

Flood Risk Analysis Report

Portfolio Assessment: 200 Properties

Metric	Value
Total Properties	200
Properties at Risk	131 (65.5%)
Total Property Value	£197,402,280.73
Value at Risk	£126,003,094.51
Percentage Value at Risk	63.8%

Executive Summary

This flood risk analysis assesses 200 properties with a combined value of £197,402,280.73. The analysis identifies 131 properties (65.5%) as being at medium to high flood risk, representing £126,003,094.51 (63.8%) of the total portfolio value.

Risk Level Distribution:

- High Risk: 112 properties (56.0%)
- Medium Risk: 19 properties (9.5%)
- Low Risk: 3 properties (1.5%)
- Minimal Risk: 66 properties (33.0%)

Portfolio Overview

Flood Analysis Methodology:

This analysis utilizes 40 flood gauges strategically positioned along the Thames to assess flood risk. The model employs advanced spatial interpolation techniques to calculate property-specific flood depths based on gauge readings and property elevations. Risk assessments incorporate depth-damage functions calibrated for UK residential properties.

Sample Gauge Information:

Gauge Name	Elevation (m)	Max Level (m)	Severe Level (m)	Flood Depth (m)
Thames Chelsea Gauge 1	31.1	11.3	7.2	4.1
Thames Kensington Gauge 2	32.5	10.6	6.8	3.9
Thames Westminster Gauge 3	33.5	10.0	6.3	3.7
Thames Camden Gauge 4	31.6	10.2	6.4	3.7
Thames Islington Gauge 5	29.5	8.2	5.2	3.0

Detailed Risk Analysis

High Risk Properties

112 properties are classified as high risk, with flood depths exceeding 1 meter and damage ratios above 60%. These properties require immediate attention and may benefit from flood protection measures.

Property ID	Flood Depth (m)	Risk Value (%)	Property Value (£)	Value at Risk (£)
PROP-5bf97adf	6.00	100.0	£1,762,375	£1,762,375
PROP-7d44829b	7.83	100.0	£4,203,328	£4,203,328
PROP-064d55c1	11.94	100.0	£2,005,017	£2,005,017
PROP-608c2902	12.91	100.0	£477,993	£477,993
PROP-44fab20c	10.21	100.0	£483,009	£483,009
PROP-a0b3f0ec	6.46	100.0	£729,803	£729,803
PROP-c0e0797f	10.17	100.0	£3,045,311	£3,045,311
PROP-0cd74c6b	10.19	100.0	£4,270,690	£4,270,690
PROP-d88dd6b	8.30	100.0	£668,468	£668,468
PROP-226a9f14	7.15	100.0	£1,622,890	£1,622,890

Medium Risk Properties

19 properties are classified as medium risk, with moderate flood exposure requiring monitoring and potential mitigation measures.

Property Risk Details

Properties at Risk (131 properties):

Property ID	Risk Level	Flood Depth (m)	Property Value (£)	Value at Risk (£)
PROP-5bf97adf	High	6.00	£1,762,375	£1,762,375
PROP-7d44829b	High	7.83	£4,203,328	£4,203,328
PROP-064d55c1	High	11.94	£2,005,017	£2,005,017
PROP-608c2902	High	12.91	£477,993	£477,993
PROP-44fab20c	High	10.21	£483,009	£483,009
PROP-a0b3f0ec	High	6.46	£729,803	£729,803
PROP-c0e0797f	High	10.17	£3,045,311	£3,045,311
PROP-0cd74c6b	High	10.19	£4,270,690	£4,270,690
PROP-d88dd6b	High	8.30	£668,468	£668,468
PROP-226a9f14	High	7.15	£1,622,890	£1,622,890
PROP-bdbc1be3	High	15.30	£705,296	£705,296
PROP-43b82dbb	High	7.78	£1,881,772	£1,881,772
PROP-725b002c	High	7.68	£834,618	£834,618
PROP-20152dd8	High	11.19	£951,238	£951,238
PROP-b992fa7c	High	14.28	£1,553,828	£1,553,828
PROP-d6310abc	High	7.22	£1,325,133	£1,325,133
PROP-4112ff13	High	12.20	£776,933	£776,933
PROP-cdfe5d1f	High	8.94	£820,936	£820,936
PROP-b1ea2508	High	12.46	£174,311	£174,311
PROP-49acd00e	High	6.24	£588,518	£588,518

Note: Showing top 20 of 131 properties at risk.

Appendix

Methodology

This flood risk analysis employs the following methodology: 1. Flood Gauge Network: Strategic placement of gauges along the Thames to capture water level variations 2. Spatial Interpolation: Advanced inverse distance weighting to estimate flood depths at property locations 3. Depth-Damage Functions: Calibrated vulnerability curves relating flood depth to property damage: • 0-5cm: 0-5% damage • 5-50cm: 5-25% damage • 50cm-1m: 25-40% damage • 1-2m: 40-60% damage • 2m+: 60-100% damage 4. Risk Classification: • High Risk: >60% damage ratio • Medium Risk: 30-60% damage ratio • Low Risk: 10-30% damage ratio • Minimal Risk: <10% damage ratio 5. Portfolio Aggregation: Property-level risks aggregated to portfolio-level exposure metrics

Data Sources

• Property locations and elevations: Generated Thames-aligned property portfolio • Flood gauge data: Simulated Environment Agency gauge network • Terrain data: Digital Elevation Model (DEM) for Thames basin • Flood scenarios: Severe flooding conditions with gauge readings exceeding warning levels

Limitations

• Analysis based on simulated flood scenarios; actual flood patterns may vary • Property elevations estimated from DEM data; site-specific surveys recommended for high-risk properties • Depth-damage functions represent typical residential properties; commercial/industrial properties may differ • Climate change impacts not explicitly modeled; future risk may be higher