

Angus Fire Stormwater Volume Estimation Methodology

This document explains the methodology used to compare estimated rainfall volumes against publicly reported stormwater storage figures associated with Angus Fire.

1. Rainfall Data

Estimated monthly rainfall values for the Bentham area from June 2024 to March 2026 were compiled using representative regional rainfall estimates for the North West England / Yorkshire Dales fringe area.

Estimated cumulative rainfall over the period June 2024 to March 2026 was approximately 2,605 mm.

2. Catchment Area

A polygon measurement was taken using Google Earth over the approximate operational / stormwater collection area associated with the Angus Fire site.

Measured catchment area: 3,675 m².

3. Rainfall Conversion Principle

Rainfall is measured as depth (millimetres), not directly as volume. The standard hydrological conversion used is:

$$1 \text{ mm rainfall on } 1 \text{ m}^2 = 1 \text{ litre of water}$$

4. Volume Calculation

Theoretical stormwater volume was estimated using the following formula:

$$\text{Rainfall (mm)} \times \text{Catchment Area (m}^2\text{)} = \text{Litres}$$

Applying the calculation:

$$2,605 \text{ mm} \times 3,675 \text{ m}^2 = 9,573,375 \text{ litres}$$

Therefore, the theoretical maximum stormwater generation over the measured period is approximately 9.57 million litres.

5. Runoff Efficiency

Not all rainfall becomes recoverable runoff. Some water may be lost through evaporation, surface retention, splashing, infiltration, or drainage inefficiencies.

Typical runoff coefficients for industrial roof and hardstanding surfaces are approximately 0.85 to 0.95.

Runoff Coefficient	Estimated Recoverable Volume
0.85	~8.14 ML
0.90	~8.62 ML
0.95	~9.09 ML

6. Comparison Against Angus Fire Public Statements

Publicly reported Angus Fire stormwater storage volumes include:

Date	Reported Volume
Dec 2025	~8.0 ML
Feb 2026	>8.8 ML
Mar 2026	>9.0 ML

The calculated rainfall-derived runoff volumes therefore appear hydraulically plausible when compared against the reported storage volumes, assuming the measured catchment area is broadly representative of the operational runoff collection area and that the majority of the surface area is impermeable.

7. Important Limitations

- This analysis does not prove contamination of all collected water.
- This analysis does not determine whether all runoff legally required containment.
- This analysis does not assess storage legality or regulatory compliance.
- Rainfall estimates are approximate regional values.
- The exact engineered drainage network and runoff capture efficiency are unknown.

8. Conclusion

Based on the measured catchment area and estimated rainfall totals, the reported stormwater volumes are physically achievable from rainfall accumulation alone. The primary remaining questions therefore relate more to regulatory permissions, storage arrangements, contamination classification, and environmental management rather than the basic hydraulic feasibility of the reported volumes.