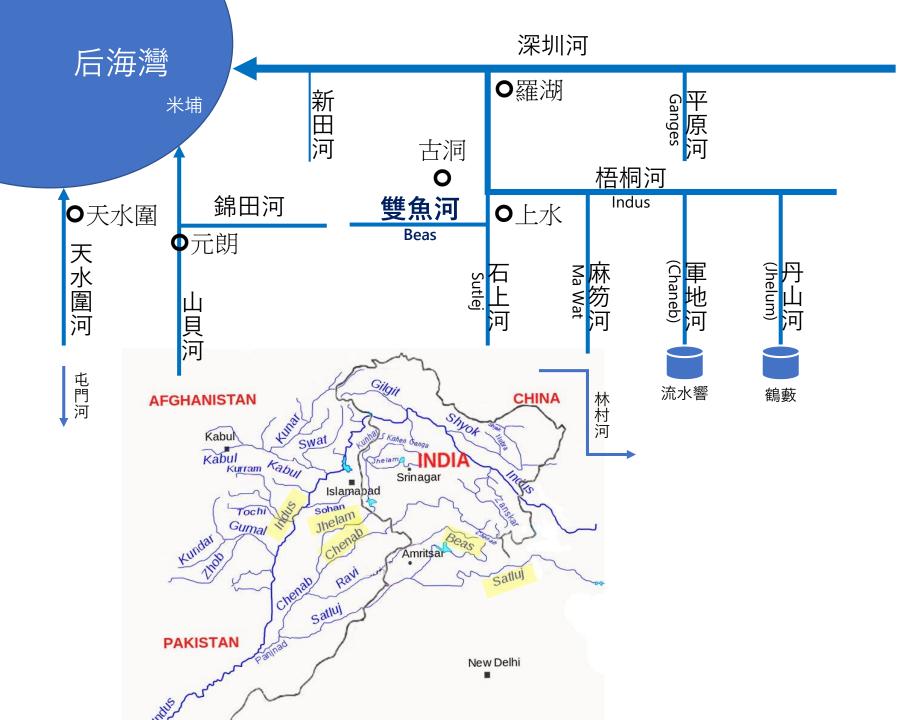
My River, My Community

Dr Lincoln Fok

Department of Science & Environmental Studies

The Education University of Hong Kong











Hillslope coupling Mass movement Debris flow initiation & scour

Bedrock 基岩

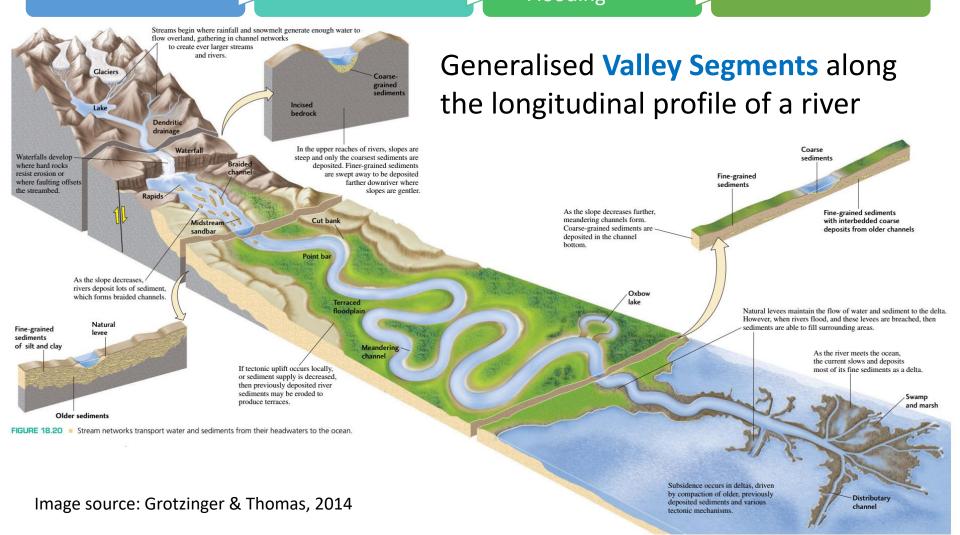
Debris flow Flash flood Sediment transport

∆lluvial 沖積

Sediment storage Channel migration River avulsion **Flooding**

Estuarine 🔟

Tide Wave Alternating flow direction

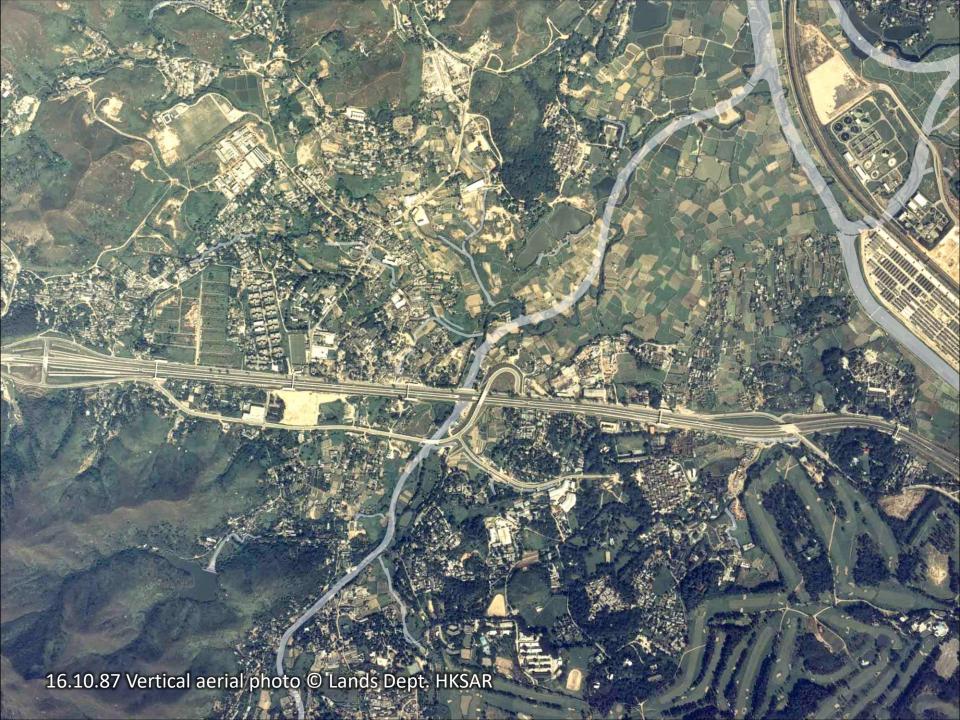














In a floodplain

今年最大豪雨五小時雨量百五毫米

新界北區大水浸成澤國



三十八人被困



Villagers in uproar after homes swamped for second time



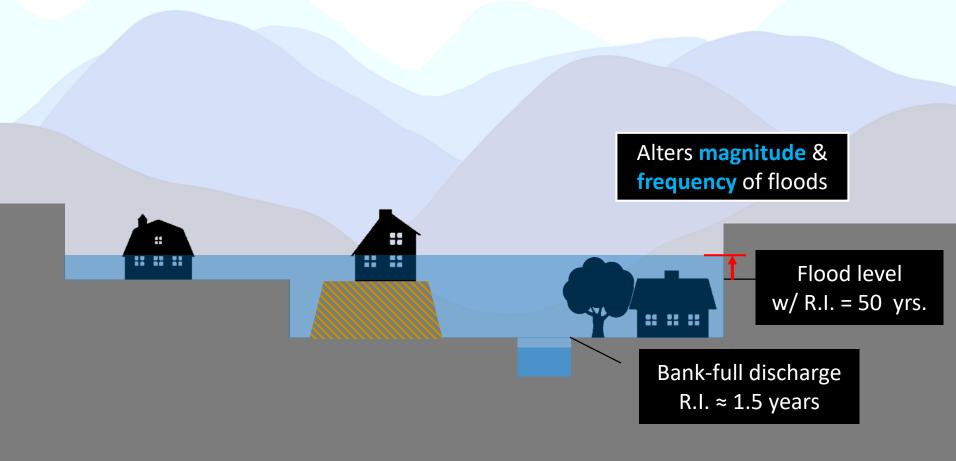








Floodplain Encroachment



Flood Control Channel

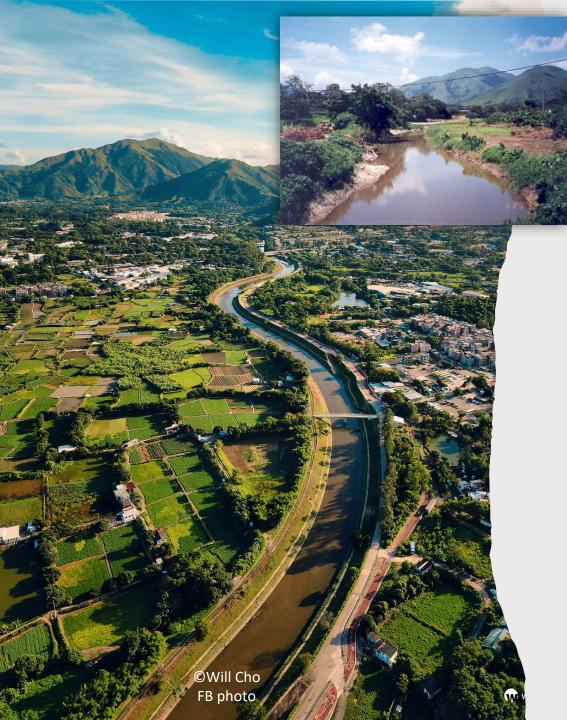
Types of Drainage	Design R.I. (Yrs)
Urban, trunk	200
Urban, branch & main rural	50
Village	10
Intensive agricultural land	2-5







Bank-full discharge R.I. = 50 years



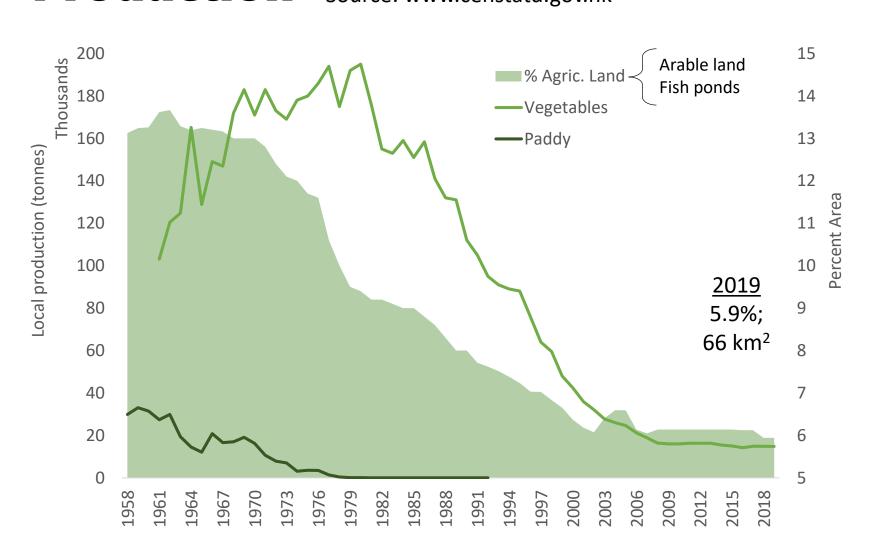
Flood Control Channels

- Functions: control & deliver floodwater downstream
- Straightened
 - Horizontally & vertically
- Enlarged
 - Width & depth
- Lining
 - Smoothen
- Which increases:
 - Bank-full discharge
 - Flow <u>velocity</u>
 - Sediment transport
 - Water <u>temperature</u>
- <u>Uncouple</u> river & its floodplain





Agricultural Land Area & Production Source: www.censtatd.gov.hk



Agricultural weirs



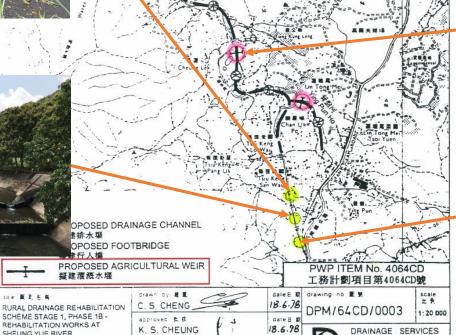
Ying Pun



tite 羅尼名馬

SHEUNG YUE RIVER

Tak Shek Wu (2) partly deflated



PROJECT MANAGEMENT DIVISION 工程管理事

DEPARTMENT 渠 務 署

HONG KONG 香港



Kwu Tung

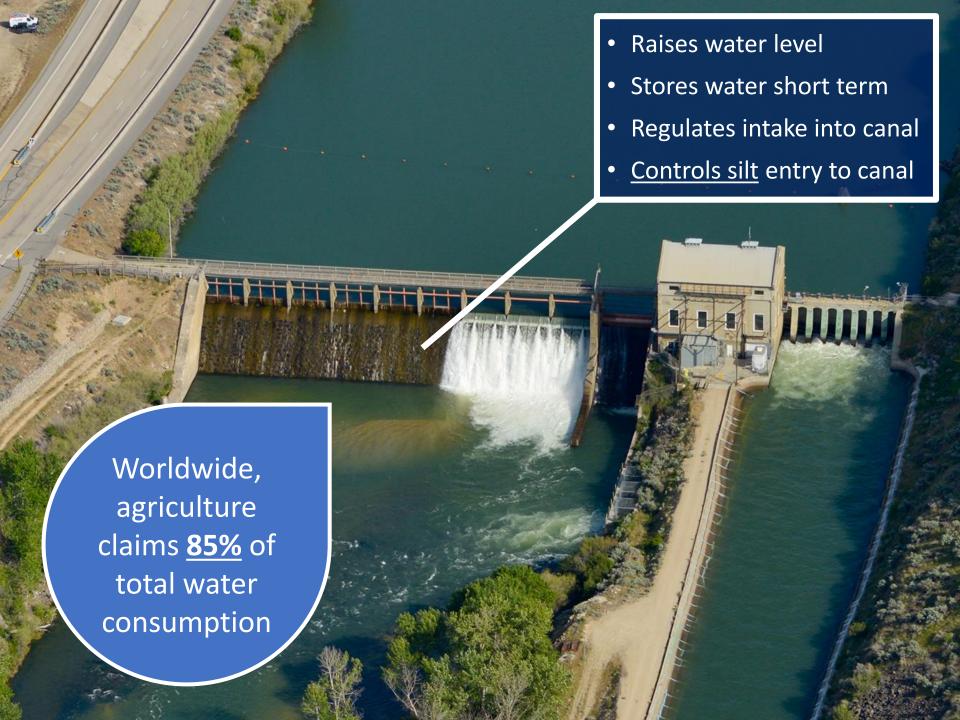


Cheung Lek, deflated



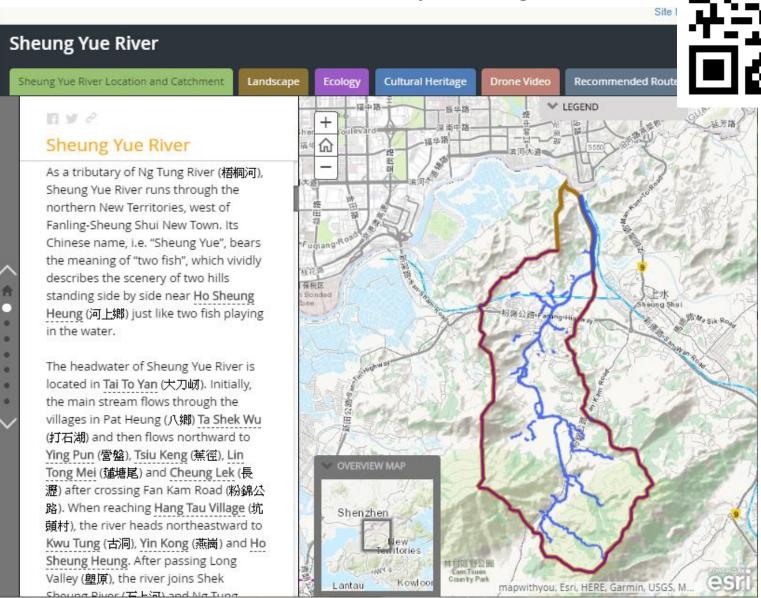
Tak Shek Wu (1), deflated





JC-WISE Rivers@HK Database

www.jcwise.hk/gis/





 https://www.theguardian.com/uknews/2021/sep/14/let-the-river-run-breachingtamars-banks-a-boon-for-wildlife-and-climate

Farmland allowed to be reclaimed by River Tamar

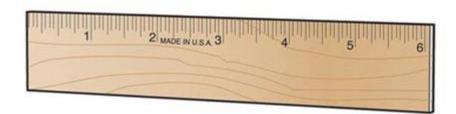


https://www.itv.com/news/westcountry/2021-09-17/wetland-created-on-banks-of-river-tamar-to-reduce-flooding-and-attract-wildlife



Water Quality & beneficial uses

- WQ is quantified by measuring an array of WQ indicators or parameters (參數; e.g. salinity ‰)
- Which are compared to **WQ standards** (標準; statutory criteria) or **guidelines** (準則; recommendations)
 - WQ standards are defined according to different water beneficial uses / functions
- Sometimes these parameters are composited to form an WQ index (指數) for public (lay) understandings



No. of points awarded	溶解氧 DO (% saturation)	生化需氧量 BOD ₅ (mg/L)	氨氮 NH ₃ -N (mg/L)
1	91 – 110	<3	<0.5
2	71 – 90 111 – 120	3.1 – 6	0.5 – 1
3	51 – 70 121 – 130	6.1 – 9	1.1 – 2
4	31 – 50	9.1 – 15	2.1 – 5
5	<30 or >130	>15	>5

HKEPD WQI

Index	Descriptor
3.0 – 4.5	Excellent
4.6 – 7.5	Good
7.6 – 10.5	Fair
10.6 – 13.5	Bad
13.6 – 15.0	Very Bad

Chinese WQ Standard:

Environmental quality standards for surface water

Grade	Functions	Note
I	Waters of headwaters & natural reserves	5
II	Habitat for rare species and spawning grounds	Drinking water
III	Contact recreation & aquaculture	
IV	Industrial uses and non-contact recreation	
V	Agricultural uses and landscaping	
Inferior V	Lost all functions	

Conductivity

(導電率)

Water	Typical range [μS/cm]
Distilled	0.5 - 3.0
Rain	2 – 100
Тар	50 – 800
Surface	100 – 10,000
Irrigation threshold	<3000
Sea	50,000

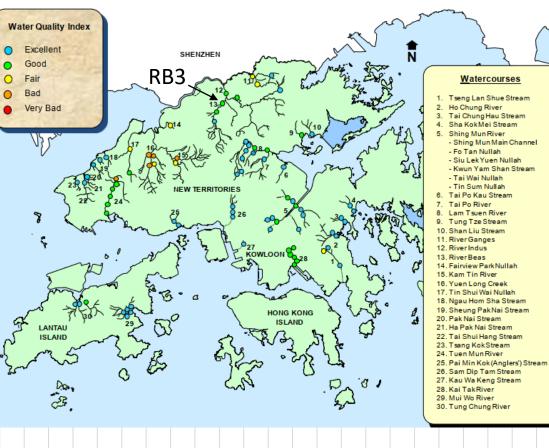
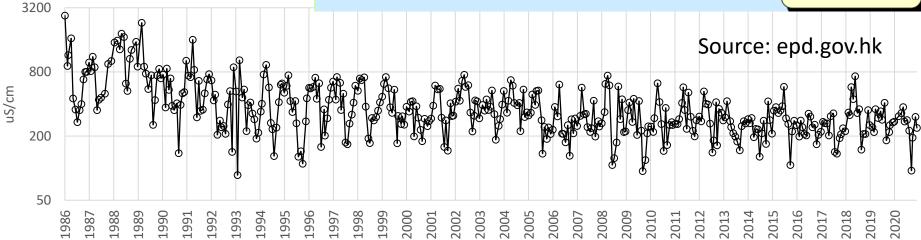
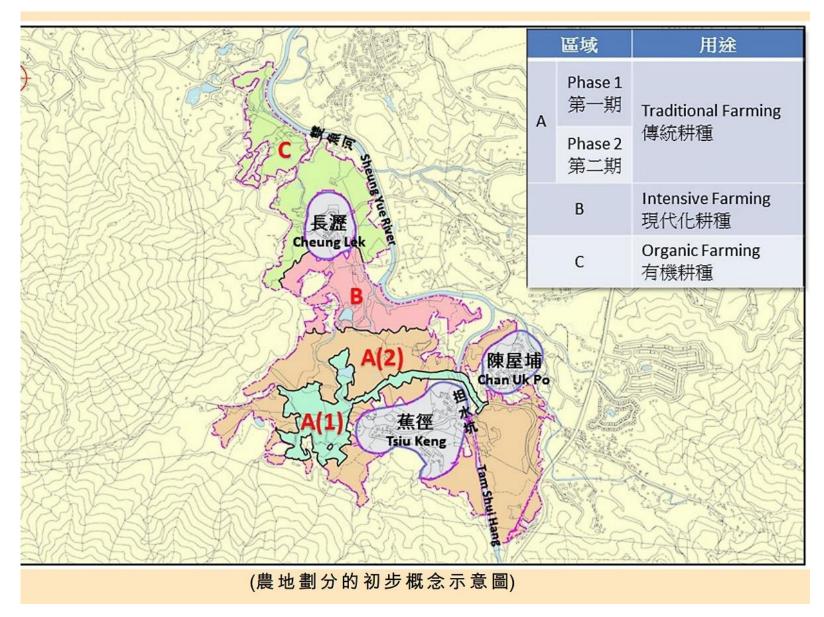


Figure 4. Map of river monitoring stations and their WQI gradings in 2019

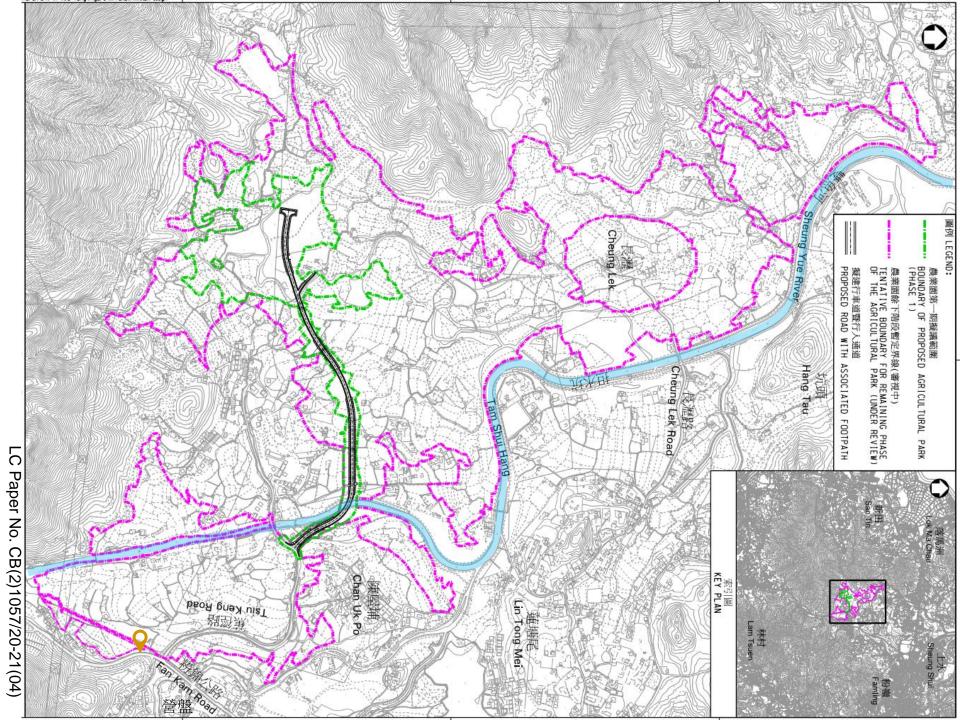




古洞南農業園



https://www.afcd.gov.hk/tc_chi/whatsnew/what_agr/files/agri_park_leaflet_for_issue.pdf



【元朗好去處】元朗紫色隱世花海!只有一天生命的鳳眼藍花 髻山簡易行山路線 2019

holiday.presslogic.com

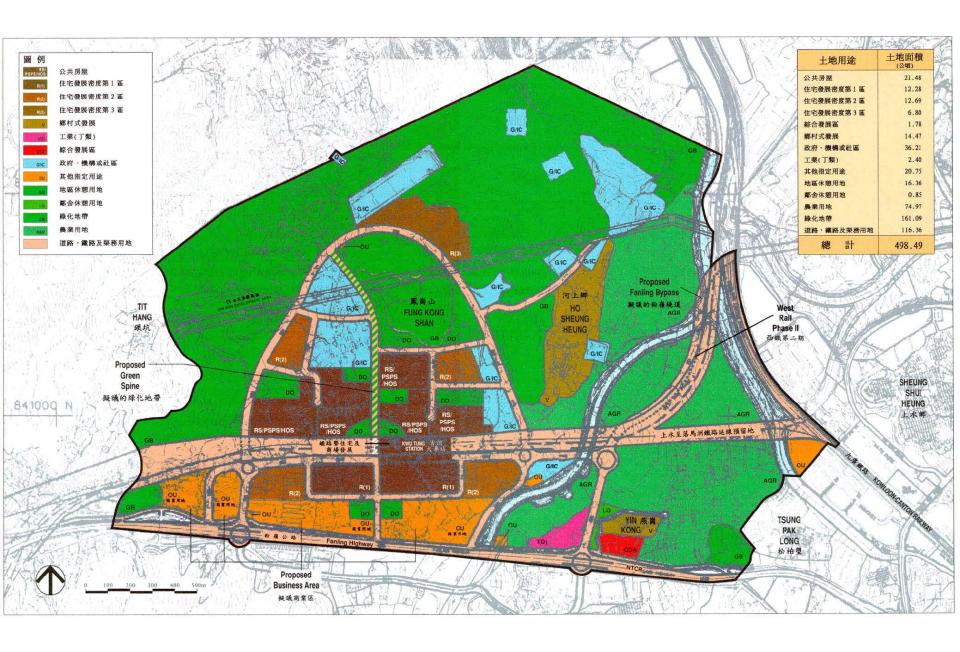


Common

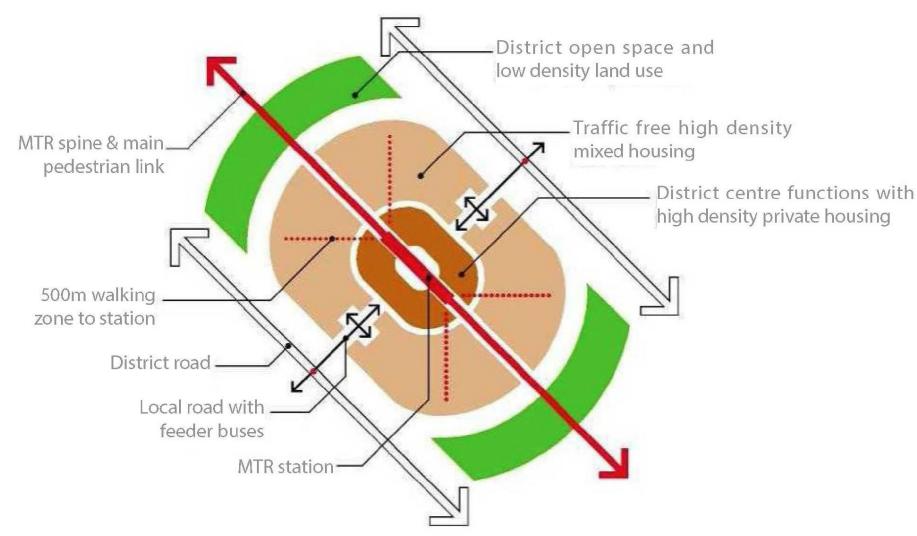
hyacinth

water





MTR's Rail & Property Design Model



Source: Sylvie Nguyen, HKU

