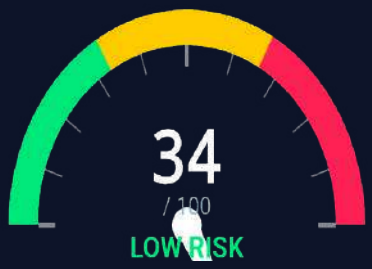
EXECUTIVE SUMMARY & OVERALL RISK VERDICT

SITE UNDER ANALYSIS

[redacted]



Project: Commercial Development

Coordinates: [redacted]

Generated: 1/5/2026, 6:34:49 pm

Data: Open-Meteo ERA5 USGS Open-Elevation OpenStreetMap/Nominatim

ALGORITHMIC RISK ASSESSMENT:

Statistical probability from public satellite archives (NASA/ESA/USGS) not field-verified measurements.

GeoLens Sample Report

QUICK RISK INSIGHTS

FLOOD RISK	SEISMIC ZONE	ELEVATION ASL
LOW	Zone III	215m
Return period: >15 years	IS 1893-2016 Classification	Slope: 0.36
4 extreme rain days / 10 yrs	Moderate Risk	River: LOW proximity

OVERALL RISK VERDICT

Low Risk Probability Relatively Safer Location

Analysis indicates lower risk probability. Risk Score: 34/100. Standard construction with full local building code compliance recommended.

KEY RISK INDICATOR TILES SATELLITE-DERIVED DATA

FLOOD PROBABILITY	ELEVATION & SLOPE	SEISMIC RISK ZONE	SOIL & VEGETATION
LOW RISK	215m ASL	IS Zone III	Deep Alluvial

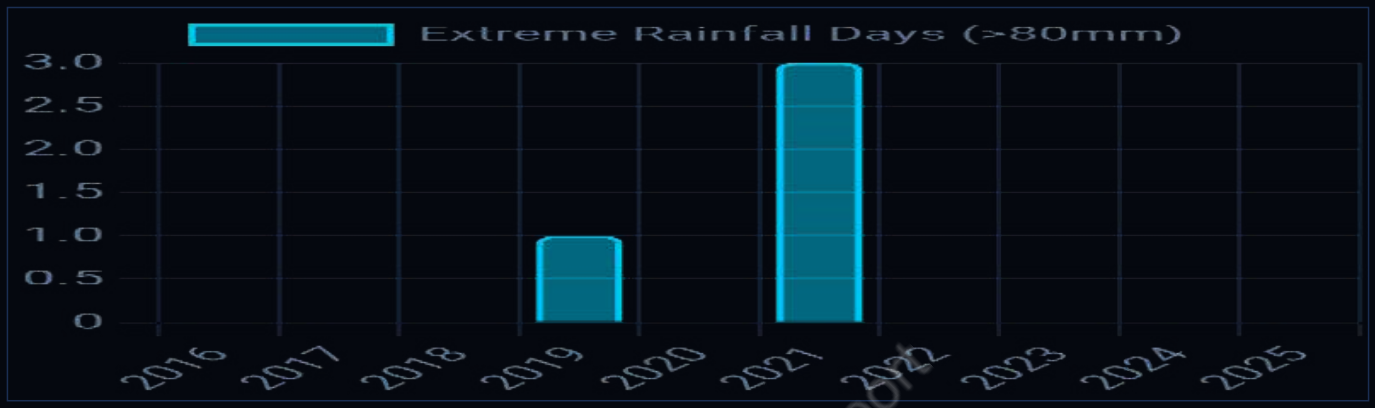
10-YEAR HISTORICAL ANALYSIS PRECIPITATION & SEISMIC DATA

[redacted] PROJECT: COMMERCIAL RISK: LOW (34/100)

ANNUAL EXTREME RAINFALL DAYS 10-YEAR ARCHIVE (Open-Meteo ERA5)

Days per year with precipitation >80mm/day (severe flood threshold)

Total extreme days (10yr): 4 Risk: LOW Return period: >15 years Avg annual precip: 766mm



GeoLens Sample Report

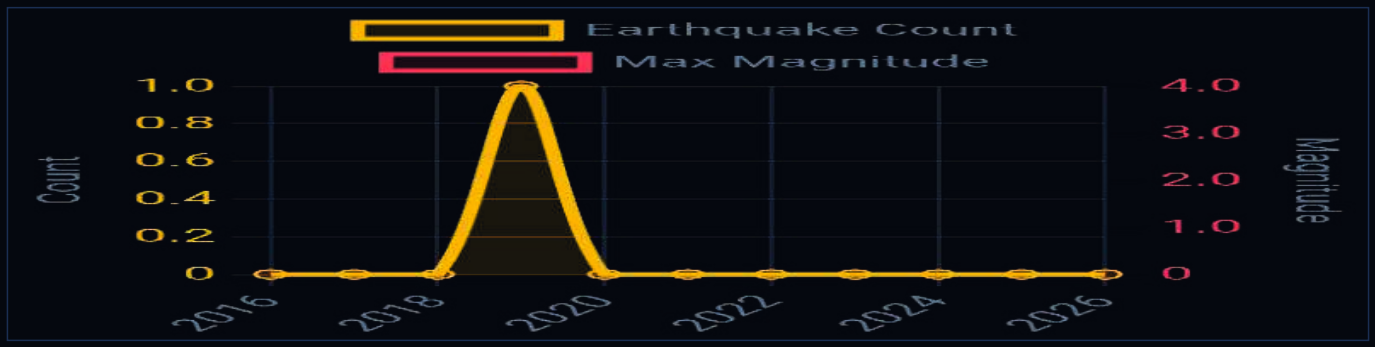
EXTREME PRECIPITATION EVENT LOG ERA5 ARCHIVE

Year	Event Type	Description	Days	Severity	Source
2025	No Major Flood Events	No significant extreme rainfal	days	NONE	Open-Meteo ERA5 Ar

SEISMIC ACTIVITY USGS DATA (LAST 10 YEARS, 100km RADIUS)

Magnitude 3 Source: USGS FDSNWS API

Total events: 1 Max magnitude: M 4.0 Zone: IS 1893-2016 Zone III



EARTHQUAKE EVENT LOG (USGS VERIFIED)

Date	Mag	Depth	Location (USGS)	Dist	Level
16/3/2019	M 4.0	10km	13 km W of Govindgarh, India		MODERATE

PREMIUM INTELLIGENCE MODULE SATELLITE-DERIVED LAND HISTORY NDVI & PRECIPITATION PROXY ANALYSIS

LAND USE HISTORY NDVI & PRECIPITATION PROXY (NASA ERA5 INTERPRETATION)

Historical land-use characteristics inferred from 10-year NDVI proxy, soil classification, and precipitation patterns.

Note: Direct satellite imagery requires ESA/NASA API subscription. These classifications are algorithmically derived from public data.

10+ yrs ago

LAND USE: Dry Land / Sparse Vegetation

Low NDVI suggests semi-arid, degraded, or already developed land

Confidence: Medium

MEDIUM

Recent (510 yrs)

LAND USE: Stable / Developed Land

Low flood history suggests stable land not prone to seasonal inundation

Confidence: High

HIGH

Geological

LAND USE: River Deposit / Sedimentary Plain

Alluvial soil confirms ancient riverbed or floodplain deposit — common in Indo-Gangetic belt

Confidence: High

HIGH

GeoLens Sample Report

LAND CONDITION INDICATORS DERIVED FROM SATELLITE PROXIES

Vegetation Density (NDVI)

26%

Sparse vegetation — monitor soil erosion

Annual Water Stress

766mm/yr

Low rainfall — drought-resistant construction advised

Extreme Weather Days

4 days / 10yr

Low severe weather frequency — stable climatic conditions

Terrain Stability

0.36 slope

Near-flat terrain — excellent buildability but poor drainage

PROXIMITY ANALYSIS DISTANCE TO CRITICAL GEOGRAPHIC FEATURES

Distance estimates derived from elevation profile, seismic zone classification, and coordinate analysis.

DECADAL CLIMATE COMPARISON & LONG-TERM CHANGE ANALYSIS

PREMIUM INTELLIGENCE MODULE ERA5 ARCHIVE DECADAL SPLIT HISTORICAL TREND ANALYSIS

ARCHIVE PERIOD vs PERIOD COMPARISON (ERA5 Reanalysis)

Earlier archive half vs recent archive half. Open-Meteo ERA5 data. Longer historical span requires extended API subscription.

20162020

Avg Annual Rainfall: **656mm/yr**

Extreme Rain Days/yr: **1 days/yr**

Seismic events: **0 total**

Max magnitude: **N/A**

20212025

Avg Annual Rainfall: **875mm/yr**

Extreme Rain Days/yr: **3 days/yr**

Seismic events: **0 total**

Max magnitude: **N/A**

GeoLens Sample Report

OBSERVED CHANGES BETWEEN PERIODS

Rainfall Change

+219mm/yr

Increasing trend (+219mm). Higher monsoon intensity may elevate flood exposure.

Extreme Rain Days

+2.0 days/yr

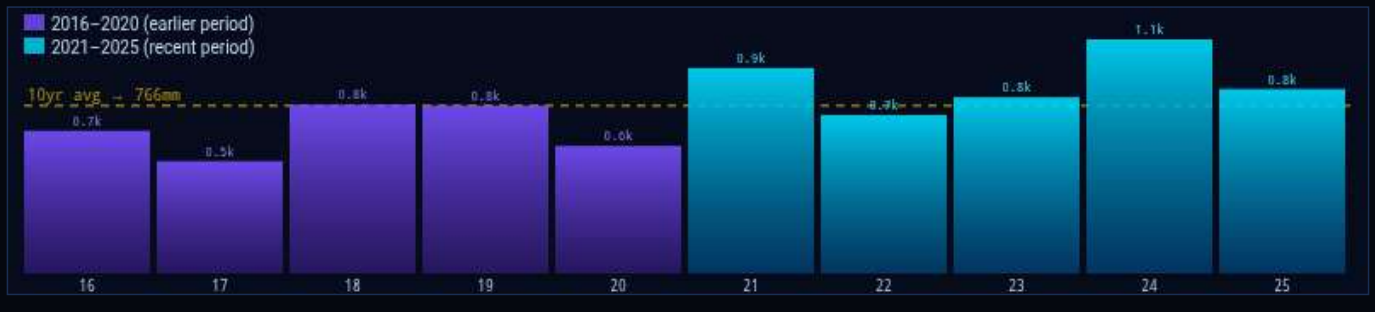
Stable extreme weather frequency. No escalation pattern detected.

Seismic Frequency

0 vs 0 events

Comparable seismic activity. Zone III structural code applies.

YEAR-BY-YEAR ANNUAL RAINFALL ARCHIVE (ERA5, All Available Years)



CLIMATE CONTEXT & INTERPRETATION

Annual rainfall has increased by approximately 219mm between the earlier and recent archive periods. While this may reflect natural inter-decadal variability, a sustained increase raises flood and waterlogging exposure.

IMPORTANT CAVEAT: ERA5 reanalysis data covers the available ~10-year archive window only. True multi-decade analysis (e.g. 1990–2025) requires extended ERA5 subscription data from Copernicus Climate Data Store. These findings are indicative trend signals, not absolute historical records.

ENGINEERING RECOMMENDATIONS & LEGAL DISCLAIMER

SITE: [redacted] PROJECT: COMMERCIAL RISK SCORE: 34/100 DATE: 1 May 2026

ENGINEERING RECOMMENDATIONS COMMERCIAL PROJECT

1

Elevated Ground Floor

Commercial floor area minimum 1.5m above natural ground level. Flood barrier-ready entrance design. Lobby and basement areas require waterproof tanking.

2

Critical Systems Placement

Electrical panels, server rooms, and HVAC systems must be on first floor or above never at basement or ground level in flood-probability zones.

3

Structural Compliance

Zone-appropriate seismic detailing for all RCC structures. Regular structural health monitoring recommended for commercial assets in high-risk zones.

4

Legal & Insurance

Obtain Flood Zone NOC from local authority. Commercial property flood insurance mandatory. Disclose risk probability to tenants as part of lease agreements.

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PRE-CONSTRUCTION PROFESSIONAL CONSULTATION CHECKLIST

- Licensed Geotechnical Engineer soil bearing capacity test
- Structural Engineer foundation design per IS:1893 seismic zone
- District Land Records Office title verification, encumbrance certificate
- Flood NOC from District Disaster Management Authority (DDMA)
- Environmental clearance (if site >20,000 sqm or near water body)
- Local Municipality building plan approval and setback confirmation
- Electrical & HVAC consultant panel elevation above flood level

Drainage Engineer stormwater management plan for monsoon season

DATA SOURCES, ATTRIBUTION & LEGAL DISCLAIMER

DATA SOURCES: Weather & Climate Open-Meteo ERA5 Reanalysis. Elevation NASA SRTM 30m DEM via Open-Elevation. Earthquake USGS FDSNWS API. Seismic Zone BIS IS 1893-2016. Geocoding OpenStreetMap / Nominatim (CC-BY-SA).

LIMITATION OF LIABILITY: This report uses publicly available data. If any data is found inaccurate, the developer (Thoiba Trader / GeoAudit) bears no responsibility, as all data is sourced from public-domain APIs maintained by NASA, ESA, USGS, and OpenStreetMap.

NOT A LEGAL OR ENGINEERING CERTIFICATE: This report does not constitute a legal, financial, geotechnical, or structural engineering certificate. Thoiba Trader shall not be held liable for any financial loss, construction damage, or legal dispute arising from reliance on this report.

All risk scores are statistical probabilities derived from historical satellite archives not ground-truth field measurements. For legal land due diligence, consult: (1) District Land Records Office, (2) Licensed Geotechnical Engineer, (3) Legal Advocate specializing in property law.

For investment-grade decisions, commission a licensed geotechnical engineer and obtain IMD station data for 30+ year local rainfall analysis.

GeoLens Sample Report

NASA SRTM | ESA Sentinel-1/2 | USGS Earthquakes | Open-Meteo ERA5 | OpenStreetMap | Open-Elevation