>• The lower catchment was exceeding the Major Flood Level at Keilor and falling.</li> <li>• The lower catchment was exceeding the Major Flood Level at Maribyrnong and steady.</li> </ul>
14 October at 2:16pm	Bureau of Meteorology	Flood Warning	Updated Major Flood Warning issued for the Maribyrnong River Maribyrnong River currently exceeding Major Flood Level and falling/steady. It is expected to drop below Major Flood Level on afternoon of 14 October.
14 October at 7.49pm	Melbourne Water	Flood warning to Bureau	Issued Major Flood Warning (9) to Bureau. It stated:

			<ul style="list-style-type: none"> <li>• The upper catchment was below the Minor Flood Levels and falling; and</li> <li>• The lower catchment was exceeding the Moderate Flood Level at Keilor and falling.</li> <li>• The lower catchment was exceeding the Major Flood Level at Maribyrnong and falling.</li> </ul>
14 October at 7:55pm	Bureau of Meteorology	Flood Warning	<p>Updated Major Flood Warning issued for the Maribyrnong River.</p> <p>Maribyrnong River currently exceeding Moderate Flood Level and falling. It is expected to drop below Moderate Flood Level on the evening of 14 October.</p>
14 October at 11.54pm	Melbourne Water	Flood warning to Bureau	<p>Issued a downgraded Minor Flood Warning (10) to Bureau. It stated:</p> <ul style="list-style-type: none"> <li>• The upper catchment was experiencing minor flooding; and</li> <li>• The lower catchment was exceeding the Minor Flood Level and falling.</li> </ul>
15 October at 12:00am	Bureau of Meteorology	Flood Warning	<p>Updated Flood Warning issued for the Maribyrnong River.</p> <p>Maribyrnong River currently exceeding Minor Flood Level and falling. It is expected to drop below Minor Flood Level on morning of 15 October.</p>
15 October at 11.42am	Melbourne Water	Flood warning to Bureau	<p>Issued Final Flood Warning (11) to Bureau. It stated that the Maribyrnong River catchment was below the Minor Flood Level and falling.</p>
15 October at 12:19pm	Bureau of Meteorology	Flood Warning	<p>Final Flood warning issued for the Maribyrnong River.</p>