2025/07/10 Rainstorm

BGI INSIGHT HUB

C4-0086F GEOVISTA

Why BGI Insight Hub?

NM: low-lying region

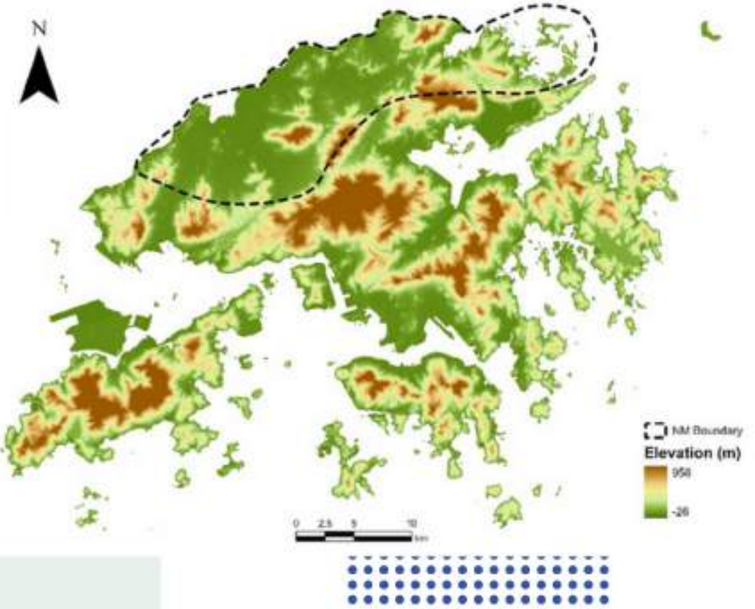
→ vulnerable to flooding

BGI: varied functionality & site requirements

→ incur development difficulties

→ limited promotion in Hong Kong

→ lack of transparency explaining decision-making process



- **Main Target User: General Public**

Page 1
BGI Suitability Map → Publicize infrastructure planning practice

Page 2
Flood Simulation Case Study → Promote BGI as solution to urban floods in NM

Page 3
Flood Resilience Dashboard → Increase public awareness on flood resilience

Spatial Data List

Digital Terrain Model	Slope	Slope	BGI Site Suitability Analysis
	Elevation	Elevation	
Digital Topographic Map iB5000	River/Channel Location	Distance to River	
Road Centreline	Road Location	Distance to Roads	
Pipe (Stormwater)	Pipe Location	Distance to Pipe	
Land Utilization	LULC	Land use cover	
Outline Zoning Plan	Environment Sensitive Zone		BGI Site Selection for Case Study
Priority Sites for Enhanced Conservation	Available Site for BGI		
Temporary Shelters	Temporary Shelter Location		Flood Risk and Evacution Map
Digital Topographic Map iB5000	Bridges Location		
	River/Channel Location		

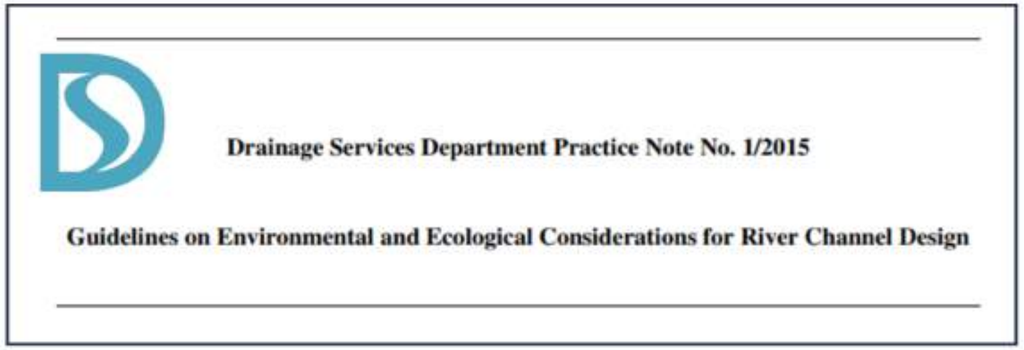
Criteria Selection & Weighting

Multi-Criteria Decision Analysis (MCDA) with Weighted Linear Combination (WLC) for BGI Land Suitability Assessment (LSA)

Slope	Flatter slopes optimize runoff management and BGI structural stability	0.35
Distance to River	Proximity to rivers enhances hydrological connectivity.	0.25
Elevation	Lower elevations minimize flooding risks and support BGI functionality.	0.2
Land use cover	Suitable land use ensures feasible BGI implementation on vacant or green spaces.	0.1
Distance to Pipe	Proximity to pipes ensures efficient stormwater drainage integration.	0.08
Distance to Roads	Higher accessibility for maintenance and public use supports BGI as urban recreational spaces.	0.02

Criteria Selection:

DSD guidelines on BGI development



Drainage Services Department Practice Note No. 1/2015

Guidelines on Environmental and Ecological Considerations for River Channel Design

Weight determination: **Analytic Hierarchy Process (AHP)**

Weight adjustment: **Correlation Analysis**

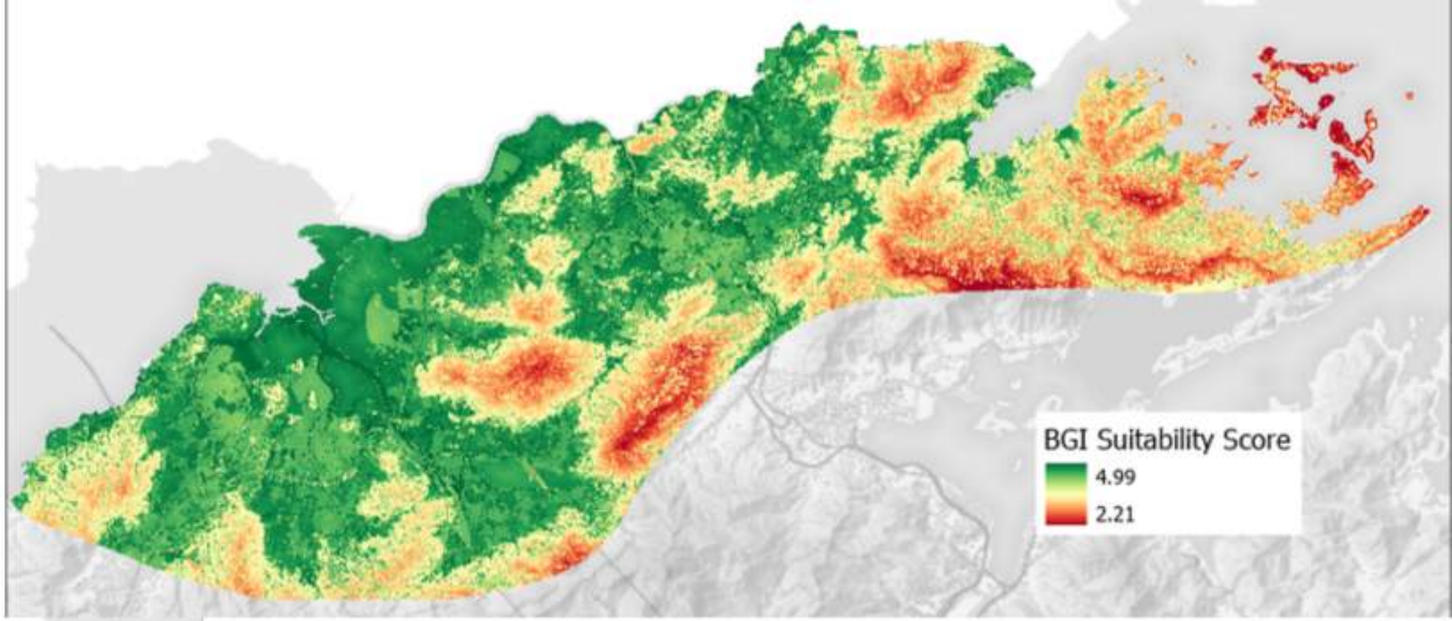
CORRELATION MATRIX

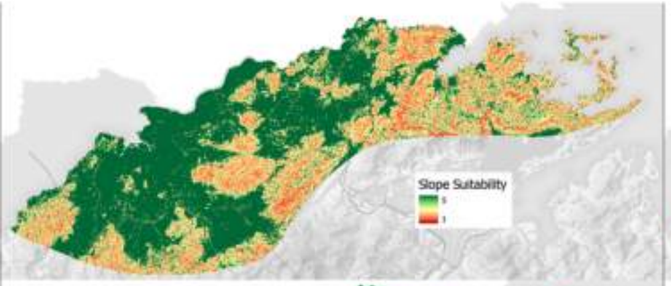
Layer	1	2	3	4	5	6
1	1.00000	0.23677	0.59923	-0.33582	0.42777	0.40186
2	0.23677	1.00000	0.31474	-0.16703	0.42041	0.42779
3	0.59923	0.31474	1.00000	-0.41601	0.42994	0.39682
4	-0.33582	-0.16703	-0.41601	1.00000	-0.30498	-0.27764
5	0.42777	0.42041	0.42994	-0.30498	1.00000	0.75813
6	0.40186	0.42779	0.39682	-0.27764	0.75813	1.00000

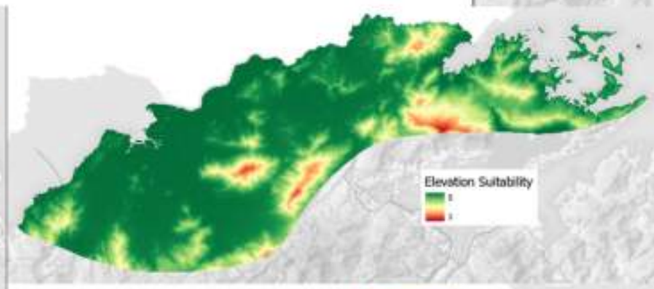
Site Selection

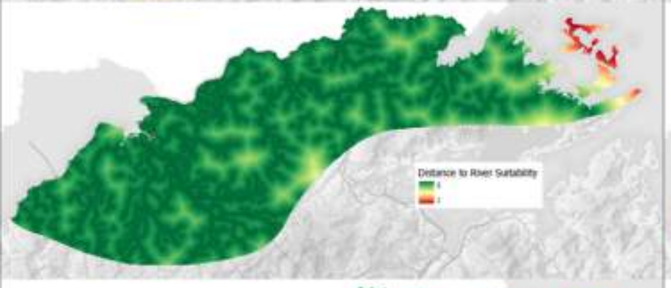
Suitability Score Computation:

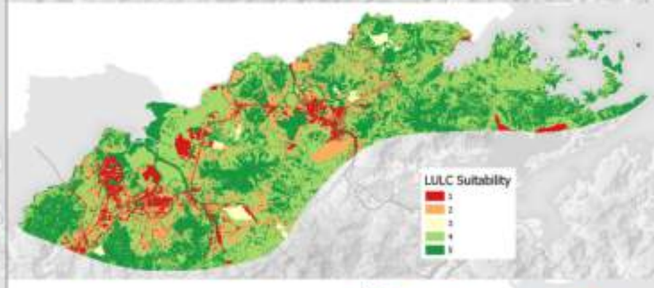
- Use **Rescale by Function / Reclassify** to translate criteria data values to a suitability scale from 1 to 5
- Use **Raster Calculator** to calculate the weighted suitability score of BGI location

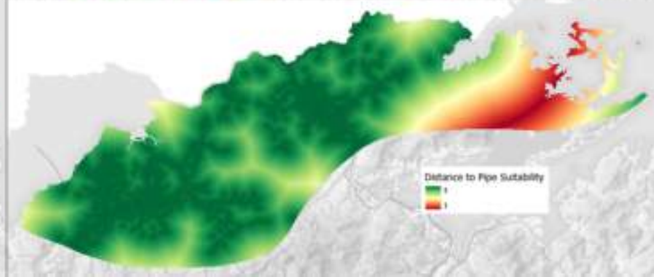








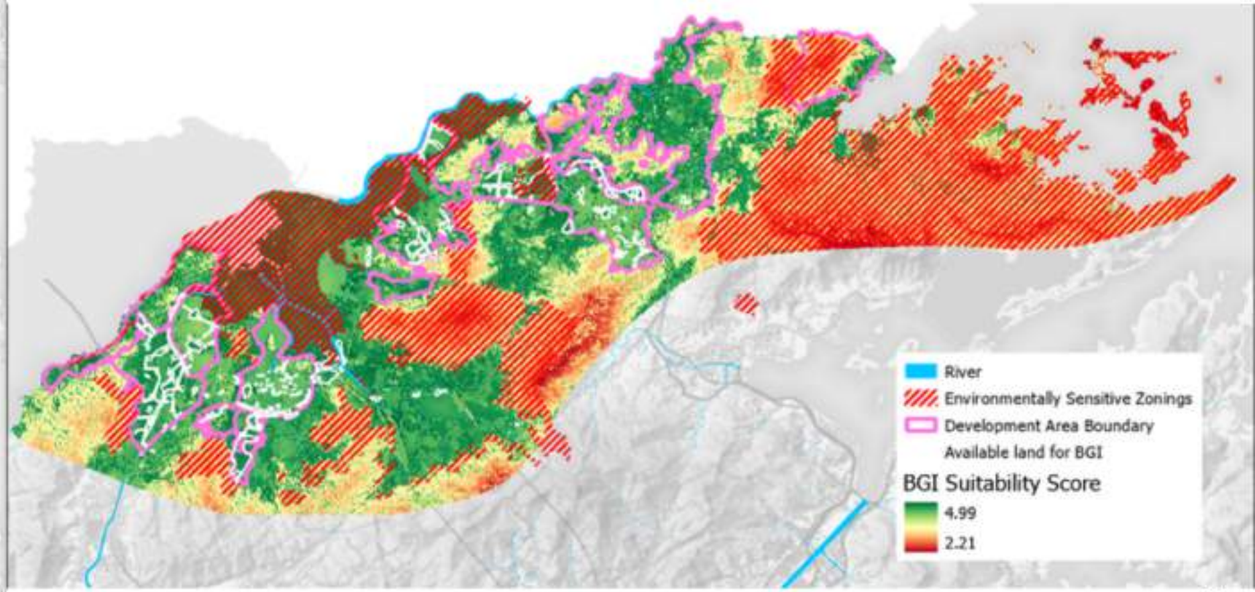




Filter sites by **OZP**:

X **ESZ**: Country park, Priority Sites, Conservation Areas, Protected Areas

✓ **Open Space/Undetermined zoning**

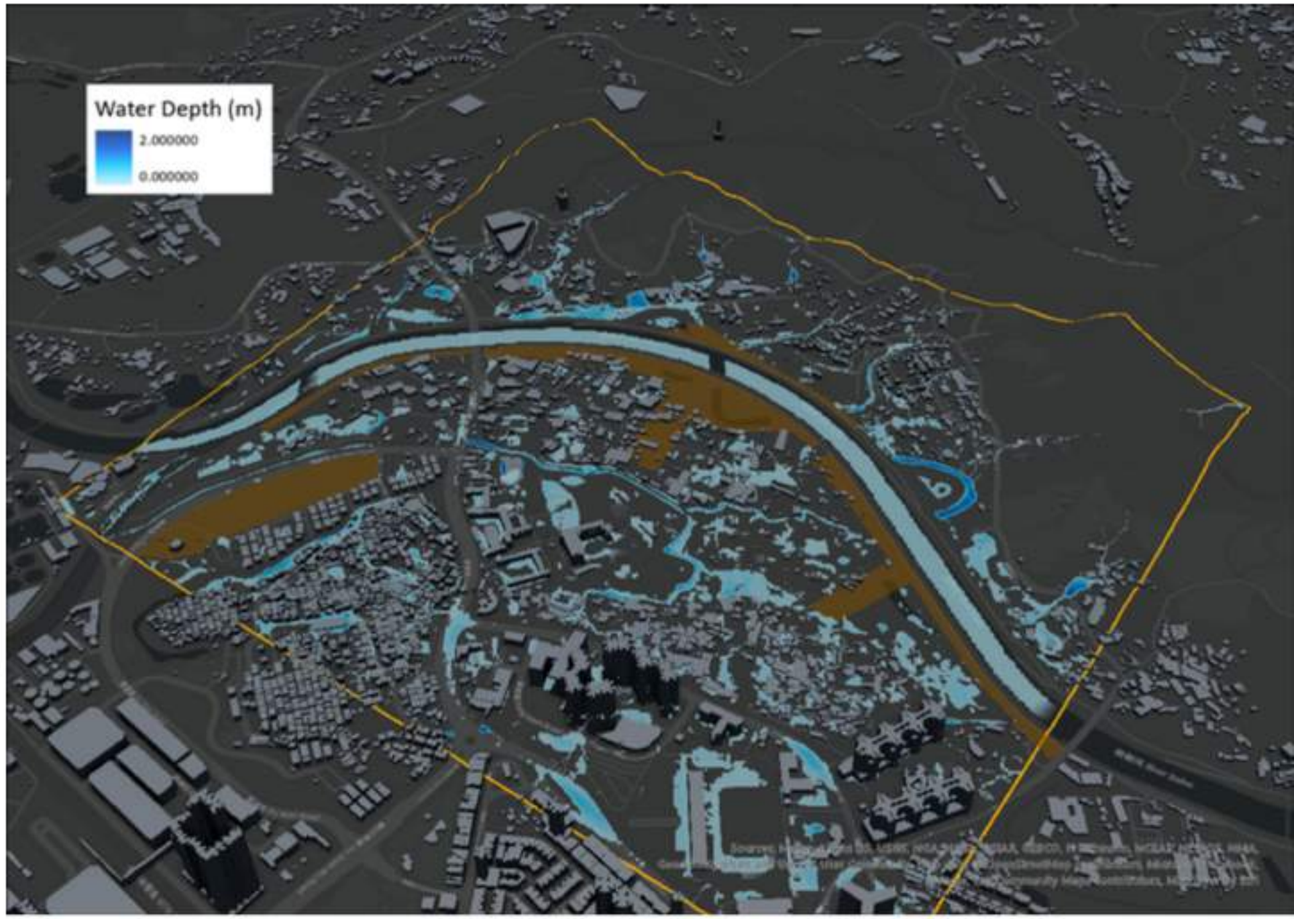


Flood Simulation Case Study

- Fanling North NDA bounded by Ng Tung River
- Set Area of Interest
- Configure rainfall rate, infiltration rate, simulation duration

Rainfall Rate	160 mm/h (500-year flood)
Infiltration Rate	Depends on land surface
Simulation Duration	1h

- Compare before-and-after water depth after raining
- =>Visualize the effectiveness of BGI on flood alleviation



Flood Resilience Dashboard

水浸期間

- 留意最新的天氣資訊。
- 如果洪水不斷湧入屋內，應到屋內的最高處暫避。
- 如在戶外，應立即往高處暫避。
- 遠離洪水上面或已被洪水掩蓋的橋樑。
- 盡量遠離洪水、河道或山坡。
- 避免涉水而行。深六吋的急流已足以把人沖走；如不得不涉水逃生，應利用堅固的長物檢測前方的水深和地面是否穩固。
- 切勿將車輛駛至水浸地方。水深兩呎已足以令車輛浮起。
- 車輛如被洪水所困，應留在車內。
- 如車內水位不斷上升，應爬到車頂暫避。
- 切勿嘗試在洪水中行走、游泳或駕駛。

【2025 年 5 月更新】

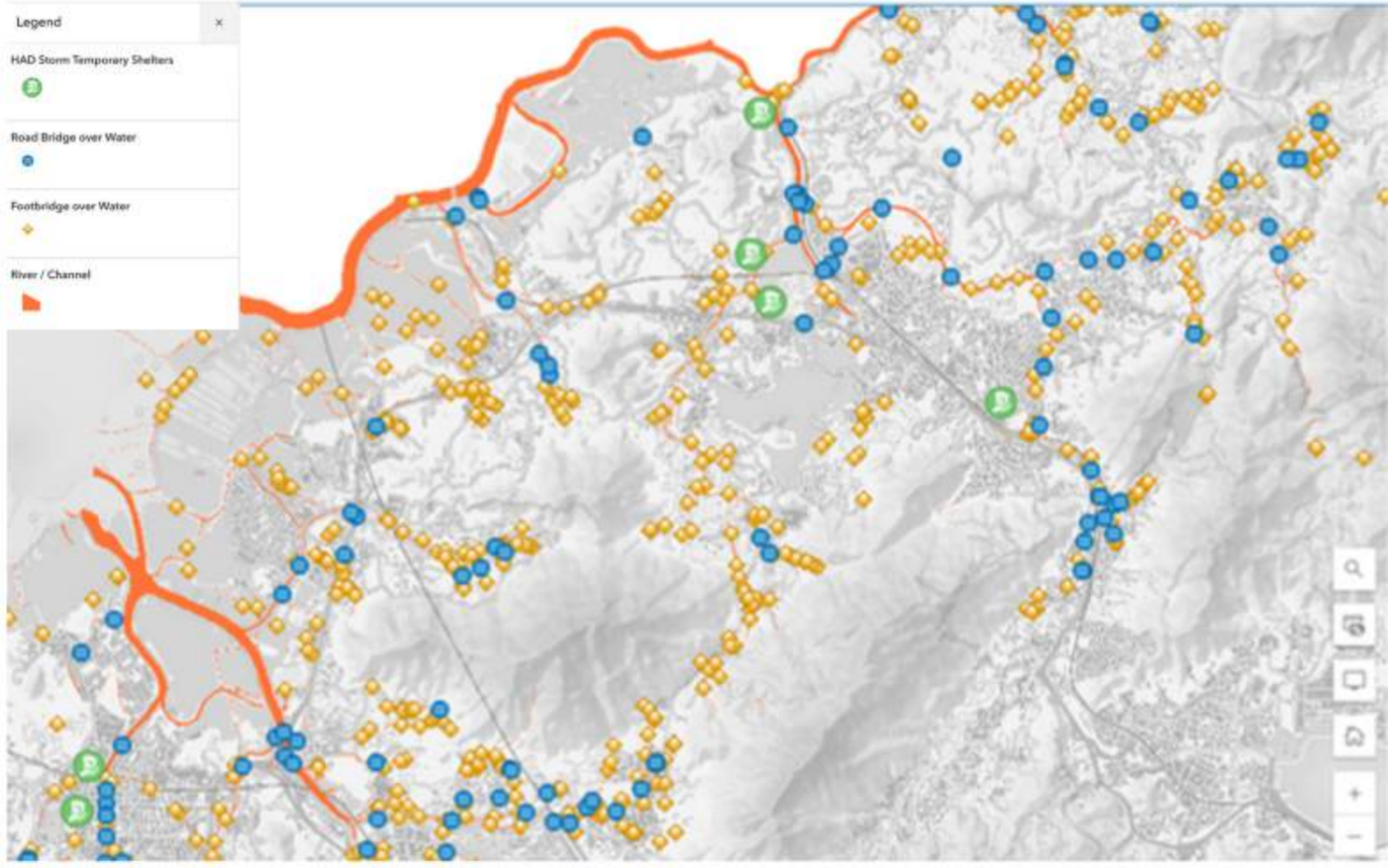
民政事務總署臨時庇護中心

（當八號或以上熱帶氣旋警告、山泥傾瀉警告或紅／黑色暴雨警告信號生效或遇到其他緊急情況時，民政事務專員會按需要開放合適的臨時庇護中心）

- Provide suggestion on **evacuation**:
  - Temporary shelters of Home Affairs Department
  - River / channel
  - Bridges / footbridges over water

=> Increased preparedness of flooding incident

- BGI information cards with proposed sites



Flood Resilience Dashboard
Examples of BGI in Hong Kong