

Report 2: Advanced Climate Risk Assessment

Risk Assessment Only

Climate and market risk evaluation

Report ID: PG-RA-2024-123COLLINS

Critical Risk Profile:

- **Flood Risk:** 66/100 (HIGH) - Primary concern requiring immediate mitigation
- **Fire Risk:** 24/100 (LOW-MEDIUM) - Manageable with standard precautions
- **Coastal Erosion:** 22/100 (LOW) - Long-term monitoring required
- **Market Volatility:** 52/100 (MEDIUM) - Cyclical risk factor

Climate Projections (2024-2070):

Year	Temperature Δ	Rainfall Δ	Property Impact
2030	+1.4°C	-8%	18% flood frequency increase
2050	+2.3°C	-15%	\$220k/yr cooling costs
2070	+3.1°C	-22%	Structural integrity concerns

Mitigation Investment Plan:

- **Total Cost:** \$279,200
- **Expected Risk Reduction:** 35% overall
- **ROI Period:** 3.2 years
- **Insurance Savings:** \$44,000/year

Executive Summary

This risk assessment identifies flood exposure as the critical vulnerability (72/100 risk score), with climate projections indicating worsening conditions. The property faces \$1.2-2.4M potential flood loss, requiring prioritized mitigation. Fire risk remains moderate (45/100) despite 4.2km bushland distance due to urban interface factors.

Climate Risk Matrix

Hazard	Current Score	2030 Projection	Key Vulnerabilities
Flood	72/100 (High)	78/100	Ground floor plant room, basement parking
Fire	45/100 (Moderate)	52/100	Heritage timber elements, NE exposure
Erosion	38/100 (Low)	45/100	SW foundation (sandy clay soil)

Geographic Risk Analysis

Flood Modeling:

- 100-year flood depth: 1.8m (ground floor inundation)
- Evacuation challenge: Collins Street bottleneck during peak hours
- Insurance implications: \$50,000 excess for water damage claims

Fire Spread Simulation:

graph LR
Bushland-->|EmberAttack_4.2km| PropertyNE[Property NE Facade]
PropertyNE-->HeritageTimber[Heritage timber elements]
HeritageTimber-->MainStructure[Main structure ignition]

Climate Projections

Year	Temp Δ	Rainfall Δ	Sea Level Δ	Impact
2030	+1.4°C	-8%	+12cm	18% flood frequency increase
2050	+2.3°C	-15%	+28cm	\$220k/yr cooling cost increase
2070	+3.1°C	-22%	+46cm	Structural integrity concerns

Mitigation Implementation Plan

Priority	Action	Cost (AUD)	Timeline	Risk Reduction
1	Flood sensor network	\$4,200	60 days	15%
2	Stormwater upgrade	\$28,000	120 days	25%
3	Fire-resistant cladding	\$62,000	180 days	18%
4	Foundation stabilization	\$185,000	240 days	22%

Insurance Optimization

Coverage	Current	Post-Mitigation	Savings
Annual Premium	\$142,000	\$98,000	\$44,000
Water Damage Excess	\$50,000	\$25,000	50%

Business Interruption	90 days	60 days	33%
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