

Field Work Exercise 1 – Part 1

Task 1: Sustainability and liveability in the Wangjing Huayuangdongqu Community [12 marks]

1. Identify and annotate on a separate worksheet version of the map (Fig. 1) provided:

- 6 features that affect the urban sustainability of the community in a positive or negative way and explain for each feature how it affects sustainability
- 6 features that affect liveability in the community in a positive or negative way and explain for each feature how it affects liveability

Award 1 mark for each feature mentioned. A mark is only awarded if the answer explains how the feature/factor affects sustainability or liveability and if its location is clearly indicated on the worksheet map.

Examples of possible answers referring to sustainability:

- 1) High rise buildings are more energy efficient than low rise single standing houses since they have less outer surface exposed to the elements; [+]
- 2) High rise residential housing creates a high population density which lowers distances traveled which in turn lowers energy consumption for traffic; [+]
- 3) Many buildings are made of concrete which absorbs and stores heat and cold which leads to a higher demand for energy for heating and cooling; [-]
- 4) Many apartments in the high rise buildings have private aircon-units: decentralized cooling (and heating) systems are less energy efficient than centralized systems; [-]
- 5) Shops and public service facilities nearby the residential buildings: reduces the need for transport, which lowers use of transport and CO₂-emissions; [+]
- 6) Public transport facilities nearby: public transport uses less energy than private cars; [+]
- 7) Some buildings have walls with thermal insulation material which reduces energy use for heating and cooling; [+]

NB: All of the buildings in the community are covered with thermal insulation materials. There is a sign on the wall of building no. 210 written in Chinese: "This building is covered with thermal insulation materials. No fireworks setting off around 50m."

Participants could detect the insulation material by knocking on the walls.



8) Parking space with permeable pavement which allows rainwater infiltration (See picture below. Locations are indicated on the map below: Fig. 1)





Figure 1. Lay-out map of the Wangjing Huayandongqu Community

- 9) Many hard (concrete/asphalt) surfaces which absorb energy and add to the heat island effect of the city; [-]
- 10) Green areas have hardly any trees and shrubs which could slow down the through-flow of water in the area. [-]
- 11) Waste management: garbage is not separated to make processing and reuse of resources possible; [-]
- 12) Lack of trees also causes a more distinct heat island effect in the cities in the summer time; [-]
- 13) Trees improve the city's microclimate and also diminishes air pollution as trees filter the small particles; [+]
- 14)...

Examples of possible answers referring to liveability:

- 1) Convenience stores, repair shops, community health service centers, kindergartens and other public service facilities nearby which saves time; [+]
- 2) Some green park like areas are suited for recreation [+]
- 3) Some spots are suited for sports activities, some have facilities/fitness equipment [+]
- 4) Green space: trees purify the air and supply space for recreation; [+]

- 5) Dog excreta collection bins
- 6) Garbage collection points: locations clearly visible. [+] (see locations on Fig. 1 above)
- 7) Traffic circle at intersection: it slows down traffic and prevents traffic jams. [+]
- 8) Underground parking lot with ventilation facilities: nearby & agreeable; [+]
- 9) Notice boards at the intersection providing rules of conduct and information about permitted recreational use of the area. [+] (See photo below; locations are indicated on Fig. 1 above)



- 10) Disordered parking, some vehicles block the fire brigade access [-]
- 11) Vacant lot: empty green space creates a feeling of space in a densely built area. [+] However: the vacant lot is fenced so it can't be used for recreational purposes. [-]
- 12) ...
- 13) ...

Task 2: Water management – Beixiaohe River [9 marks]

2. Observe the river and annotate on a separate worksheet version of the map provided (Fig. 2), notes about:

- i. its form and structure;
- ii. what functions it serves with respect to water management in this part of Beijing;
- iii. what functions it serves within the local community.

Examples of possible answers and marking scheme for the annotated map [6m]

Award 1 mark for each clearly labelled annotation which refers to form and structure, up to a maximum of 2 marks.

- i. Form: straight, steep banks, single channel (no tributaries or branches)
Structure: made of cement and stone, hard engineering, fixed/inflexible banks which do not allow river to change its course

Award 1 mark for each clearly located and labelled annotation which refers to the functions it serves with respect to water management, up to a maximum of 2 marks.

- ii. form and structure of the river indicates that the main function of the river is to allow for quick discharge of water out of the area to prevent flooding in the Wanjing District.

The presence of the barrier in the channel may also serve to regulate water flow/ levels and/ or to trap sediments and trash in order to clean up the waterway.



Award 1 mark for each clearly labelled annotation which refers to the functions it serves within a local community, up to a maximum of 2 marks.

iii. Extensive recreational functions – benches for relaxation, paths for walking /jogging on elevated embankment, occasionally you can see somebody angling with a fishing rod in the river.



3. Write brief observations of the water quality of the river in Table 1 below. [3m]

Answers: award half mark for each correct observation per indicator
[total 3 marks]

Table 1

Indicator		Observations
Clarity		Turbid
Water Flow	Velocity	The flow rate is slow, stagnant, sluggish
	Depth	About 1m
	Obstacles	Waterweeds, silt around the pier
Smell		No detectable smell

Aquatic organisms	Waterweeds, fish, frogs
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NB: the above is based on the observed results on August 7th. It rained in the evening of August 6th. The observed results would differ under different time and weather.

Task 3: Traffic at the Hongchang Road – Hongtai West Street intersection / subway station [11 marks]

4. Observe the flow of traffic at the junction using the tally sheet provided as a guide (Table 2).

- i. Based on your traffic count, what are the 3 main categories of users of the traffic junction? Provide evidence from Table 2 to support your answer. [2m]
- ii. Which groups of road users are prioritised in the design of this traffic junction? Why do you say so? Write your answer in Table 2. [3m]
- iii. Locate and annotate on a separate worksheet version of the map provided (Fig. 3), where bottlenecks in traffic flow are occurring / might occur and explain why there. [6m]

Marking scheme:

- i. Award 1 mark for each correctly identified category which is supported by evidence from Table 2. [3m]
- ii. Award 1 mark for any road user identified and supported by evidence. Award up to 2 marks for supporting evidence. [3m]
- iii. NB: Please go to the traffic intersection and identify on the map where bottlenecks are occurring, and why these bottlenecks are occurring there. (Basically there are few traffic jams at this intersection according to both of our field observation and data survey, even when it is weekday morning and evening rush hours)

Table 2: Traffic Count at Junction within a 5 minute period

Type of traffic (vehicular/ pedestrian)	Numbers counted in a 5 minute period ¹	Time	Other relevant observations
Buses	10;11;12;12		There are many passengers in buses; there are no electric buses on this section of the road.
Trucks	2;4;3;6		Small vans are dominant.
	81;76;102;150		The number of vehicles is huge but proportion of the taxi is small

¹ From four students' answers

Cars			
Motorcycles/ Scooters	25;17;41;15		There is few motorcycles, but electric cars are in the majority, which are mainly used for the delivery of takeout
Bicycles	10;5;14;8		People riding bicycles is mainly the older
Pedestrians	48;59;47;30		The young people is dominant
Others			

Which groups of road users are prioritised in the design of this traffic junction? Why do you say so?

Motorised vehicles, mainly private cars.

- Most of the available space (lanes) are designated for motorized vehicles.
- Adjustment/programming of the traffic lights: when the pedestrians cross the road, the length of time of green light is short; when the cars cross the junction, the length of time of green light is much longer.
- There are no separate bus lanes for buses.
- ...
- ...