



Request for information

Department of Regional Development, Manufacturing and Water

Sch 4 - Personal Information

SUBJECT: Wivenhoe Dam Operations (February/March 2022 flood releases) and implied secrecy

Key/contentious issues

- This brief has been prepared in response to Sch 4 - Personal Information claiming that the recent Wivenhoe Dam releases contributed to downstream flooding, that operational decisions are kept secret, and that water security is prioritised over flood mitigation and downstream flood impacts.

Current status

- Seqwater's flood engineers operate Wivenhoe in accordance with the approved Flood Operations Manual which guides the timing and volume of releases from Wivenhoe based rainfall and inflows.
- Operations at Wivenhoe managed the recent extreme rainfall event to minimise flood impacts downstream and the dam performed how it was designed to.
- On 25 February 2022, 1,000 megalitres (ML) were released from Wivenhoe but these releases were stopped to let the Brisbane River peak naturally and to avoid exacerbating the level of natural flooding.
- At 4:00 am on 27 February 2022, Seqwater began controlled releases from Wivenhoe. These releases are necessary in accordance with the Flood Operations Manual to make sure the dam has capacity for natural events.
- Controlled draw down releases continued until 9 March 2022 to bring the storage capacity back down to 90 per cent, which is the temporary reduced-full supply level.
- Seqwater maintained open and transparent communications during the flood event, including on its website and through the media, and provided advice ahead of releases.
- Seqwater's Flood Operations Manuals for Wivenhoe and Somerset Dams are publicly available on its website.
- Seqwater released flows from Wivenhoe taking into consideration catchment rainfall and runoff, worst case scenarios and possible concerns for dam safety, available volumes to mitigate flood waters, and timings associated with natural catchment runoff from Lockyer Creek, Bremer River and other catchments that enter the Brisbane River downstream of Wivenhoe.
- Gauged measurements of river conditions and predictions of likely runoff from rainfall measurements were used and Seqwater engineers frequently consulted with the Bureau of Meteorology's specialist meteorologists to gain insights into future conditions.
- The flood levels experienced would have occurred without Wivenhoe releases.

Chief of Staff - Conflict of Interest

- No conflicts of interest have been identified as being relevant to the information provided in this briefing note.

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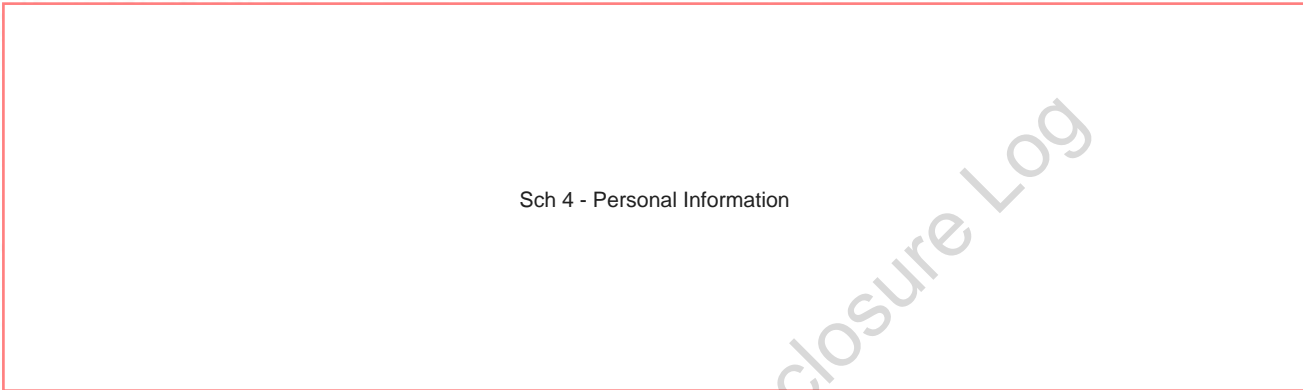
Request for information

Department of Regional Development, Manufacturing and Water

Sch 4 - Personal Information

SUBJECT: Wivenhoe Dam – Need for an overhaul of the flood mitigation manual

Key/contentious issues



Sch 4 - Personal Information

Sch 4 - Personal Information should be advised as follows:

- Wivenhoe Dam was operated exactly how it was designed to operate by reducing flooding in the Brisbane River, that would have occurred without the dam.
- Wivenhoe Dam has three storage compartments -
 - Water supply - the target is to have this full at the end of the event. When the dam is at 100 per cent, it means the drinking water supply compartment is full. Currently Wivenhoe Dam water supply compartment is kept at 90 per cent to manage dam safety risks at Somerset and Wivenhoe dams.
 - Flood storage compartment - the target is to have this storage available for when additional floods come into the dam. It is used to temporarily store floodwater to reduce downstream flooding, with this water being released when appropriate in accordance with the Flood Manual. This compartment is full at approximately 200 per cent.
 - Dam safety compartment - this is reserved for very extreme floods to protect the safety of the dam. The goal is to keep the dam safety compartment empty for severe emergency situations.
- So when the dam was at 169 per cent the water levels were in the flood storage compartment.
- Wivenhoe Dam has a design full supply level (FSL) to which storage volumes are calculated. However, there is currently an operational full supply level (OFSL) applied for dam safety and flood mitigation purposes that is lower than FSL. This means that at the target OFSL, which is the full water supply storage compartment available, the storage capacity is 90 per cent.
- Prior to the heavy rain in February 2022, Wivenhoe Dam was approximately 57 per cent full in the water supply storage compartment relative to the FSL, after experiencing around seven years of drought.
- This storage capacity prior to the event is significantly lower than desirable for water supply purposes. Given the uncertainties with rainfall forecasts and the risks associated with water security during droughts, it is unlikely that early releases would be made in such circumstances.

Table with 4 columns: Prepared by, Endorsed by ED, Endorsed by DDG, and Approved by A/Director-General. Includes dates, names, and a signature box for Linda Dobe dated 9/03/2022.

- Seqwater released water from Wivenhoe Dam in a manner which did not exacerbate the natural peak of the river coming from Brisbane River inflows downstream of the dam.
- Seqwater took into account the current conditions and worked with the Bureau of Meteorology to adjust the releases in real time. Seqwater took into account rainfall and catchment inflows as well as the combined inflows from Lockyer Creek, Bremer River and other inflows upstream of Moggill.
- Operations at Wivenhoe Dam were undertaken to manage the dam, how it was designed to operate and held back floodwaters that would otherwise have increased flooding downstream.
- Seqwater will produce a flood event report.
- After every significant event there are reviews to consider lessons learnt and improve future processes.
- The differences in what is considered “full” relative to crest level at Wivenhoe and Somerset dams is influenced by the different designs of the dams.
- Somerset Dam has a spillway crest at 100.45 metres Australian Height Datum (AHD) but operates eight sluice gates to release flood flows prior to levels reaching this crest level.
- In contrast, Wivenhoe Dam has five large gates sitting above a spillway crest at 57.0 metres AHD which lift to release flood flows. During normal operations the gates remain closed and the reservoir level is against the closed gates.
- The published flood mitigation manuals provide details on the dams and their operations.

Current status

How does Wivenhoe Dam work?

- The dam operated exactly how it was designed to by reducing flooding in the Brisbane River, that would have occurred without the dam.
- The dam has three storage compartments –
 - Drinking supply – the target is to have this full at the end of a flood event.
 - Flood storage compartment – the target is to have this storage available for when additional floods come into the dam; it is used to temporarily store floodwater to reduce downstream flooding – so it is generally emptied in about a week after a flood event.
 - Dam safety compartment – this is reserved for very extreme floods to protect the safety of the dam.
 - When the storage capacity is at 90 per cent, it means the drinking water supply storage compartment (1,052,000 megalitres (ML)) is full.
 - The goal is to retain the dam safety compartment for severe emergency situations.
 - In 2011, the drinking water supply compartment as well as the flood storage compartment were full, with water starting to move into the dam safety compartment. This eventually required full opening of the gates to protect the dam.

Releases

- Seqwater’s flood engineers began making controlled releases from Wivenhoe Dam at approximately 4.00 am Sunday morning 27 February 2022.
- Based on rainfall and rises in the Bremer and Lockyer Rivers, Seqwater made maximum releases of about 3,400 cubic metres per second from Wivenhoe Dam.
- This was well below the peak flow of the river measured at Moggill which was about 6,700 cubic metres per second and did not exacerbate the natural peak of the river.
- Controlled, gradual releases were necessary in accordance with the Flood Operations Manual to ensure the rainfall event was best managed.

- 140 ML was released from Wivenhoe on Friday night 25 February 2022 but these releases were stopped in order to let the Brisbane River peak naturally, and not exacerbate the level of natural flooding.

Flood Manuals

- The flood manuals guide the timing and volume of releases from Wivenhoe Dam, depending on actual rainfall and inflows into the dam.
- While Seqwater does work with the BoM and puts in place plans according to the forecast, actual releases are not made until the rain hits the ground, due to the uncertainty of the forecasts.
- Instead, and under the flood manual, Seqwater responds in real time to the real conditions.

Chief of Staff - Conflict of Interest

- No conflicts of interest have been identified as being relevant to this decision or to the information provided in this briefing note or its attachments.

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