Infrastructure Impact Analysis Report

Generated: 2025-12-31 18:23:54
Analysis ID: GNN-20251231-182413

Executive Summary

Failure Source:	Hospital (Hospital)
Failure Type:	Power Failure
Severity Level:	MEDIUM
Overall Risk:	LOW
Affected Nodes:	4
Critical Impacts:	0
High Severity:	0
Estimated Affected Population:	~300 people
Estimated Recovery Time:	< 1 hour

Detailed Cascading Impact Analysis

The GNN-based predictive model has analyzed the failure propagation through the infrastructure network. A total of 4 connected nodes are predicted to experience cascading effects, with 0 nodes reaching critical impact levels and 0 nodes experiencing high severity impacts.

Affected Infrastructure Nodes

Node Name	Type	Severity	Impact Probability	Expected Effects
School	School	LOW	12%	Minor power variance at School. Systems operating normally wi
Main-Pipe	Water Pipe	LOW	12%	Minor power variance at Main-Pipe. Systems operating normally
Pump-A	Water Pump	LOW	11%	Minor power variance at Pump-A. Systems operating normally v
Main-Tank	Water Tank	LOW	10%	Minor power variance at Main-Tank. Systems operating normall

Analysis Methodology

This analysis was generated using a Graph Neural Network (GNN) trained on infrastructure cascade patterns. The model analyzes network topology, node criticality, and historical failure propagation patterns to predict the cascading effects of infrastructure failures.

Network Configuration: 5 nodes connected by 4 bidirectional edges. The analysis accounts for node health status, infrastructure type, connectivity, and failure mode characteristics.

This report is generated by the Village Infrastructure Impact Predictor using AI-powered cascade analysis. Predictions should be validated with domain experts and real-time monitoring data.