EDITORIAL DECISION REPORT

African Journal of Community and Environmental Health

Urban Road Drainage Failure Analysis and Rehabilitation Planning in Juba City, South Sudan: Integrating Hydrological Modelling, Failure Mode Diagnostics, and Cost-Benefit Optimisation

Editor-facing summary of reviewer feedback and final decision

Decision	Reject
Authors	Aduot Madit Anhiem
Journal	African Journal of Community and Environmental Health
Date	27 Mar 2026

Reviewer Snapshot

Reviewer	Recommendation	Major	Minor
Reviewer 1	Major Revision	3	3
Reviewer 2	Reject	3	3
Reviewer 3	Major Revision	3	3

Editorial Decision

The current consolidated editorial decision is reject. Human editorial verification remains required before publication.

Required Changes

- Replace or substantially justify the use of the Rational Method with a more appropriate hydrological model for an urban setting, detailing its limitations.
- Expand the methodology section to explicitly address data limitations, uncertainty analysis, and assumptions in both hydrological modelling and economic appraisal.
- Restructure the abstract to be concise and complete, ensuring it accurately reflects the full study's scope and key findings.
- Strengthen the discussion by comparing findings with similar studies in other African cities and explicitly addressing practical implementation barriers in Juba's context.
- The reliance on the Rational Method for hydrological modelling in a complex urban catchment is a major weakness; more sophisticated models (e.g., SWMM) should be employed or justified given Juba's specific conditions.
- The manuscript lacks critical discussion of data limitations, particularly the reliability and spatial representativeness of 42 years of rainfall data from a single airport station for city-wide analysis.
- The cost-benefit analysis appears overly optimistic; assumptions about future maintenance costs, discount rates, and benefit quantification (especially social benefits) require thorough justification and sensitivity analysis.
- Conduct proper hydrological model calibration using observed flood data and multiple rainfall stations
- Provide detailed methodology for field survey design including sampling strategy and quality assurance procedures

- Strengthen literature review with specific focus on urban drainage studies in similar developing city contexts
- Include sensitivity analysis for cost-benefit assumptions and clearly document all economic parameters
- Inadequate validation of hydrological modelling parameters - reliance on single rainfall station data and the Rational Method without proper calibration against observed flood events raises serious questions about model accuracy
- Questionable data quality and sampling methodology - field survey covering only 26.4km of drainage infrastructure without clear sampling strategy or statistical power analysis
- Superficial integration of multiple methodologies - the claimed integration of hydrological modelling, failure diagnostics, and cost-benefit analysis appears disjointed rather than systematic
- Substantially revise the methodology section to justify model selections, document data limitations, and validate hydrological outputs against independent observations.
- Complete and transparently report the cost-benefit analysis methodology, including all assumptions, parameter values, and sensitivity testing.
- Provide explicit discussion of study limitations regarding data quality, model simplifications, and generalisability of findings.
- Standardise language to British English conventions throughout and restructure the abstract to focus on key findings rather than methodological details.
- The Rational Method application lacks justification for its suitability in Juba's complex urban environment, with no discussion of limitations or validation against observed flood events.
- The 42-year rainfall record from a single airport station may not represent spatial variability across Juba's 28 sub-catchments, potentially biasing IDF curves and subsequent capacity calculations.
- The cost-benefit analysis appears incomplete in the provided text, lacking details on cost estimation methods, benefit quantification, discount rates, and sensitivity analysis for key assumptions.

Ethics and Transparency Checklist

- Conflicts of interest: Not stated
- Funding disclosure: Not stated
- Data availability: Not stated
- Ethics approval (if applicable): Not stated
- Review method: Automated reviewer simulation requiring human verification before publication.