JOCKEY CLUB WATER INITIATIVES ON SUSTAINABILITY AND ENGAGEMENT

INTERNATIONAL SYMPOSIUM ON WATER SUSTAINABILITY 2022

SESSION 4 - THE VALUES OF URBAN RIVERS: A SOCIAL SCIENCE PERSPECTIVE

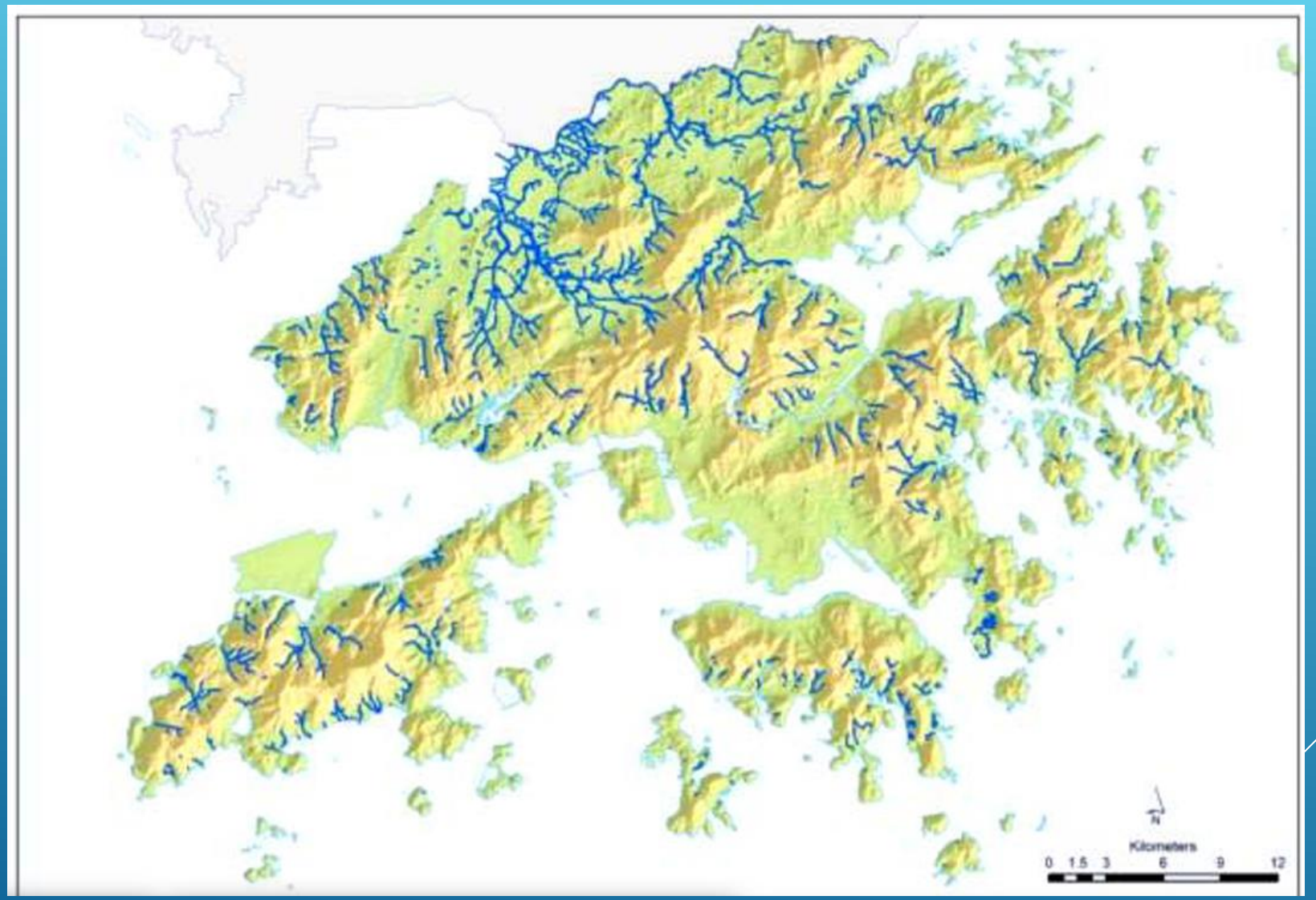
THE UNIVERSITY OF HONG KONG
FACULTY OF SOCIAL SCIENCES

Back-to-Basics –

Simple Principle but Complex Manipulation for Hong Kong Rivers

Dr. Luk Ki CHENG
Director, Green Power

There are more than 200 rivers in Hong Kong which are short and small.

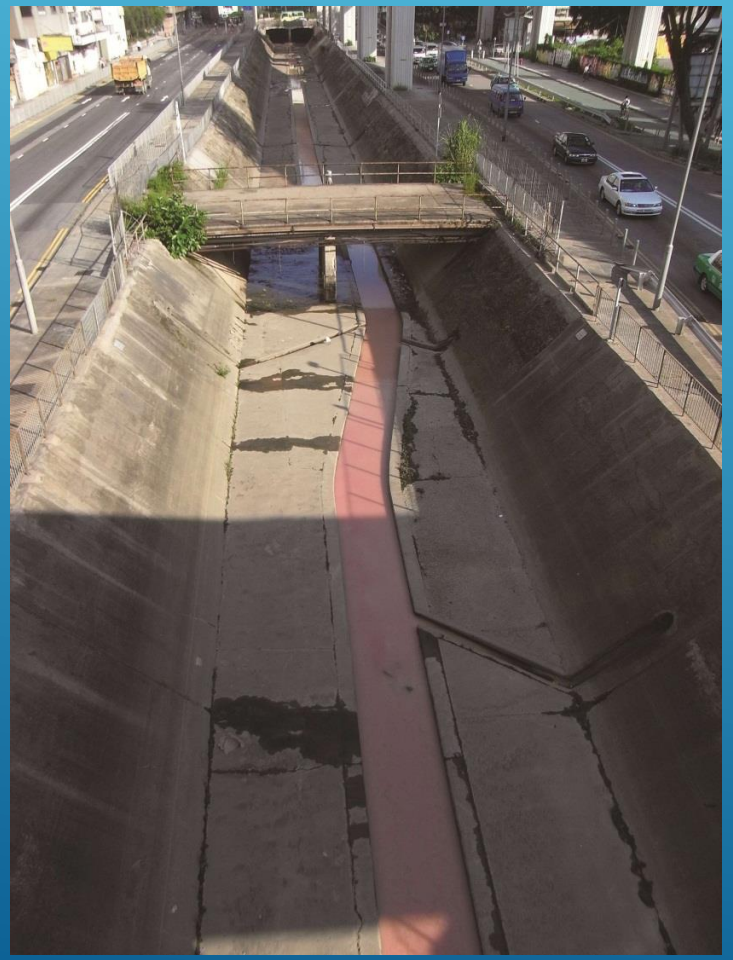


http://www.socsc.hku.hk/jcwise/wp-content/uploads/2018/05/Final_MRMC_SYR_Dr-Ng_27Apr2018.pdf

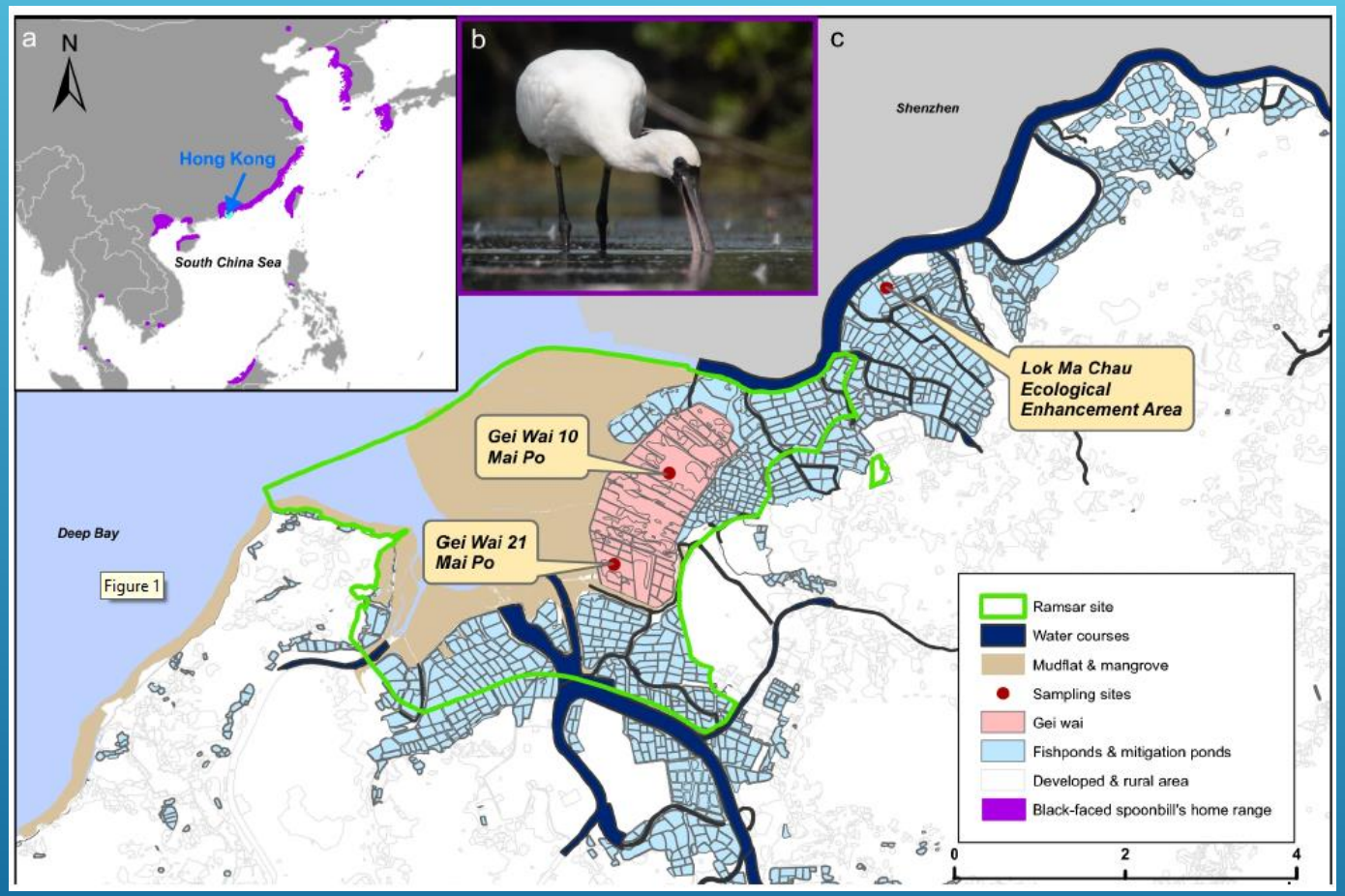
Many lowland rivers have been channelized for **flood prevention**, top priority for drainage management in Hong Kong.

Flooding in villages of Hong Kong in 90's

Subsequently, channelized rivers become monotonous and polluted during urbanization which are perceived as eyescores and some have been decked. Rivers are dying!



The issue of **river conservation** in Hong Kong was initiated by a massive river training project that encroached a Ramsar Site.

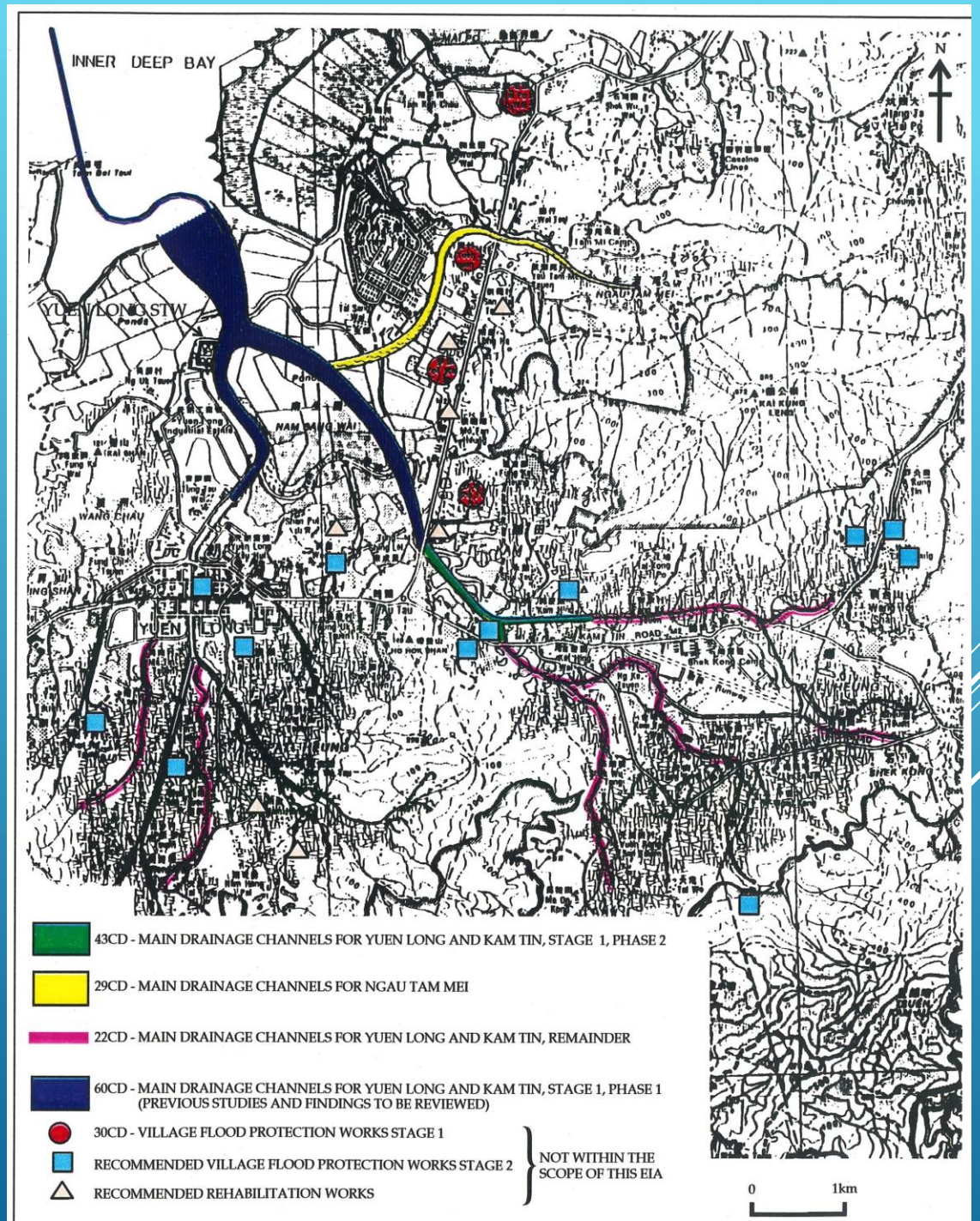


Huang, PY., Poon, E.S.K., Wong, A.T.C. *et al.* DNA metabarcoding reveals the dietary composition in the endangered black-faced spoonbill. *Sci Rep* **11,** 18773 (2021). https://doi.org/10.1038/s41598-021-97337-w

Main drainage works encroached Ramsar Site in Deep Bay, Hong Kong in late 1990s:

River training of lower courses of Shan Pui River & Kam Tin River (dark blue section)

leading to loss of wetlands.



In response to criticisms, "**green measures**" were implemented, including rip-rap banks, mangroves replantation and retaining the natural beds.

Contrary to conventional channelized rivers,
the trained river sections have become a hotspot of bird watching.

Basic components for conserving a river were recognized:

- **Hydrology**
- **Water quality**
- **Ecology**
- **Landscape**

They are also basic components for

- **River mechanisms**, i.e.

moderating flood, self-purification, connection to underground water, erosion/deposition, re-aeration, pH adjustment and etc.

- **River functions**, i.e.

water supply, fishery, navigation, irrigation, recreation, moderating microclimate, flood discharge

And for "**Ecosystem Services**" of rivers

In the early 2000s, the discussion deepened when the authority proposed to “rehabilitate” a old concrete nullah – **Yuen Long Nullah** (Shan Pui River), which runs through a densely populated town.

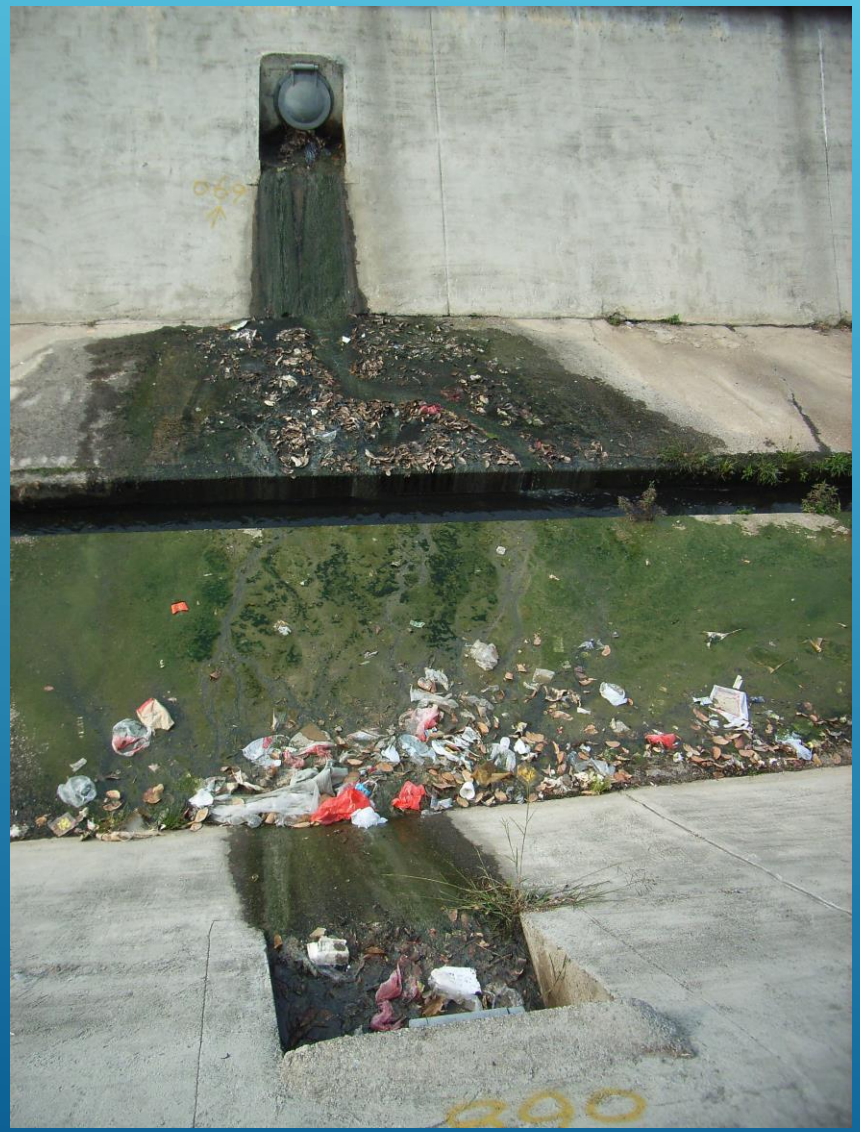
Rehabilitation of Yuen Long Nullah

What's wrong with Yuen Long Nullah (or Hong Kong's urban rivers)?

- Filthy water
- Full of Rubbish
- Odour nuisance
- Monotonous appearance

Another list of practical and social concerns then emerged.

Stormwater pollution & refuse



Ecological connectivity to the sea – blocked by an fibradam.

Vulnerability of in-channel installations

Discharge fluctuation

Vulnerability of in-channel installations

sediment deposit & erosion

Vulnerability of in-channel installations

Greening

Revitalization = ?

- Rehabilitation
- Beautification
- Greening
- Compensation
- Mitigation
- Reinstatement

Basic question: Purposes?

Face lifting

or

Problems solving?

Still wandering between !

Afterwards, the authority incorporated **ecological features** in the river training projects (esp. for natural and rural rivers) to mitigate potential negative impacts.

Basic references for eco-engineering a river
(considered by green groups)

- old aerial photos
- private and official photos of the old sites
- literature research
- folk and official records
- interviewing nearby residents
- reference to the unspoiled river sections or other tributaries nearby.

But engineers go for structural solutions.

Fish ladder in Lam Tsuen River

Fish shelters provide refuge for fish and other aquatic animals in Ho Chung River

Mitigation wetland and **greening** in San Tin Eastern/Western Channel

“**Permeable**” **bedding** in River Beas

- "Green measures (structures)" were implemented with consultation of green groups and professionals.
- However, green measures are designed and constructed with engineering mind, e.g.
  - *Sig-zip concrete inclined channels for fish ladders*
  - *Uniform-sized pebbles as the sole natural substrate for riverbeds*
  - *Winding dry-weather flow channels pretend naturally changing meanders*
  - *Plantation, gardening actually, in the channel*

"Basic" green designs for engineers

At the same time, some urban channels were **revitalized** by addressing past concerns and enhancing other values such as aesthetics, water-friendliness, ecology and leisure pursuit.

Kai Tak River

Dry weather flow interception (water quality)

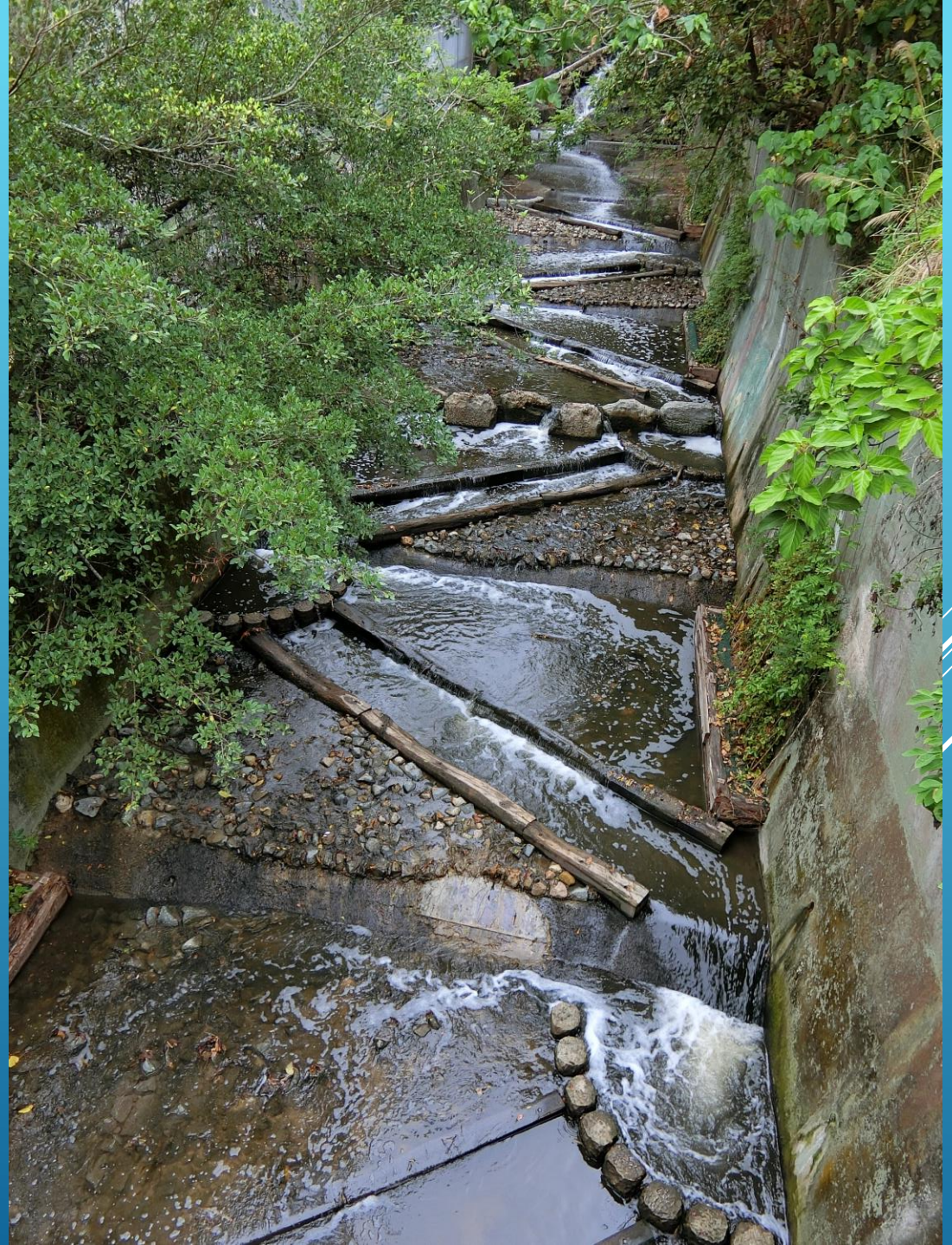
ARTIFICIAL ROCKS (LANDSCAPE & ECOLOGY)

Angling (leisure pursuit)

Interpretation panels (public education)

JORDAN VALLEY WATER CHANNEL

Fish ladder (ecology)



Greening/plantation (landscape & ecology)

Viewing deck for public enjoyment (water friendliness or get close to water)

- Green measures were implemented with consultation of green groups and professionals.
- Green measures are designed with **compromises**, e.g.
  - *Dry-weather flow interception to improve water quality*
  - *"Greening" to soften the monotonous structures*
  - *Exhibition panels for public education*
  - *Amenities for public enjoyment*
- **Basics for urban river revitalization**

Directions for the future,

- biodiversity,
- climate resilience,
- integration with urban landscape and
- connection to the community

that pose key challenges for the modification and maintenance of natural and manmade channels in the territory.

Tung Chung River Park (conserving a natural river under urbanization)

魚梯
Fish Ladder

河道活化區
River Revitalisation Zone

動態康樂區
Active Zone

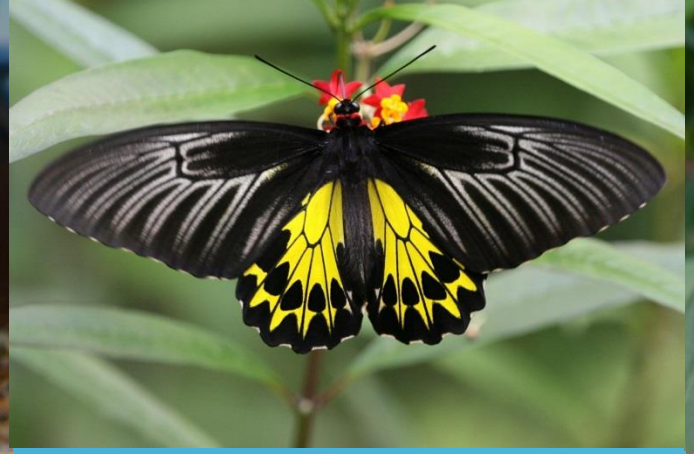
渡河及親水設施
River Crossing and Active Water Play

觀鳥屋
Bird Hide

步行徑
Walking Trail

靜態康樂及保育區
Passive Recreation & Conservation Zone

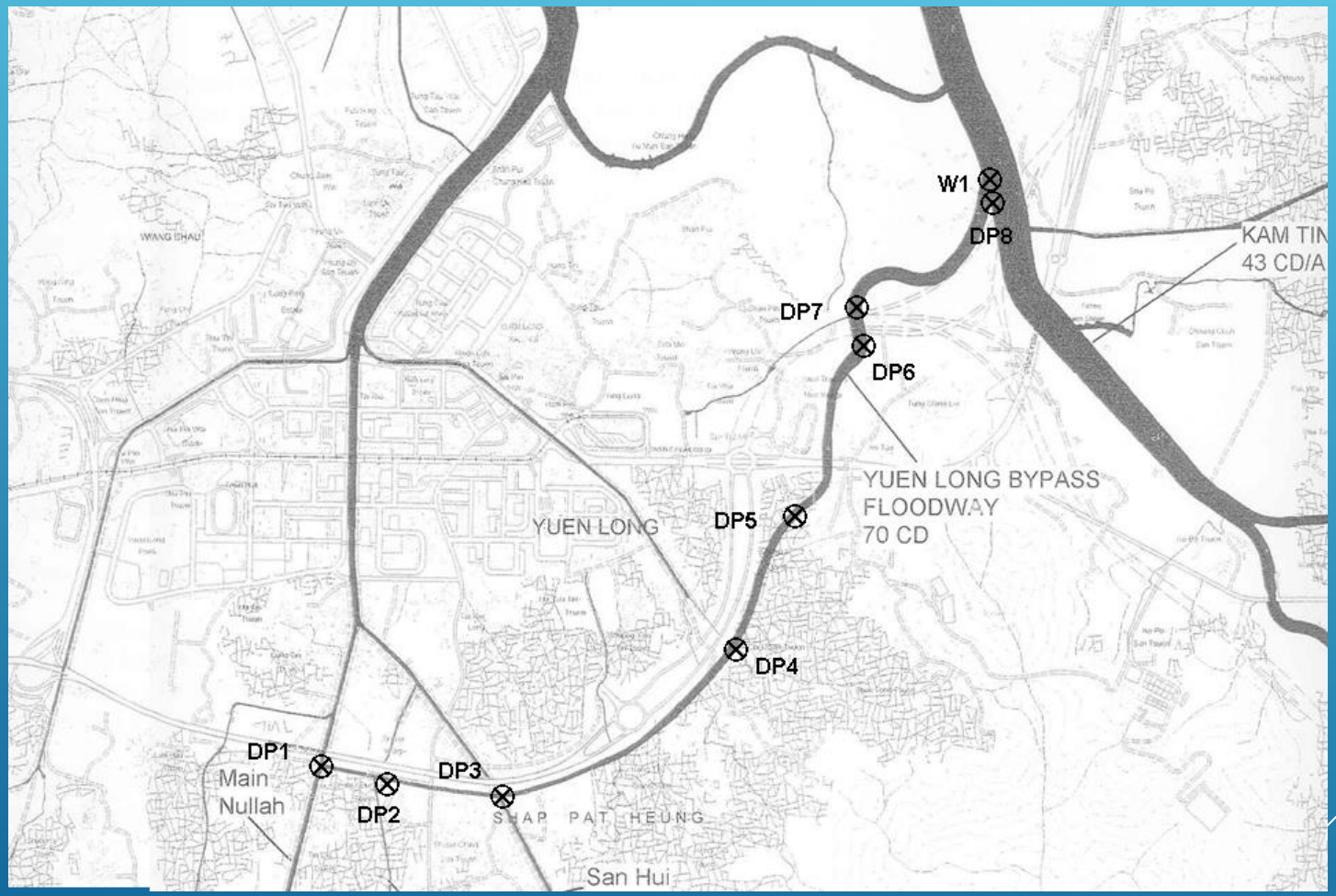
蝴蝶花園
Butterfly Garden

Biodiversity




Yuen Long Bypass Floodway



Climate resilience

Tsui Ping River (Revitalization for the city and community)

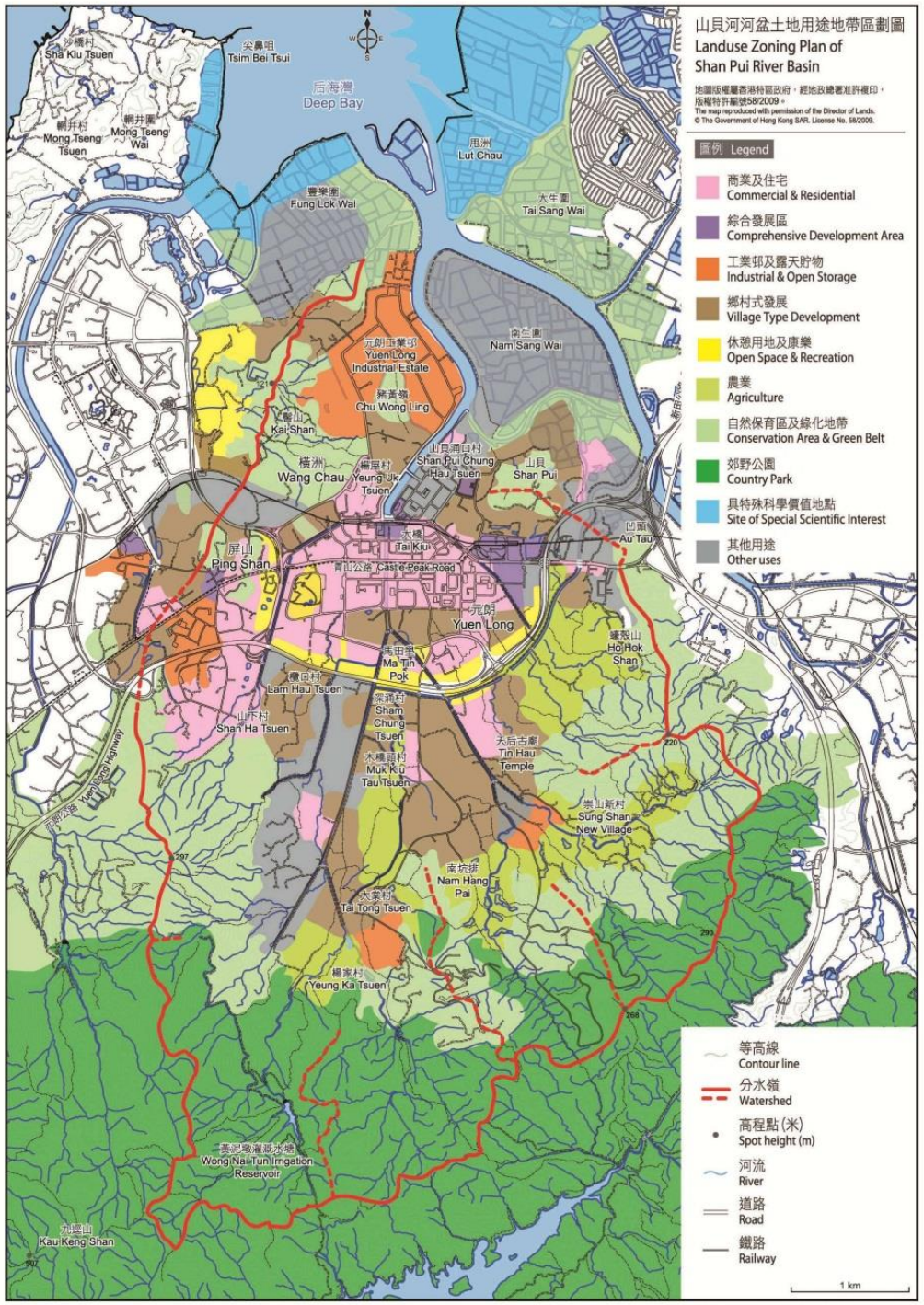
(Photomontage of the revitalized Tsui Ping River)

BASICS FOR RIVER CONSERVATION

- A Whole River approach
  - from headwater to estuary
- River Basin Management
- Co-existence approach
  - preserve for long-term benefits

LET'S START

- Explore alternatives other than engineering natural rivers/streams
- Keep the rivers/streams/channels clean and clear
- Searching for suitable and ecologically friendly channel structures and materials
- Land use planning incorporating "river basin management"




綠色力量
GREEN POWER
Treasure our rivers!