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Caritas Chan Chun Ha Field Studies Centre

From Channel to Stream
Kai Tak River

Course Objective

➢ Knowledge:
- To understand the usage of the urban channel
- To understand the management strategies of urban channel
- To analyze the relationship between river and surrounding land uses
- To analyze the effectiveness of river revitalization

➢ Skills:
- To master the skills in measuring the width and depth of urban channel
- To classify and record the land use and land use distribution
- To observe the river management strategies and understand their relationship with the surrounding environment
- To conduct questionnaire survey

➢ Value:
- To appreciate the urban channel after revitalization
- To aware the importance of good water quality to China and Hong Kong.

Name： _____ **Group**： _____

Date： _____

Relevance to Senior Secondary Geography Curriculum

✓ Managing Rivers Environments: A continuing challenge

Prior knowledge

Background

Existing Kai Tak River running along Choi Hung Road starts from Po Kong Village Road, through Tung Tau Estate, Prince Edward Road East, Kai Tak Development area and finally connects to Victoria Harbour. It is one of the major drainage channels in East Kowloon area.

Kai Tak River, former called Kai Tak Nullah, experienced serious water pollution in 1960-70s. The sewage discharged from the factory and domestic sewage flowed directly into the Kai Tak Nullah, causing bad smell from the nullah.

In 2000s, the drainage capacity of Kai Tak River was inadequate to meet the current flood protection standard. Severe flooding incidents have occurred at Choi Hung Road beside Kai Tak River during heavy rains.

Therefore, the Drainage Services Department (DSD) has planned to start improvement works in 2011 in order to enhance the drainage capacity of the nullah. DSD has implemented works to rehabilitate the River and introduce aesthetic, greening, landscaping and ecological elements at the sides and bottom of the nullah. The project was completed in 2018.

Objectives of the project

1. Enhance drainage capacity.
2. Increase greening and landscape beautification facilities.
3. Improve community environment, link up surrounding area.

Source from web site of Drainage Service Department (https://www.kaitakriverwts.hk/index.php)

River Management Strategies

Classify the followings management strategies into hard and soft engineering.

1. Channelisation	2. Weir	3. Gabion	4. Afforestation
5. Dam	6. Concrete Frame with Soil Sacks	7. Land Use Zoning	8. Flood warning system
9. Diversion channels	10. Dykes	11. Planting at river banks	

Hard engineering：＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿

Soft engineering：＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿

STAGE 1: PLANNING AND PREPARATION

- ➢ **Key point of fieldwork: River management strategies**

- ➢ **Enquiry question: Study the river management strategies of urban channel and their effectiveness**

- ➢ **When to collect the data?**

Date	
Time	
Season	
Precipitation three days before the fieldwork	Heavy Rained / Drizzle / No Rain
Weather conditions	

Why do we have to pay attention to the weather condition before conducting the fieldwork?

- ➢ **Where to collect the data (please refers to the map on p.11)**
    Along Kai Tak River (AB) and Tai Shing Street to Tseuk Luk Street (XY)

- ➢ **How to collect the data？**

Research items		methods of collecting primary data (check all that apply)	Required equipment / Tool (if any)
1. River Management Strategies	a. Artificial structure (e.g. channelisation, monitoring systems)		
	b. Land use zoning		
2. Effectiveness of river revitalization	a. Drainage capacity 　i. river width 　ii. river depth		
	b. Water quality		
	c. Ecosystem (e.g. number of fishes)		

Methods of collecting primary data

A. Measurement	B. Scoring	C. Mapping
D. Questionnaire/Interview	E. Observation	F. Counting

Equipment

measuring Tape	laser distance meter
colour Pencil	**lead line**

*For reference only, the outlook may differ by brands.

➢ **Sampling**

1. **What sampling method is used in the following items?**   Point   Line   Gird

   a) Land Use along transect XY   ☐   ☐   ☐

   b) Access the effectiveness of revitalization at   ☐   ☐   ☐
   study site P, Q, R and B

2. **Conducting questionnaire research with the passersby you meet, which sampling method is used?**

   Simple random / Systematic / Purposive / Stratified/ Convenience/ Quota sampling

3. **Completing questionnaire research with 5 residents who live nearby, which sampling method is used?**

   Simple random / Systematic / Purposive / Stratified/ Convenience/ Quota sampling

STAGE 2: DATA COLLECTION

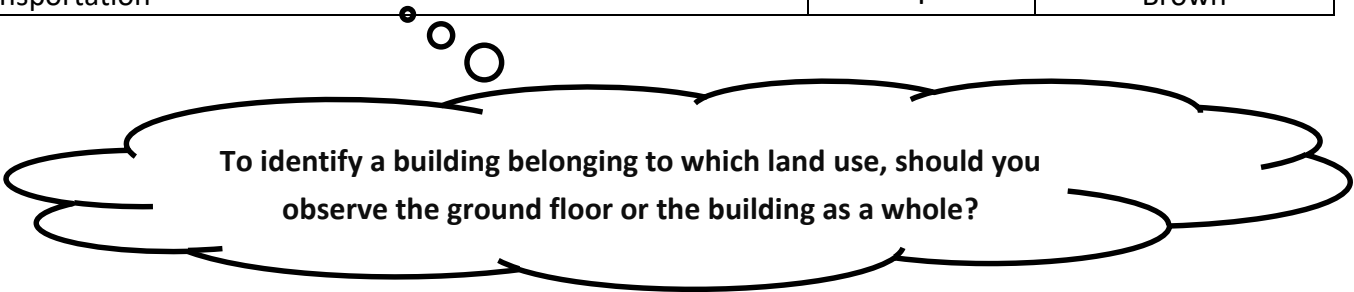## A. Name, location and usage of different River Management Strategies

Referring to the map (p.10), which of the following management strategies can you find at location 1-7 along transect AB? Describe their usage and function.

River management strategies	Usage (describe and choose the correct function)	Location (1-7) on the map	River management strategies	Usage (describe and choose the correct function)	Location (1-7) on the map
Channelisation	Function: ☐ prevent flooding ☐ monitor water level ☐ enhance habitat		**Benchmark (河道基準尺)**	Function: ☐ prevent flooding ☐ monitor water level ☐ enhance habitat	
Remote Monitoring System	Function: ☐ prevent flooding ☐ monitor water level ☐ enhance habitat		**Flow Deflectors and fish shelters**	Function: ☐ prevent flooding ☐ monitor water level ☐ enhance habitat	
Box Culvert(箱形暗渠)	Function: ☐ prevent flooding ☐ monitor water level ☐ enhance habitat		**Submerged planters**	Function: ☐ prevent flooding ☐ monitor water level ☐ enhance habitat	

B. Land Use along the river and transect

Walk along the transect AB and XY and classify the land use in the study area.   Use the colour scheme below to show the land use distribution on the base map (p.10).

Land use*	Code	Colour
Commercial	Com	Red
Residential	Res	Blue
Industrial	I	Black
Government/Community/Institution (G/C/I) (e.g. hospital, school, library, etc.)	G/C/I	Yellow
Recreational	Rec	Green
Vacant	V	Purple
Mixed commercial and residential	Mix	Orange
Transportation	T	Brown
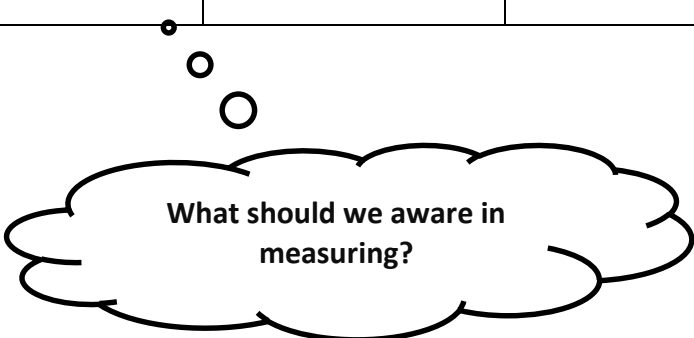
To identify a building belonging to which land use, should you observe the ground floor or the building as a whole?

C. Drainage capacity

Measure the width of the river in the following sites with 2 different equipment and measure the water depth with lead line.

Site		P	Q	R	B
Channel width (m)	Method 1: using laser distance meter				
	Method 2: using measuring Tape				
Water depth (cm)	i. Actual depth				
	ii. Bankfull stage				

What should we aware in measuring?

D. Effectiveness of river revitalization

➢ **D1 Scoring**

According to the following table, evaluate the effectiveness of the river revitalization.

How to decide the scoring criteria？

Score	0	1	2	3
Clearness of the river water	Very turbid	A bit turbid	Clear	Very Clear
Bad Smell	Strong	Moderate	Slight	None
Number of fishes in water	0-15	16-30	31-45	46 or more
Number of birds*	0-2	3-5	6-8	9 or more
Vegetation along the river	None	Few planters	Many planters	Both trees and planters
Number of people using the sitting out area along the river	0-2	3-5	6-8	9 or more

*Only count the birds living in the riversides and hunt for food in the river.

Site	P	Q	R	B	Total score of each item	Effectiveness of revitalization
Clearness of the river water					points	
Bad Smell					points	
Number of fishes in water					points	
Number of birds					points	
Vegetation along the river					points	
Number of people using the sitting out area along the river					points	
Total score of each site	points	points	points	points		
Effectiveness of revitalization						

Total score of each site	Effectiveness of revitalization
14 or above	Very High
9-13	Moderate
4-8	Low
3 or below	Ineffective

Total score of each item	Effectiveness of revitalization
10 or above	Very High
7-9	Moderate
4-6	Low
3 or below	Ineffective

D2 Questionnaire Survey

Interview_____residents near the river about their comments on river revitalization.

Do you live near Kai Tak River？

☐ Yes   ☐ No. *(Not necessary to answer the following questions. Please search for another respondent.)*

Did you live near Kai Tak River in 2016 or before?

☐ Yes   ☐ No. *(Not necessary to answer the following questions. Please search for another respondent.)*

The following is to understand the residents' perception of the river revitalization (after 2019).
1 is strongly disagree and 5 is strongly agree

		Strongly Disagree				Strongly Agree
1	Bad smell of river has been lessened	1	2	3	4	5
2	After revitalization (2019), the surrounding environment was beautified	1	2	3	4	5
3	After revitalization (2019), the drainage improved obviously	1	2	3	4	5
4	After revitalization (2019), the number of living organisms increased obviously (more fishes, birds and etc can be seen)	1	2	3	4	5
5	After revitalization work (2019), you have always used the facilities on it (ie sitting out, recreation facilities and etc)	1	2	3	4	5

6.   What should other aspects be improved in Kai Tak River?
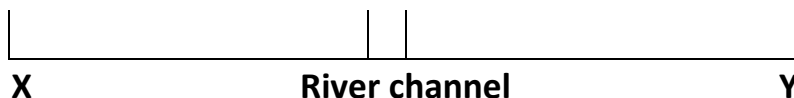
_____

Background information of the interviewee
Sex: ☐ Male   ☐ Female

Age Group: ☐ 11-20   ☐ 21-40   ☐ 41-60   ☐ 61 or above

STAGE 3: DATA PROCESSING, PRESENTATION AND ANALYSIS

B. Draw the land use distribution of transact XY

| X | River channel | Y |

D1. Calculate the score of effectiveness of the revitalization along Kai Tak River

Total Score of all 4 sites：_____

Total Score	Effectiveness of the whole river session
54 or above	Very High
34-53	Moderate
14-33	Low
13 or below	Ineffective

D2 Result of Questionnaire Survey

Calculate the mean score of questions 1 to 4 of different respondents to reflect whether the respondents agree with the effectiveness of the river revitalization.

Question	Mean Score	Degree of recognition
1) Bad smell had been lessened		
2) The surrounding environment improved		
3) The drainage improved obviously		
4) the number of living organisms increased obviously		
5) Citizens always use the facilities nearby		

Mean Score	Degree of recognition
1.0-1.8	Strongly Disagree
1.9-2.6	Disagree
2.7-3.4	Neither Agree or disagree
3.5-4.2	Agree
4.3-5.0	Strongly Agree

STAGE 4: INTERPRETATION AND CONCLUSION

DISCUSSION QUESTIONS

1. According to the locations of box culvert, why were box culverts built there?

2. With reference to the data collected, to what degree of effectiveness did the river revitalization enhance the habitat of Kai Tak River? Give explanation.

3. With reference to land use distribution of transect XY, explain whether there are land use zoning near Kai Tak River to lower the negative impacts brought by flooding?

4. Do you agree, "The river revitalization brings a better environment for surrounding residents"? Explain your answer with the data collected today.

STAGE 5: EVALUATION

1. We use two equipment to measure the river width. Analyze the advantages and limitations of these two equipment. Explain which one is preferable.
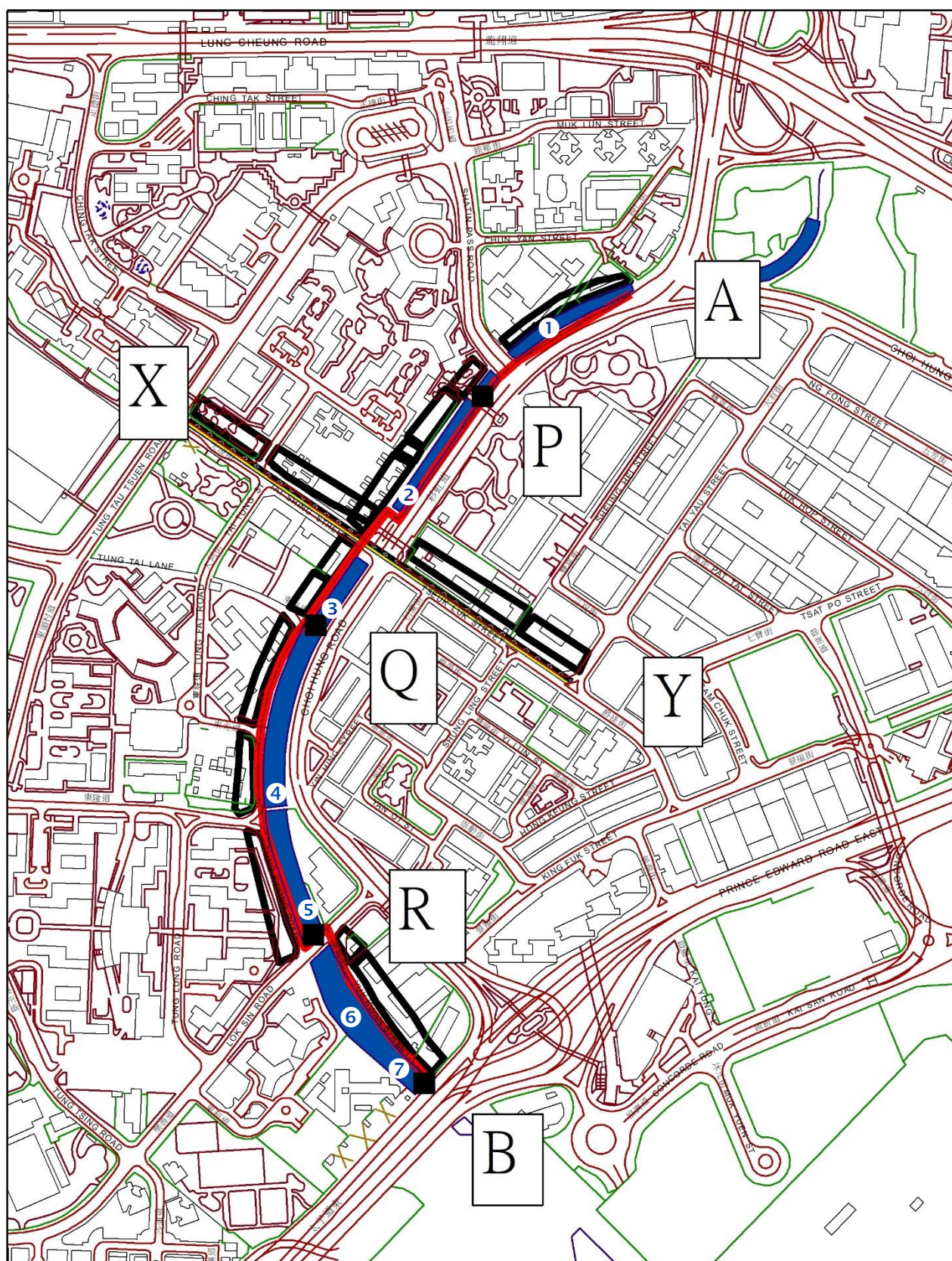
	Laser distance meter	Measuring Tape
Advantages		
Limitations		

2. Is Kai Tak River suitable for conducting river fieldwork about fluvial processes and fluvial landforms? Explain your answer.

3. Today, the data collected is focusing on "river management strategies". We need to have further study for a better understanding about the function of urban channel. Choose one topic about Kai Tak River and elaborate your study plan (e.g. field site / date / time / data collected / field methods / sampling methods).

HOMEWORK

After the fieldwork, please organize this fieldwork experience in field trip diary on p.11-12, as a reference for the revision of field-based question.

Legend

Symbol	Description	Symbol	Description	Symbol	Description
■	Measuring Point	▬	TransectXY	▬	Kai Tak River
──	Road	▭	Land Use		
▬	TransectAB	▭	Buildings		

0 50 100 200 300 400
Meters

N

My Field Trip Diary

➤ Related modules: Managing Rivers and Coastal Environments: A continuing challenge

➤ Key point of fieldwork/topic: River management strategies

▪ Date:_____ (Weekday/ Public holiday) ▪ Time:_____ ▪ Field site: _____	▪ Weather condition:
Is the above planning appropriate for the fieldwork?	

➤ Primary data:

Data collection method	Data collected	Equipment/ Material (if any)	Merits☺/ Demerits☹ of the data collection method (give examples)	Suggestion for improvement (give explanations)
❑ Measurement				
❑ Observation				
❑ Counting				
❑ Questionnaire/ Interview				
❑ Other (if any)				

➢ Secondary data:

Data collected	Use	Data obtained from

Apart from the above, what other secondary data could be used for further investigation?

➢ Sampling method (if any):

Sampling method	Applied in the following	Merits☺/ Demerits☹

➢ Data processing and presentation:

Type of graph/ chart	Content shown and function of graph/chart	Merits☺/ Demerits☹

➢ For deeper learning or further study, I suggest modify the following aspects.

		Suggestion (give examples)
❑	Key point of fieldwork/ topic	
❑	Data to be collected and method of data collection	
❑	Date and time of fieldwork	
❑	Field site	