

Field Work Exercise 1 – Test Booklet

Assignments

Task 1: Sustainability and liveability – Wangjing Huayuandongqu Community [12 marks]

1. Identify and annotate on a separate worksheet version of the map (Fig. 1) provided:
 - i. 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. [6m]
 - ii. 6 features that affect liveability in the community in a positive or negative way and explain for each feature how it affects liveability. [6m]

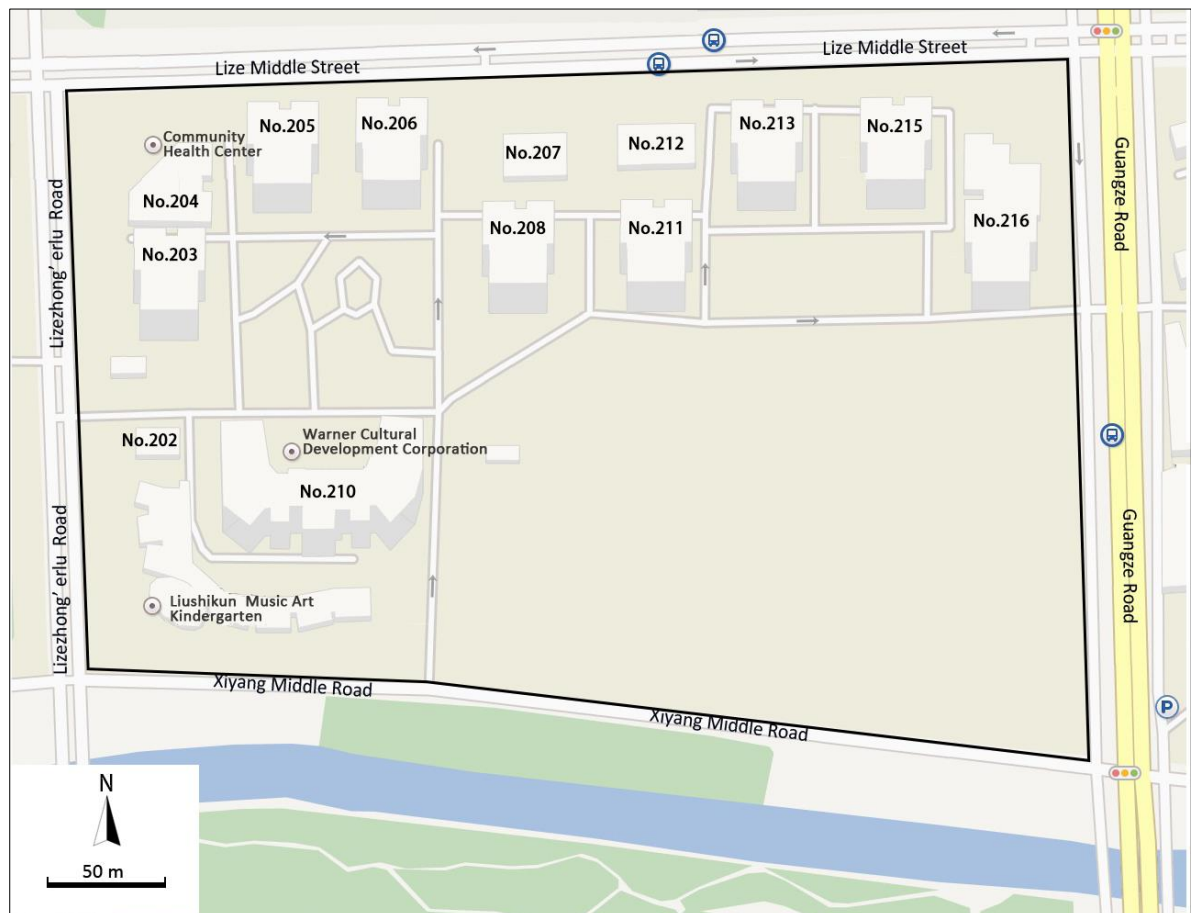


Figure1: Layout map of the Wangjing Huayuandongqu Community

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

2. Observe the river and annotate on a separate worksheet version of the map (Fig. 2) provided, 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. [6m]

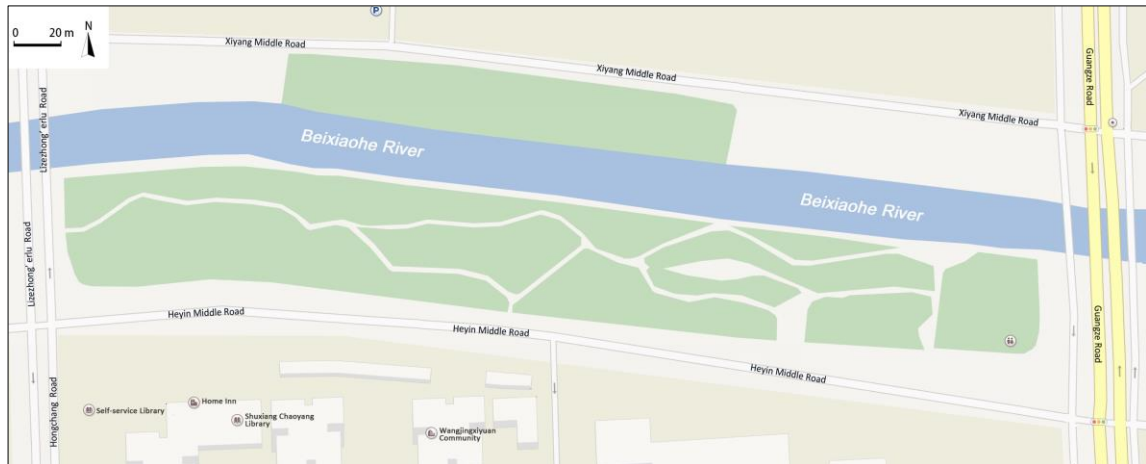


Figure 2: Layout map of a Section of the Beixiaohe River

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

Table 1

Indicator		Observations
Clarity		
Water Flow	Velocity	
	Depth	
	Obstacles	
Smell		
Aquatic organisms		

Task 3: Traffic junction and subway station [11 marks]

4. Observe the flow of traffic at the junction using the tally worksheet 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 the box at the bottom of Table 2. [3m]
- iii. Locate and annotate on a separate worksheet version of the map (Fig.3) provided, where bottlenecks in traffic flow are occurring / might occur and explain why they might occur there. [6m]

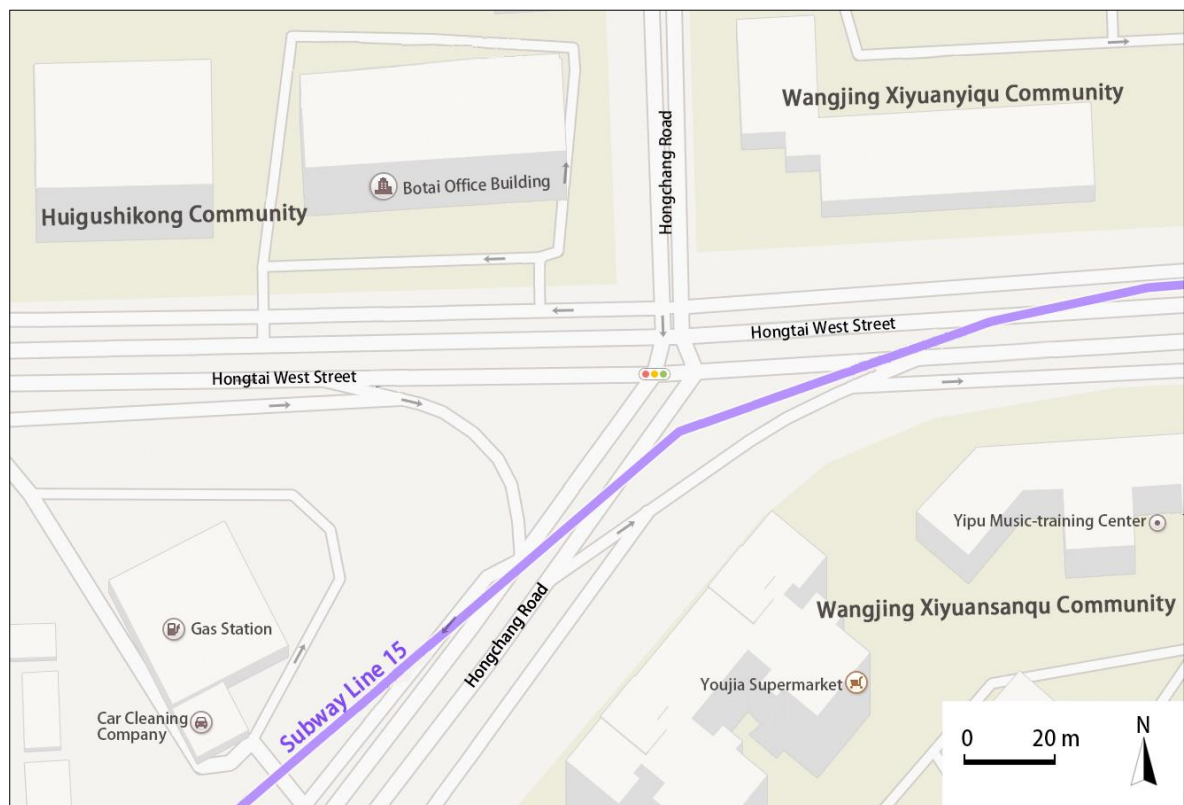


Figure 3: Lay-out map of the Hongchang Road - Hongtai West Street intersection

Table 2:

Type of traffic (vehicular/ pedestrian)	Numbers counted in a 5 minute period	Time	Other relevant observations
Buses			
Trucks			
Cars			
Motorcycles/ Scooters			
Bicycles			
Pedestrians			
Others			
Which groups of road users are prioritised in the design of this traffic junction? Why do you say so?			

FWExercise Part 2 – Test Booklet

Assignments

Task 1: Sustainability and liveability – Wangjing Huayandongqu Community

Using the materials in the resource booklet as well as your observations yesterday, design a sustainable residential development for the empty plot of land next to the Wangjing Huayandongqu Community,

- i) represent your proposed development using annotated sketches/ maps;
- ii) explain how your proposed development will enhance the sustainability and liveability of the area and for the local community in 400 words or less.

Task 2: Water management – Beixiaohe River

Based on your observations of the Beixiaohe River yesterday, the changes you might make to the canal to:

- i) improve water retention during the dry seasons;
- ii) enhance the liveability of the area for the local community.

Annotate your suggestions on the sketch map provided (Fig. 1).
No additional text or writing is permitted beyond the annotated sketch.

Task 3: Traffic junction and subway station

With reference to the resource materials on the Transit Elevated Bus provided, and based on your field observations yesterday:

- i) analyse the strengths and weaknesses of the proposed Transit Elevated Bus system in addressing sustainability and liveability issues observed in Wanjing in 400 words or less.

Notes for the Local FWE-team:

The following resources must be provided in the Resource Booklet for the problem solving test:

1. General information about Wanjing district - residential population, landuse, energy use, water consumption, transport systems and routes, sustainable community features etc.
2. A clear well-labelled map showing the neighbourhood around Huayandongqu Community and the empty plot of land next to it. The North arrow as well as scale of the map needs to be clear to aid students in developing their answers.
3. A clear well-labelled map showing the landuse of the neighbourhood around the the Beixiaohe River, the north arrow as well as scale of the map needs to be clear to aid students in developing their answers.
4. Information about the Elevated Transit Bus system.

The following resources must be provided for students to complete their tasks:

- Sketch map (Fig. 1) of the Beixiaohe River?Canal for annotation.

FWE 2- Resource Booklet

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I. General Introduction to Wangjing



Figure 1 The location of Wangjing District in Beijing



Figure 2 The land use of Wangjing District

Commented [ts1]: Add names of 4 main arterial roads and main roads through Wangjing (match with description in text under “Transport” in the next section). If possible show where the subway station is and indicate the subway line. Label the main roads running through Wangjing.

1. Location and general information:

Wangjing, is located within the jurisdiction of Chaoyang District of Beijing, and was once farmland. There are many residential units in Wangjing, with high quality projects, comfortable living atmosphere and complete service facilities. According to government plans, Wangjing will be built into a super large community with a total planning area of 16 square kilometers and total population of 500-600 thousand, which is equivalent to a standard medium city. There are a variety of large chain stores and basic education schools and higher education institutions in the community. The medical establishments in Wangjing include Wangjing Hospital of Chinese Academy of Chinese Medical Sciences and community health service station of Wangjing Xiyuan Fourth District. In addition, local activities are also very rich. Wangjing Party is the center of activities for young people in Wangjing with dining, sports, games, and other activities are carried out here.

3. Transport

Wangjing is well-connected with four arterial roads, Northeast Fourth Ring Road, Jingmi Road, Northeast Fifth Ring Road and Jingcheng Thruway, crossing here. Datun is in the west; 798 Art District is in the south; Laiguangying is in the north and Huantie is in the east. Covering an area of 16 square kilometers, Wangjing is 30 minutes to the Capital International Airport, China World Trade Center, Asian Sports Village and the Olympic Village. Rail transit and bus lines go throughout the whole area of Wangjing. Wangjing West Station provides access to public transport, with the 13th, 14th and 15th subway lines going through here. The private car ownership rate in Wangjing is nearly 50%. However the roads in this community do not extend from the south to the north, so drivers are easily disoriented. Wangjing Street, Guangshun South Street, Huajiadi Street are three important roads running through Wangjing.

3. Resident population

The number of residents in Wangjing is about 300 thousand, of which Japanese and South Koreans account for a large proportion. Residents in Wangjing are generally young, mainly middle class, and work as entertainers, business managers, employees of foreign companies, lawyers, doctors, journalists. Since 1992, a large number of South Koreans have settled in Wangjing. In 1997, the outbreak of the Asian financial crisis led to devaluation of the South Korean Won. In order to avoid the impact of the financial crisis, more and more South Koreans came to China to start a business and a new life, for the living and labor costs in China are much lower than in South Korea. The first South Koreans coming to Beijing mostly lived in the vicinity of Madianqiao, and later Wangjing began to be developed. Because it was close to Capital Airport and house prices were relatively low, the staff dormitories of a number of South Korean companies moved to Wangjing and gradually more and more South Koreans were attracted to settle here, with Wangjing becoming the largest gathering place for South Koreans in Beijing.

4. Economic Structure

The Communication industry and Internet industry in Wangjing are very developed. The Zhongguancun Electronic Science and Technology Zone houses multinational company headquarters and R & D centers. Headquarters for hi-tech enterprises in electronic information and application software like ABB, Motorola, Sony Ericsson, Siemens, Panasonic and Microsoft are located in Wangjing. With a number of well-known multinational companies in the area, Wangjing has a reputation for an, open, diversified and international atmosphere.

II. Wangjing Huayuangongqu Community



Figure 3 The neighbourhood around Huayuangongqu Community

Commented [ts2]: See comment below

III. Beixiaohe River

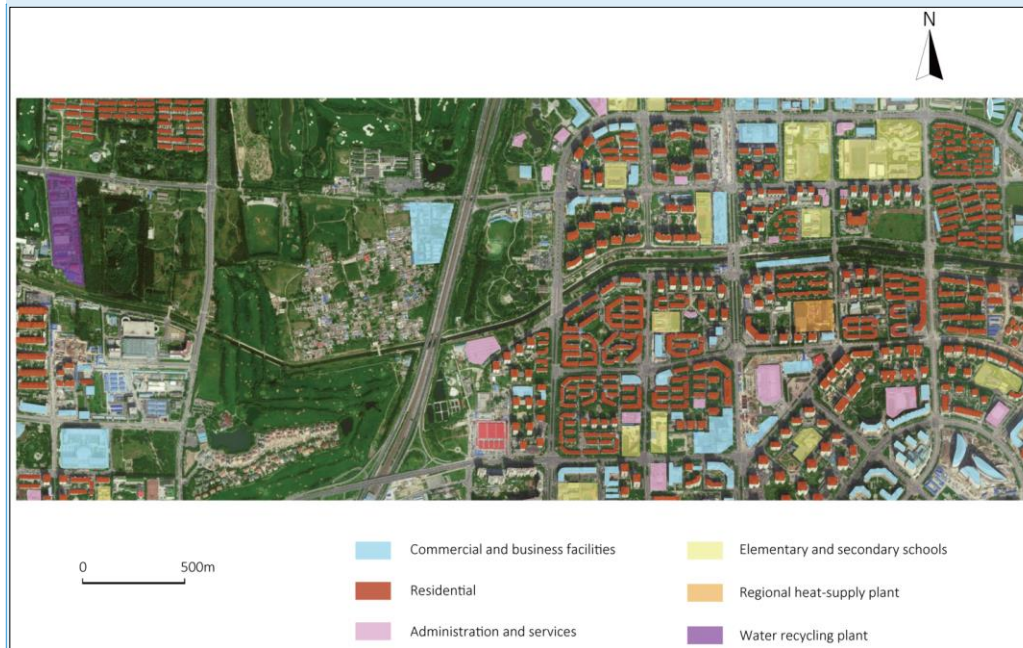


Figure 4 The land use of the neighborhood around the the Beixiaohe River

Commented [ts3]: Figure 3 and 4 are repetitive. I suggest we use Fig 4 since students are already familiar with it from FWE1. Blow up this figure, and make the boundaries and label of Huayuandongqu community clear. The empty plot of land next to it should also be labelled. Show the location of the Beixiao He river field site too, and ensure the entire length of the waterbody is clearly seen.

IV. Transit Elevated Bus

Transit Elevated Bus (TEB) is a new type of mass public transportation system pioneered by China which combines the advantages of the Bus Rapid Transit (BRT) and subway . Like the subway, it driven by electricity and runs on tracks, but hangs above the ground across both sides of the road. The first research and development base of the TEB in the world will be located in Zhoukou and the first TEB will be manufactured in June of 2017 in Zhoukou.



Figure 5 The world first test vehicle TEB-1 launching test running in Qinhuangdao City



Figure 6 The platform of TEB



Figure 7 The inside of TEB

TEB's average speed is 40 kilometers per hour, much faster than a normal bus with an average speed of 20 kilometers per hour. It carries 1200-1400 passengers, dozens of times the capacity of a normal bus. The TEB connects with the roadside bus stations or platform bridges, so whether other types of traffic under it will not be affected when it stops. Computer simulation results show that the TEB would be like a mobile tunnel as cars can run on two lanes under it without interference.

TEB is suitable for urban main roads which can accommodate the dimensions of the TEB. TEB is 56-

62-meter-long, 4.5-4.7-meter-high and 7.8-meter-wide. TEB is divided into 4 carriages with each measuring 12 meter long. The TEB, running across two lanes, has a raised compartment for passengers and the lower compartment is hollowed out. The height of lower compartment is 2.1-2.2 meter, so cars whose height is lower than 2 meter can successfully move under it.

Each TEB would cost about \$20 million per kilometer, which is only 16%-20% of the cost of the subway.. TEB does not need parking lots, for it could stop at the platform on the lines in operation, which would not impede the normal traffic.

It is reckoned that each TEB would replace 40 normal gasoline-powered buses so that the urban air pollution and carbon emission would be relieved.