NATIONAL
Junior College

SH1 Promo 2023

9173 H2 Geography

Suggested Marking Guide

Disclaimer:
The Suggested Marking Guide should be treated with confidentiality, and should be used with discretion.

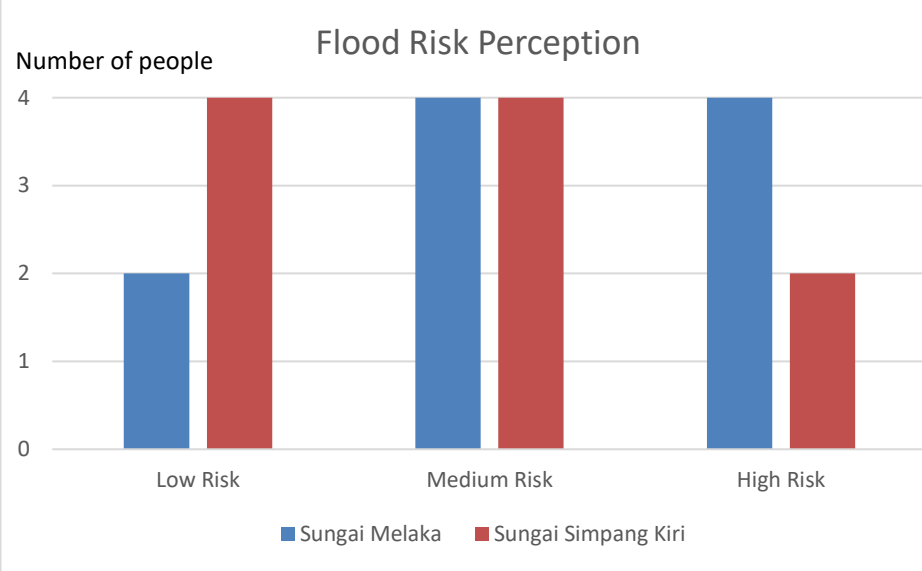
Section A

Cluster 4: Fieldwork

Question	Answer	Marks
1(a)	**With reference to Resource 1, explain why the students' hypothesis is suitable.** Award 1 mark for each explanation on suitability of students' hypothesis, to a maximum of 4 marks. Award a maximum of 1 additional mark for further development of each explanation, where applicable. Possible answers include: • [clearly defined] The hypothesis is clearly defined with variable (flood risk) and population (the two sites, Sungai Melaka and Sungai Simpang Kiri) clearly stated) • [Scale: Spatial] The distance between the two locations is reasonable, they are 90km apart which means that they are likely to have similar climate conditions. ○ It is also easy to travel from one location to another as it is less than a 2-hour drive away. The students are visiting both locations on two different days which makes the investigation manageable. • [Scale: Temporal] The time spent in each area is enough to collect some data for their investigation. ○ Spending an afternoon at each river would allow them to collect 10 responses from the area. • [Methods] The use of surveys will allow the students to find out about flood risk perceptions of those who live and work near the river. • [manpower]The hypothesis is suitable for investigation as they have sufficient manpower (4 students) for data collection in both areas. **AO1**	**4**
1(b)	**With reference to Resources 2A and 2B, explain how potential risks of the investigation can be mitigated.** Award 1 mark for each explanation on how students can mitigate potential risks, to a maximum of 5 marks. Award a maximum of 1 additional mark for further development of each explanation, where applicable. Possible answers include: ● Heavy rain might occur which can result in the students falling sick. ○ To mitigate this, students should check the weather forecast before heading to the field site and bring umbrellas or raincoats as a precaution for changes in weather conditions. They should also seek shelter immediately if there is the arrival of inclement weather. ● Students might be in danger collecting data from people in a	**5**

	foreign country. ○ To mitigate this, students should move around in pairs and always stay near the rest of the group, communicating when there is movement. ● Respondents to the students' survey questionnaire might get agitated and become hostile towards the students ○ To mitigate this, students should pilot test their survey questions to avoid sensitive questions which may unintentionally provoke the respondents ● Wildlife may be present in Sungai Simpang Kiri that can injure students unintentionally ○ Students should be alert at all times, and do prior research on possible wildlife and how to avoid accidents upon an encounter. ● Students might get sun stroke as they are collecting data in the afternoons and there is not much shelter in the area. ○ Students should wear cool and comfortable clothing, bringing sufficient water to hydrate themselves frequently. **AO1**	
1(c)	**With reference to Resource 2A, describe one sampling method that the students can adopt for their survey data collection at Sungai Melaka.** Award 1 mark for each valid description, to a maximum of 4 marks. Possible answers include: • If possible, students should obtain the sampling frame of the area near Sungai Melaka (i.e. the list of housing and shop units within the area) ○ Students can consider doing a recce on the first half of day one to list out the housing units in the area ○ Students can make use of google maps to list out the shop and houses in the area. <u>Random sampling</u> • Using a random number generator, generate a random number and the unit associated with it will be surveyed • Continue the previous step until at least 10 responses are obtained • Random sampling is a probability sampling method that ensures that all housing and shop units within the area are given equal chance of being selected, and it is less biased. <u>Systematic sampling</u> • Using a random number generator, generate a random number and the unit associated with it will be surveyed • This number will be used as the interval of housing/shop units until at least 10 responses are obtained • Systematic sampling reduces the probability of a clustered selection of housing and shop units and ensures all units have an equal chance of being selected. **AO2**	**4**

1(d)	**With reference to Resource 3, explain how the survey might not help them to gather data accurately.** Award 1 mark for each valid description and explanation, with a maximum of 6 marks. Possible answers: ● There were questions that seemed potentially sensitive and irrelevant to the hypothesis. ○ Questions such as "how old are you" might be sensitive and age is not a variable in the hypothesis. ● They used a lot of technical jargon such as "mitigation strategies" and "adaptive capacity". ○ The respondents might not understand these terms and the answers given might not be accurate when respondents provide answers to complete the survey quickly. ● There were no labels for the numbers on the scale. ○ Respondents might rate according to their perspective of what 1 and what 10 is which can differ among individuals. ● Some questions asked are too subjective without a guide given to them. ○ Different respondents might have different views of what low, medium and high risk are. **AO2**	**6**
1(e)	**With reference to Resource 2A, 2B and 3, suggest other suitable data collection methods aid in the student's investigation.** Award 1 mark for each valid description, with a maximum of 6 marks. Award a maximum of 1 additional mark for elaboration of each description point. Possible responses include: ● Students can conduct interviews from the shop owners and people living near the rivers through using a map to narrow down the area where they would interview people in to get in depth understanding on the respondents' flood risk perception. ○ This can be done through spatial mapping/ sketching of the area around the river ● Students can also measure flood likelihood scores to find out flood risk. The flood risk score of each site is then calculated by multiplying the flood severity score with the flood likelihood score. ○ For flood likelihood, students can find the mean of the scores derived from data of height of land above river level ○ Flood severity score can be found from the mean of the scores from percentage of built-up land and land use ● Secondary data can be collected from credible sources on past flood events and flood mitigation strategies implemented in the area. ● Primary data can be collected via taking photographs, field sketches with important features annotated to them and creating a land use map of the area near the river	**5**

	AO1	
1(f)	**Using a suitable mode of data representation, present the data on perception of flood risk at the two rivers as shown in Resource 4 and justify your choice.** Award 1 mark for each correct component of the graph (labelling, title, proportion) to a maximum of 3 marks. Award 1 mark for each explanation on the suitability of the chosen method to a maximum of 3 marks. Possible answers include:  ● A comparative bar graph helps to present the information in a clear and simple format for easy reading. ● A bar graph is used to represent discrete data or data in categories that are not continuous in nature. ● It also allows for easy comparison of data sets across the two rivers.	**6**
	AO2	
1(g)	**With reference to all the Resources and your own knowledge, evaluate the usefulness of this investigation in examining the factors influencing flood risk.** <u>Possible approaches:</u> Candidates can consider the usefulness of this investigation with the perceptions of flood risk from respondents. They can refer to Resources 1 and 2 for land use of the areas surrounding the rivers and how they determine flood risk. Resources 3 and 4 would show them flood risk from the perspective of the respondents. But the resources do not provide a holistic understanding of the various factors influencing flood risk, such as distance from the river, climate of the locations strategies implemented etc. Candidates can also consider the limitations of this investigation due to no data from the river collected. Limitations of the data collected would also include a small sample size at both rivers and the questionnaire's questions not being clear enough to get accurate data. Candidates can consider the	**10**

	context, Malaysia, as well, there might be a language barrier as respondents might not be fluent in the language. This thus limits the usefulness of the investigation in understanding people perceptions of flood risk and/or the influence of land use on flood risk. <u>Indicative content</u> Candidates will need to evaluate the extent to which the investigation was useful in examining the factors of flood risk. Responses could include an evaluation of the investigation, methods used, and data collected in proving the hypothesis, 'There is higher flood risk at Sungai Melaka than Sungai Simpang Kiri.' Responses should include identification of key elements in the four resources and the background information that would be useful in answering the research question. Candidates can include how the data collection was useful as data was collected through surveys (Resource 3) which allowed the students to find out flood risk perceptions of the area. Quantitative data (Resource 4) was collected to allow for some statistical analysis to answer the hypothesis crafted. Students can also look at land use cover of the areas near the rivers, comparing Resource 2A which is covered by concrete and Resource 2B which has some green spaces, to measure flood risk. For their counter argument, candidates will have to include limitations. These limitations can include the methods of data collection, duration of data collection and the presence of a potential language barrier. Candidates can include how data collection was only collected for one day with 10 respondents (Resource 4) per river which might not be enough. The survey questions (Resource 3) students used had technical jargon and subjective terms which might affect the validity of the information collected. Data collected was mostly quantitative (Resources 3 and 4) and they lacked qualitative responses which could have given more detail to the flood risk perception of the area. Candidates can also include how the sample surveyed might not be a good representation of the population as students did not have comprehensive information of the population before selecting some for the surveys. The sampling methods used might have been random, but this might result in clustering of data or survey respondents to be living in a cluster. The flood risk perceptions collected might not have been a reliable source of data. Candidates can also include how the group of students didn't consider other factors affecting flood risk such as climate, nature of drainage basin, topography, section of river. Data from these factors should have been collected using secondary data to provide a more holistic conclusion to the investigation *Levels marked using Generic Level Descriptors for H2 fieldwork evaluative questions* **AO3**	

Section B

Cluster 3: Sustainable Future and Climate Change

Question	Answer	Marks
2(a)	**Compare the performance in urban metabolism of the two cities shown in Resource 5.** Award 1 mark for each comparison of the performance of the two cities, to a maximum of 6 marks. Award a maximum of 1 additional mark for further development of each description, where applicable. <u>Possible responses</u> • Barcelona performed less than average in 5 indicators such as public transport network and efficiency of residential energy use while Freiburg performed less than average in 8 indicators like GDP per person ○ Only overlapped in the "less than average" category in one indicator: 'efficiency of water consumption', • Barcelona performed best in land use efficiency while Freiburg performed best in recycling, both with a score of about 2.5 • In terms of indicators with data, Barcelona performed worst in energy efficiency of transport with a score of 0.5 whereas Freiburg performed worst in concentration of particulate pollutants with a score of about 0.3 • Freiburg generally does better in its energy indicators, with scores all close to 1.5 while Barcelona scores less than 1 in this aspect • Barcelona fares better in economic indicators like GDP per person (difference of 0.8) and unemployment as well as air quality like concentration of NO2 in air (difference of 0.8) and concentration of particulate pollutants • Both are similar in indicators like efficiency of water consumption (close to 1), waste intensity (about 1) • Barcelona lacks data for 2 indicators (green space access and registered cars) while Freiburg has data for all indicators in the framework **AO2**	**6**
2(b)	**With reference to Resource 5, explain two difficulties in the measurement of sustainable urban development.** Award 1 mark for each explanation of a difficulty in measuring sustainable urban development. Award a maximum of 1 additional mark for further development of each explanation. Award a maximum of 2 marks for each difficulty identified.	**4**

	Possible responses
	• [Lack of data] Resource 5 shows that a score of 0 indicates the lack of data and there were indicators for Barcelona such as 'green space access' and 'private cars' that showed 0
	  ○ Despite being a city in a developed country, there can be issue with collecting the relevant data needed for an indicator used. This makes comparability across cities difficult when there is lack of relevant data to 'feed' into the indicator to measure SUD
	• [Aspects of each dimension of SUD to be measured] Resource 5 shows that the Urban Metabolism Framework uses 14 indicators to measure SUD and these are indicators chosen by EEA, such as 'GDP per person', 'public transport network' and 'recycling'
	  ○ (skewed towards a particular dimension) It is observed that 9 out of 14 indicators measure the environmental aspect which would make this Urban Metabolism Framework better at assessing environmental performance of cities rather than SUD holistically
	  ○ (selection of indicators) Also, the indicators selected to measure each aspect is selected by EEA in terms of what it deems best in measuring 'economic growth', 'environmental preservation' and 'social equity' – but these indicators may not provide an accurate and reliable picture of each aspect (e.g. what about quality of education, gender inequality)
	
	AO2	

2(c)	**Explain possible challenges that cities in countries at high levels of development, such as those in Resource 5, face in their progress towards sustainable urban development.** Award 1 mark for each explanation on possible challenge that cities in countries at high levels of development face in their progress towards sustainable urban development, to a maximum of 6 marks. Award a maximum of 1 additional mark for further development of each explanation, where applicable. Possible responses • Urban population loss: In countries at high levels of development, due to natural decrease or urban-rural migration (where residents of urban areas move out of the city into the rural areas), it might result in urban population loss ○ If the population loss is significant, there might not be enough manpower in the urban areas to maintain the productivity of the cities. Industries and generation of resources might slow down, leading to insufficient resources available for present essential and future needs • High ecological footprint: High levels of urbanisation (i.e. high % of urban population) coupled with high affluence of its urban population result in high consumption of goods and hence high ecological footprint (high amount of resources used in the	**6**

	production of these goods + high amounts of waste being generated) ○ Such ecological footprint of cities in developed countries often exceed its bio-capacity, resulting in 'ecological deficit' in which the limits of the environment have been exceeded in supporting the lifestyle patterns of its population, particularly in the near future • Creating a liveable city for elderly: Cities in countries at high levels of development also face an ageing population as life expectancy increases, and both birth and death rates are low ○ However, such cities that have started urbanisation since the early 1900s have been largely designed for the young, working population. A challenge that cities in developed countries face now is re-designing its urban space to address issues that elderly face in the cities *Candidates can also be explaining about challenges on managing slums, deindustrailisation (need for urban reimaging to remain relevant in the global economy for economic investments), waste generated and others **AO1**	
2(d)	**Using Resource 6, explain how Freiburg is working towards sustainable urban development.** Award 1 mark for each explanation on the implementations by Freiburg as part of their effort towards creating a sustainable city, to a maximum of 6marks. Award a maximum of 1 additional mark for further development of each explanation, where applicable <u>Possible responses</u> • Freiburg 'centered their designs around public transport' with '400km of bike paths' to create a car-lite / environmentally-friendly city ○ This transport planning and design has reduced the reliance of the city on cars, as there are now 'twice as many bikes as cars', reducing the issue of possible traffic congestion and its associated issues (emissions of pollutive gases, health issues) • Roads have been designed with people in mind in to enhance liveability of the city through improving mobility ○ 'widening the streets to accommodate trams and bike lanes, including large pedestrian zones', 'bicycle priority route' • Germany's first solar-powered football stadium to increase dependence on renewable sources of energy so as to reduce reliance on unsustainable fossil fuels ○ 'the stadium has generated 250,000 kilowatt-hours per year, powering the stadium • Circular metabolism is practiced where waste generated is returned back as an input into the city (to reduce the amount of waste generate)	**6**

	○ 'Recycling energy generated from a nearby manufacturing plant to heat the stadium' and 'feeding any excess back into the local grid' ○ 'The minimal energy that is brought in is generated locally from the wood-chip powered heating systems located in the neighbourhood.' • The city also ensures the involvement of various key stakeholders in decisions in creating an inclusive and liveable city ○ 'Civic involvement goes hand in hand with "collective building" – where citizens buy a piece of land together and build an apartment building themselves, instead of individually buying an apartment from a development company' • High environmental performance required to reduce energy usage ○ 'All housing adheres to Freiburg's low-energy building standard of 65 kWh/sqm' **AO2**	
2(e)	**Explain the complementarity and tension between sustainable urban development and liveability.** Award 1 mark for each explanation on the complementarity and tension between SUD and liveability, to a maximum of 4 marks. Award a maximum of 1 additional mark for further development of each explanation, where applicable Award a maximum of 2 marks if only complementarity **or** tension is provided. Possible responses • SUD and liveability complements in the aspects that make up each concept ○ SUD: three interdependent dimensions of social equity, environmental preservation and economic growth while factors that influence liveability can be largely categorised into social (access to healthcare and education), economic (infrastructure) and environmental (climate) • Tension 1: Now vs current and future generations ○ SUD: focuses on meeting the needs of current and future generations ○ Liveability: focuses on meeting the needs of urban dwellers who reside in the city at that current point in time • Tension 2: Scale ○ SUD is concerned with the actions within the city and how it can influence sustainable development at the national / regional / global scale too ○ Liveability is concerned only with the quality of living within the urban area • Tension 3: Context ○ SUD is a static concept which does not change with time ○ Liveability is a dynamic concept that changes with the changes in demographics of the city	**4**

	• Tension 4: Theory vs practical
	  ○ SUD is a vision that is set out for cities to work towards to but has yet to move beyond normative theory to adopted practices
	  ○ Liveability is more pragmatic in which cities put in place more focused strategies to improve on urban liveability
	
	AO1	

2(f)	**With reference to resource 7, describe the impact of urban reimaging on sustainable urban development.**
	
	Award 1 mark for each description on the impact of urban reimaging on sustainable urban development, to a maximum of 4 marks.
	Award a maximum of 1 additional mark for further development of each description, where applicable.
	
	<u>Possible responses</u>
	• Hamburg in Germany has employed flagship development via revitalising its waterfront to improve its image of the city, so as to ensure the city's relevance in the global economy in the long term
	• The project consists of 'dynamic mixed used district for residential, commercial and recreational uses' to ensure that in the pursuit of economic sustainability, the development also meet the needs of its people, by providing opportunities for social activities and leisure
	  ○ Such areas repurposed for businesses can lead to increased revenue for its retailers
	  ○ Such iconic building constructed can also enhance civic pride amongst its urban dwellers
	• However, the increased property value that comes with this waterfront development may inadvertently displace urban dwellers, forcing them to relocate elsewhere
	• The project 'regenerated its waterfront from former derelict docklands' through 'collaborations among urban planners, investors…', ensuring that important stakeholders are involved in the process to ensure various needs are met
	  ○ Such involvement and collaboration reduces the issue of people not identifying with the place after the regeneration
	• There is also a 'focus on built heritage' to ensure cultural integrity remains and the historical value is preserved despite the project
	• Although it is a good idea to counter urban population loss via such strategy, the 'inner city densification' can result in unintended consequences such as the increased pressures on the environment (increased air pollution etc)
	
	AO2
		6

Section C

Cluster 3: Sustainable Future and Climate Change

Question	Answer	Marks
3	**'Strategies to manage non-hazardous solid waste in cities have been successful in achieving sustainable urban development.'** **Evaluate the extent to which you agree with this statement.** <u>Possible Approaches</u> Candidates could approach the question by making a judgement on whether strategies to manage non-hazardous solid waste have been largely successful in achieving sustainable urban development (SUD) through a consideration of two or more case studies. Candidates could evaluate whether the strategies in each case study achieved the intended aims or targets. Candidates could also consider whether there are unintended negative impacts in achieving the aims of targets. Candidates could also analyse the challenges to success which are common across the case studies. Candidates could also approach the question by making a judgement on whether strategies to manage non-hazardous solid waste in cities have been successful in achieving SUD through a cost-benefit analysis. Candidates could analyse the positive and negative impact of the strategies in terms of scale of impact on SUD, political commitment and the progress towards SUD and stakeholders involved in achieving SUD. <u>Indicative Content</u> With increasing rates of urbanisation, there are more than half of the world's population living in urban areas today. This resulting in high concentration of waste, exerting large ecological footprint and absorbing vast number of resources from surrounding areas. The generation of waste is unsustainable, and yet at the same time, many countries are dealing with the issue of managing non-hazardous solid waste, posing a challenge to urban sustainability. Cities have implemented strategies to manage its non-hazardous solid waste to achieve sustainable urban development. A higher-level response will make use of a set of criteria to consistently evaluate the effectiveness of these strategies, such as the extent to which the strategies are able to address the root cause with links to long term sustainability, the extent of stakeholder involvement and the extent to which governments are able to implement these strategies to achieve SUD. A range of relevant examples (various strategies applied in different cities) are used to support their response and points. Recognition should be made to the fact that the extent of effectiveness of strategies in achieving SUD is dependent on multitude of factors, and they vary across different contexts. *Levels marked using Generic Level Descriptors for 20m H2 essays.*	**20**

	AO3	

Question	Answer	Marks
4	**Evaluate the effectiveness of different strategies to improve the lives of slum dwellers in cities.** Possible Approaches Candidates could approach the question by making a judgement on whether slum management strategies have been effective through a consideration of two or more case studies. Candidates could evaluate whether the strategies in each case study is effective in improving the lives of slum dwellers. Candidates could also consider whether there are unintended negative impacts in achieving the aims or targets. Candidates can evaluate the essay through the use of suitable criteria, or through the argumentative method. Candidates could also approach the question by making a judgement on whether slum management strategies have been effective through a cost-benefit analysis. Candidates could analyse the positive and negative impacts of the strategies in terms of economic scale, temporal scale and impacts on progress towards sustainable development. Indicative content Candidates should consider the extent of success of strategies to improve the lives of slum dwellers. In analysing the strategies, candidates should highlight the challenges presented through the difficulties in addressing the causes of housing issues with ever increasing poorer population into the inner city due to migration and the limitations of government in the provision of affordable housing, the lack of long-term sustainability and stakeholder involvement, etc., which place enormous pressures within the city. Candidates should include the discussion of a diverse range of strategies in the areas of redevelopment and rehabilitation to address housing problems in cities, for instance case studies from various cities should be used to substantiate the arguments put forward. A higher level response could apply a set of clearly defined and appropriate criteria to consistently evaluate the range of strategies from both CHLDs and CLLDs. For instance, the extent of the strategies in addressing the root cause of issues to ensure lives of slum dwellers are improved in the long term, the extent of stakeholder involvement, the extent of political commitment in dealing with the issues. *Levels marked using H2 generic level descriptors for 20m H2 essays.* **AO3**	**20**