Moa Point Wastewater Treatment Plant flood incident: Independent review

The Moa Point wastewater treatment plant has two channels that contain ultraviolet (UV) equipment for wastewater disinfection.

Since October 2025 one UV channel had been offline to enable the replacement of old, obsolete UV equipment. This reduces the treatment plant hydraulic capacity and requires more wastewater flow to be directed to the Long Outfall via a bypass pipe.

Technical factors that contributed to the flooding incident have been summarised in the accompanying diagram. These include aspects of the original design of the treatment plant carried out in the 1990s.

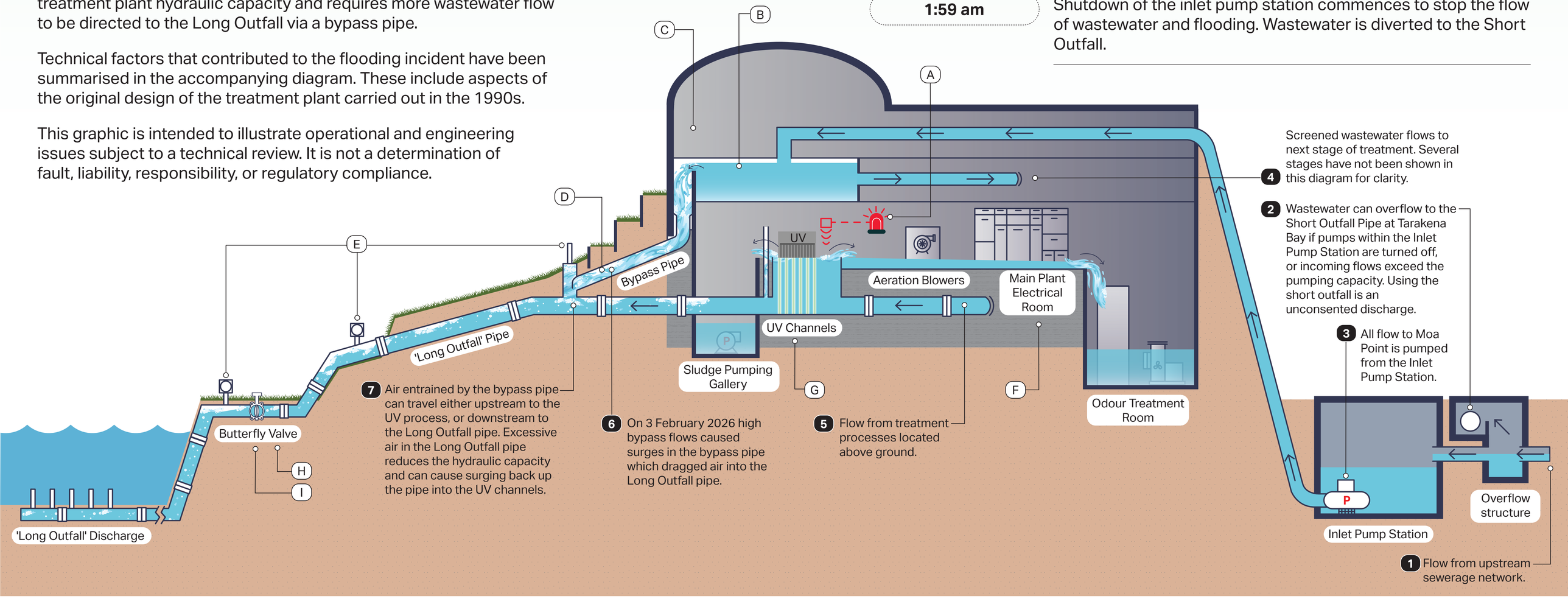
This graphic is intended to illustrate operational and engineering issues subject to a technical review. It is not a determination of fault, liability, responsibility, or regulatory compliance.

Incident Timeline (3 and 4 February 2026)

11:15 pm
Wastewater flow to the treatment plant reaches 3,400 litres per second. Surges in flow down the bypass pipe dragged air into the Long Outfall pipe causing a restriction in capacity.

11:17 - 11:33 pm
The operating UV channel overflows, flooding of structures located underground begins.

1:59 am
Shutdown of the inlet pump station commences to stop the flow of wastewater and flooding. Wastewater is diverted to the Short Outfall.



Observations

A Design documentation reviewed from the original 1990s design did not include or **infer** any need for level sensors with high level alarms to alert staff to high water levels in the UV room, or **to** stop flow from the Inlet Pump Station.

B Design documentation reviewed from the original 1990s design indicates the treatment process was designed for 3,000 litres per second of flow, the Inlet Pump Station was designed for 4,000 litres per second of flow, the bypass pipe is intended to handle 4,000 litres per second of flow and the Long Outfall pipe was designed to handle 4,500 litres per second of flow. During the flooding incident the bypass flow did not exceed 2,300 litres per second.

C Design documentation reviewed from the original 1990s design did not identify the risk of surges and/or air entrainment in the bypass pipe. Air entrainment is a process where air is mixed with a liquid (e.g., wastewater). It occupies pipe volume and can restrict the flow of wastewater in a pipe.

D The original 1990s design implies that the bypass pipe is intended to handle 4,000 litres per second of flow. Hydraulic calculations reviewed from the original 1990s design do not appear to consider the combined, bypass pipe, Long Outfall and wastewater treatment plant system. They also do not appear to test the scenario where 4,000 litres per second is directed through the bypass pipe.

E Air relief valves and vents along the Long Outfall pipe, while **consistent** with the original design, may not be of an appropriate size or type and may not have released air fast enough. This is currently under investigation. The purpose of the air relief values is to release air from the Long Outfall pipe, so the air does not restrict the flow of the wastewater.

F The original design and construction in the 1990s placed critical infrastructure (such as the main plant electrical room), below ground and within overflow pathways without flood protection barriers, suggesting that the risk of flooding to lower levels of the plant was considered to be low during the design process or due to the physical constraints of the site.

G Early design concepts for the wastewater treatment plant included four UV channels. Between these early concepts and the 1994-96 design, the number of UV channels was reduced two. Documentation reviewed from the 1994-96 design indicates that the intent was to increase the capacity of the UV process by making structural changes to the two UV channels and modifications to UV equipment, when required in the future. However, the documentation does not describe how this was to occur without a reduction in UV hydraulic capacity, which would lead to increased flows being directed to the bypass pipe. This meant a redundant UV channel was not available to maintain hydraulic and treatment capacity during the eventual replacement of UV equipment in 2026.

H Potential downstream obstructions may have contributed to the flooding incident. These are currently under investigation.