**TEMASEK JUNIOR COLLEGE
PRELIMINARY EXAMINATION 2017**

GEOGRAPHY   **9751/02**
Higher 2

Paper 2   **3 HOURS**

Additional Materials: Resource Booklet
                             World Outline Map

READ THESE INSTRUCTIONS FIRST

Write your name and CG on all the work you hand in.
Begin the answer to each question on a fresh sheet of paper.
Write in dark blue or black pen.
You may use a soft pencil for any diagrams, graphs or rough working.
Do not use highlighters, glue or correction fluid.

Answer **all** questions.

You should make reference to appropriate examples studied in the field or the classroom, even where such examples are not specifically requested by the question.
Diagrams and sketch maps should be drawn whenever they serve to illustrate an answer.
The world outline map may be annotated and handed in with relevant answers.
You are reminded of the need for good English and clear presentation in your answers.

At the end of the examination, fasten all your work securely together.
The number of marks is given in brackets [ ] at the end of each question or part question.
You should spend time according to marks allocated to questions.
All resources referred to in the question paper are in the Resource Booklet.

This document consists of 6 printed pages

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SECTION A

Answer the question below.

The question carries 25 marks.

Theme 4: Geographical Investigation

1   You and your classmates comprising 40 students in total were tasked to carry out a geography fieldwork exercise to investigate the impact of land use on infiltration rates in a local area.

Your group of four members were given one morning to collect infiltration data in the area shown in Resource 1.

The equipment provided included:
- 1 infiltration ring (improvised from a plastic drain pipe)
- 1 metre ruler
- 1 stop watch
- Water bottles
- Recording sheet

Your group placed the infiltration ring on the ground and poured water into the infiltration ring as shown in Resource 2. Using a metre ruler, you measured the time it took for the water level to drop every 1cm and recorded down the readings. You carried out the measurement for 30 minutes at each sampling point without topping up the water in the infiltration ring. A group member noticed the ground area immediately adjacent to the infiltration ring getting wet soon after the experiment started.

The same data collection method was repeated at all the sample sites.

Resource 1 shows a map of the fieldwork site. Resource 2 shows the setup of the equipment and data collection process.

(a)   Explain how you would determine the location of your sample sites in Resource 1 to collect infiltration data for your investigation.   [5]

(b)   Your group concluded that some of the infiltration data collected may not be accurate.

Highlight **two** possible problems with the data collection method shown and suggest ways to overcome them.   [4]

(c)   With reference to Resources 1 and 2, suggest measures you and your group would take to minimize the potential risks and impacts of the investigation.   [5]

2

(d) With the aid of a diagram, show how the data collected from your investigation can be best represented. [2]

(e) Evaluate the usefulness of the data collected from your investigation in ascertaining the flood risk of the stream shown in Resource 1. [9]

SECTION B

Answer the question below.

The question carries 25 marks.

Theme 1: Tropical Environments

Channel Patterns in Tropical Environments

2   Resource 3 shows the changes in channel variables and the drainage network of a river basin in the tropics. Most of the catchment has moderately steep slopes and is covered with a thick mantle of clay. Around half the catchment is arable land.
Resource 4 shows two river channels, Y and Z, which are referred to in Resource 5.
Resource 5 shows the relationship between river bed material and river channel pattern.

(a)   With reference to Resource 3, explain the changes in channel morphology between stations A and B.   [6]

(b)   Describe how you would determine the drainage density of the drainage basin shown in Resource 3.   [3]

(c)   Compare the features of river channels **Y** and **Z** as shown in Resource 4.   [4]

(d)   Using Resource 5, state the percentage composition of the various river bed material for river channel **X.**   [3]

(e)   With reference to Resources 4, 5 and your own knowledge, assess the role of river bed material in influencing the formation of channel pattern **Y**.   [9]

SECTION C

Answer the question below.

The question carries 25 marks.

Theme 2: Development, Economy and Environment

Resource extraction in India

3   Resource 6 is a map of India that shows the distribution of selected resources.
Resource 7 shows areas affected by political violence in India.
Resource 8 shows excerpts of news articles regarding the impacts of resource extraction in India.
Resource 9 shows the relationship between average economic growth rate and mineral and fuel exports as a percentage of total exports for selected countries from 1970 to 2008.

(a)   With reference to Resource 6, describe the distribution of resources in India.   [5]

(b)   Compare the pattern of distribution of selected resources and areas affected by political violence in India as seen in Resources 6 and 7.   [3]

(c)   With reference to Resources 7, 8 and your own knowledge, examine the negative impacts of mining in countries at low levels of development like India.   [8]

(d)   Describe the overall relationship between average economic growth rate and mineral and fuel exports as a percentage of total exports for selected countries between 1970 and 2008, supporting your response with information from Resource 9.   [4]

(e)   Using information from Resource 9 and your own knowledge, suggest why India may not be suffering from the 'resource curse'.   [5]

SECTION D

Answer the question below.

The question carries 25 marks.

Theme 3: Sustainable Development

Liveability of Melbourne, Australia

4   Resource 10 is a table showing the top five cities as ranked by three measures of urban liveability, namely the 2015 Economist Intelligence Unit Liveability Index, 2016 Mercer Quality of Living Ranking and the 2016 Monocle Quality of Life Survey.
Resource 11 is a map showing pricing and affordability of housing in Melbourne, Australia.
Resource 12 show photographs of Melbourne's docklands before and after urban change began in the area in 1997.

(a)   Compare the ranking of the top five cities across the three measures of urban liveability in Resource 10.   [4]

(b)   With reference to Resource 10 and your own knowledge, highlight some of the difficulties in measuring urban liveability.   [5]

(c)   Describe the pattern of housing prices in Melbourne as seen in Resource 11.   [4]

(d)   Using Resource 12, show how urban change has taken place in Melbourne's docklands.   [5]

(e)   Using the resources provided, explain why not all residents in Melbourne enjoy a high quality of urban living.   [7]

END OF PAPER

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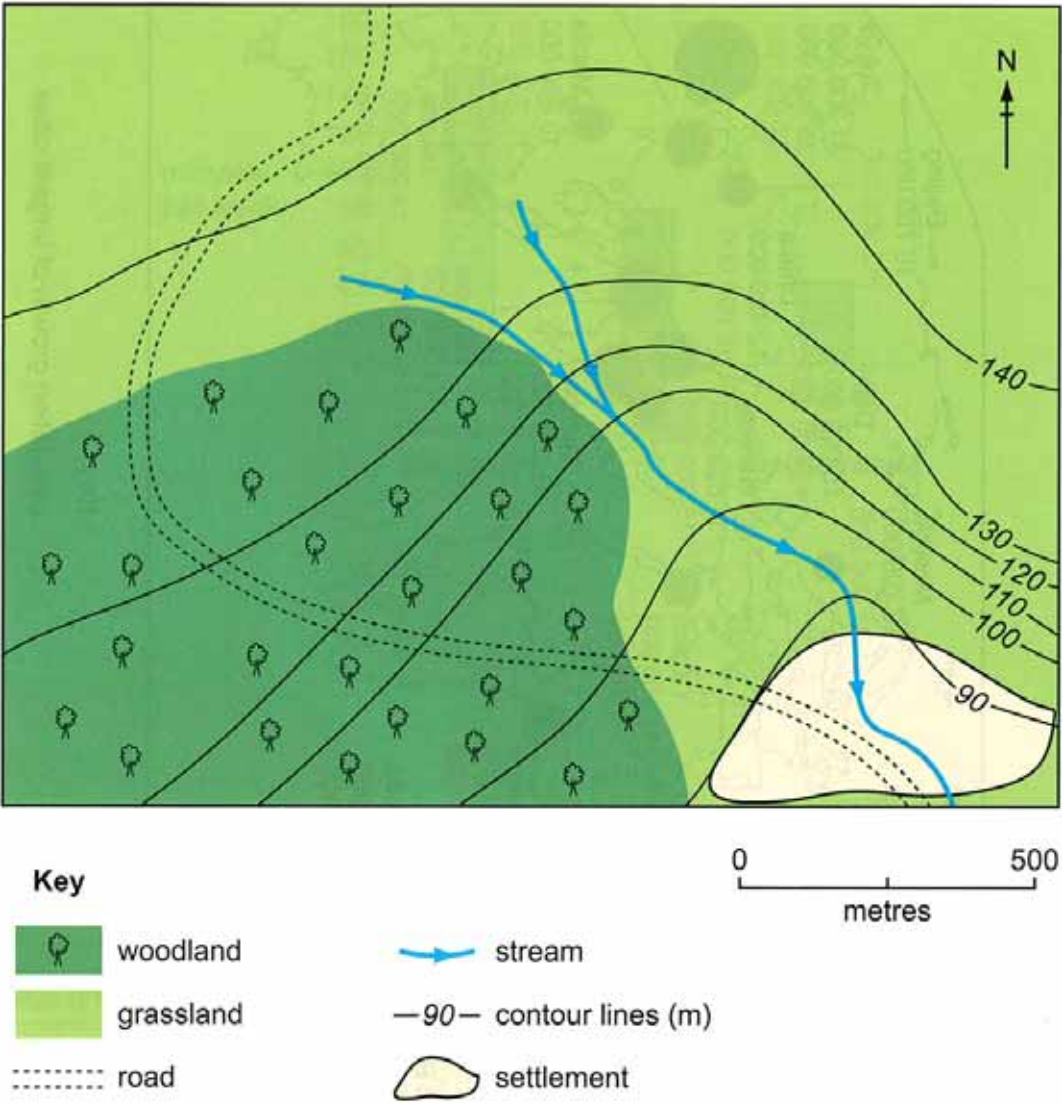

RESOURCE BOOKLET

READ THESE INSTRUCTIONS FIRST

This resource booklet contains the resources referred to in the questions as well as the World Outline Maps

Resource 1 for Question 1

Map of fieldwork site

Key

🌳 woodland	
grassland	
·········· road	

→ stream	
—90— contour lines (m)	
⬭ settlement	

0   500

metres

Resource 2 for Question 1

Collection of infiltration data

Resource 3 for Question 2

Changes in channel variables

Variable	Upstream Mean (Station A)	Downstream Mean (Station B)
Bankfull Discharge (cumecs)	10.77	30.63
Hydraulic Radius	0.53	0.73
Channel depth (m)	0.64	0.83
Channel width (m)	5.70	9.13
Bankfull velocity (ms^{-1})	2.68	3.60

Drainage network of a river basin

● (spot height in metres)
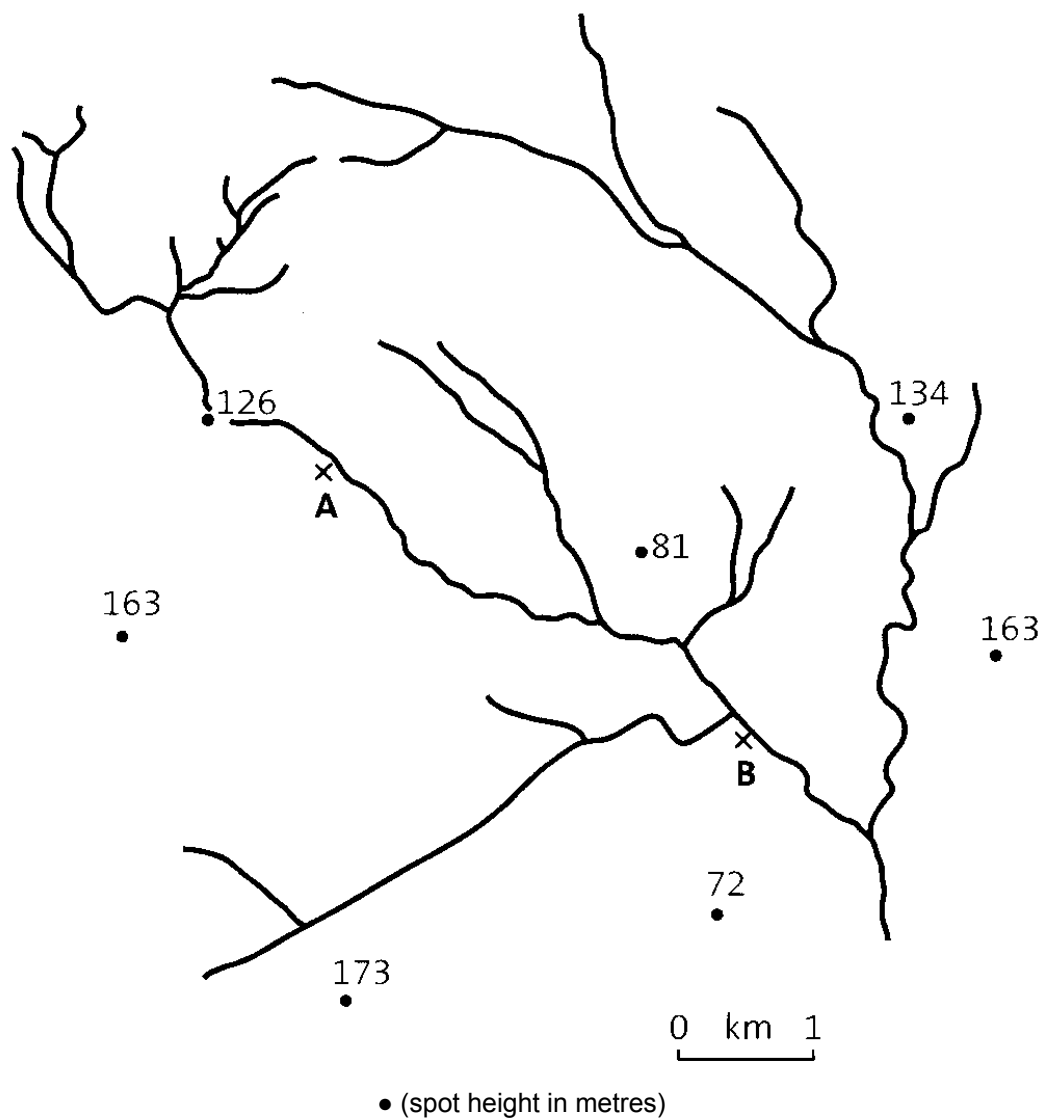
Resource 4 for Question 2

River channel Y

River channel Z

Resource 5 for Question 2

The relationship between river bed material and river channel pattern

Key

● river
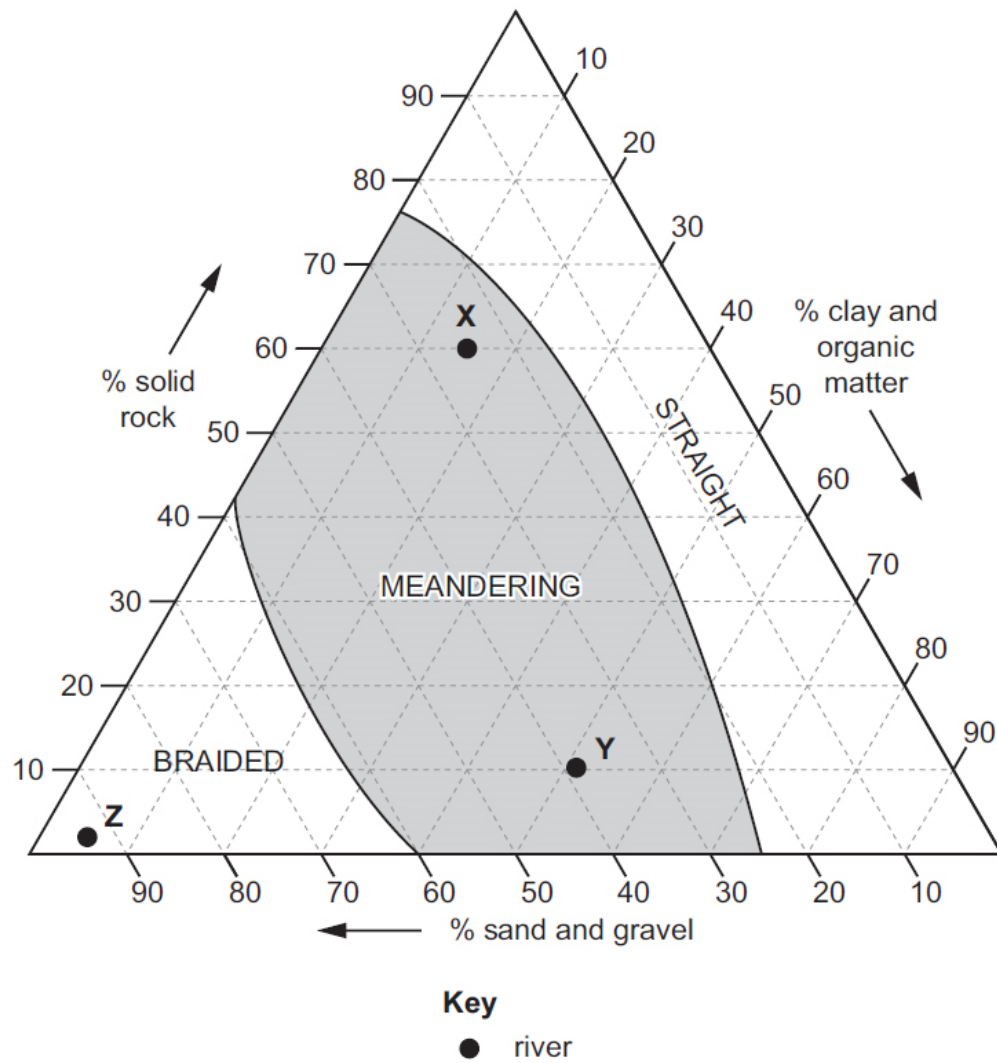
Resource 6 for Question 3

Distribution of selected resources in India
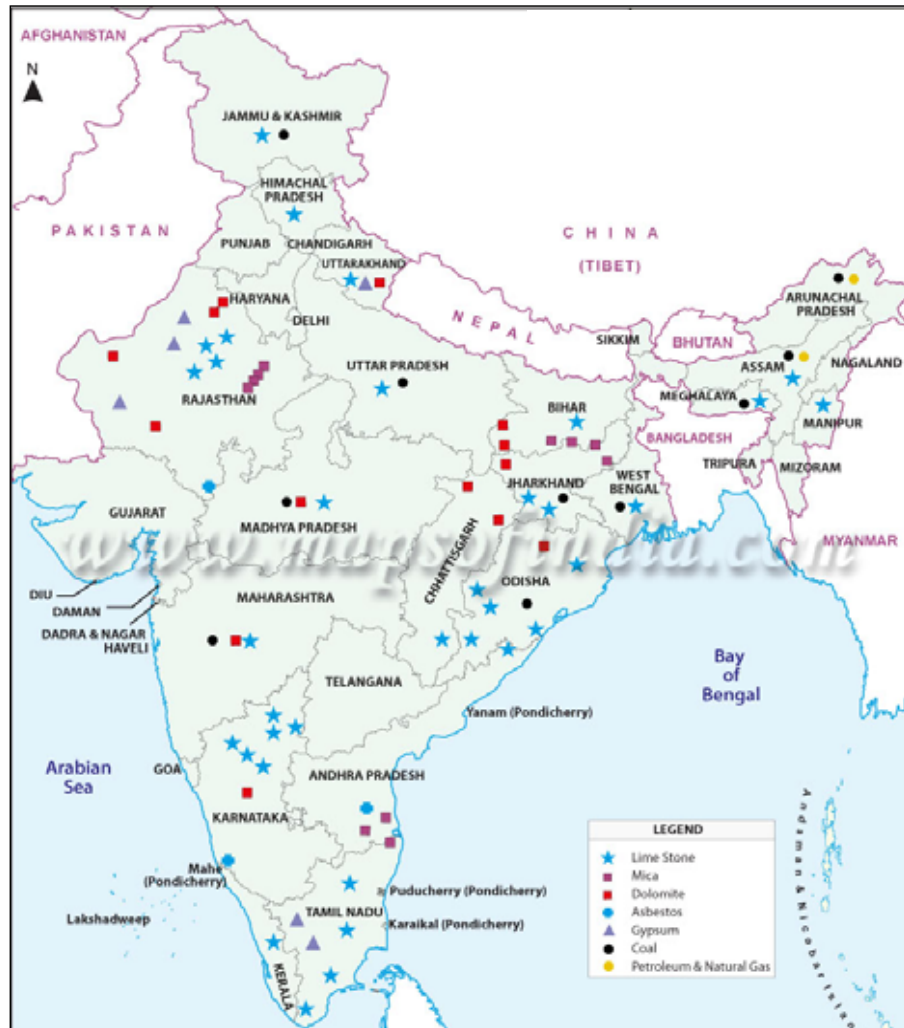
Resource 7 for Question 3

Areas affected by political violence in India
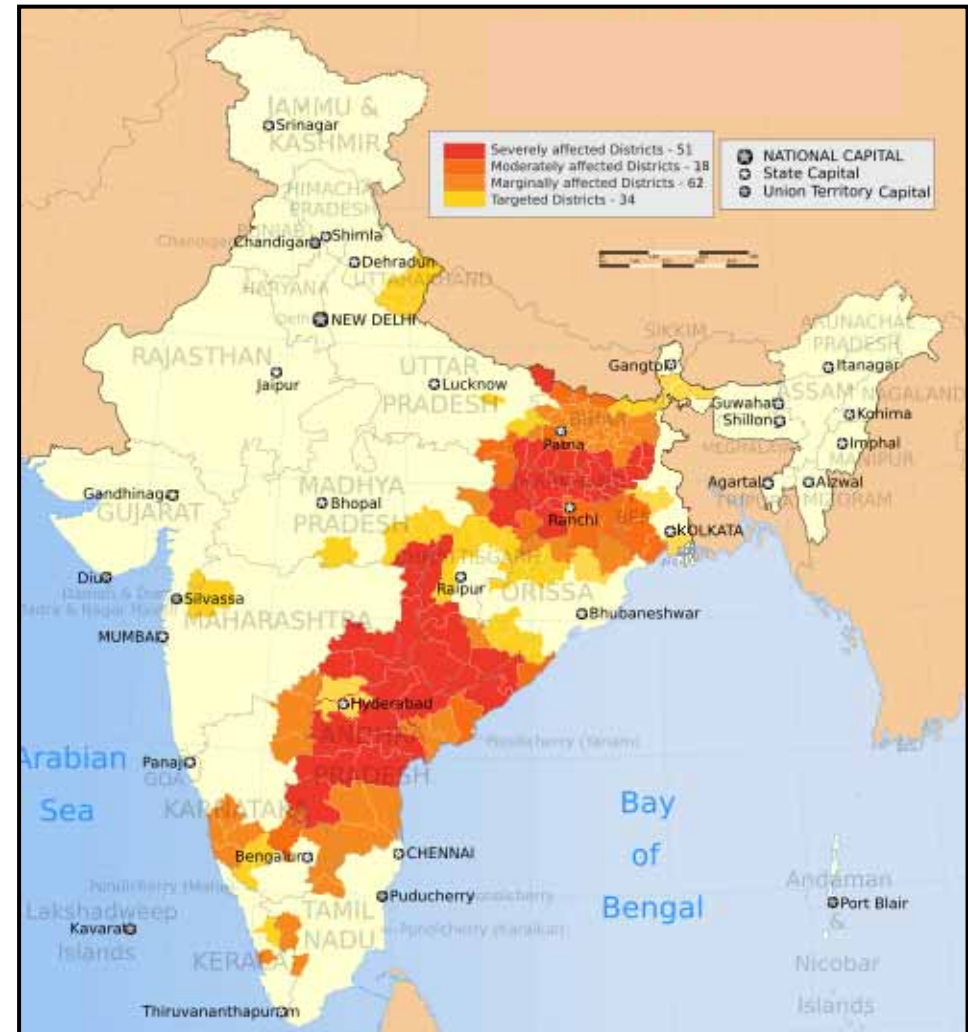
Resource 8 for Question 3

Excerpts of news articles regarding the impacts of resource extraction in India

Resource 9 for Question 3

Average economic growth rate and mineral and fuel exports as a percentage of total exports for selected countries, 1970 - 2008
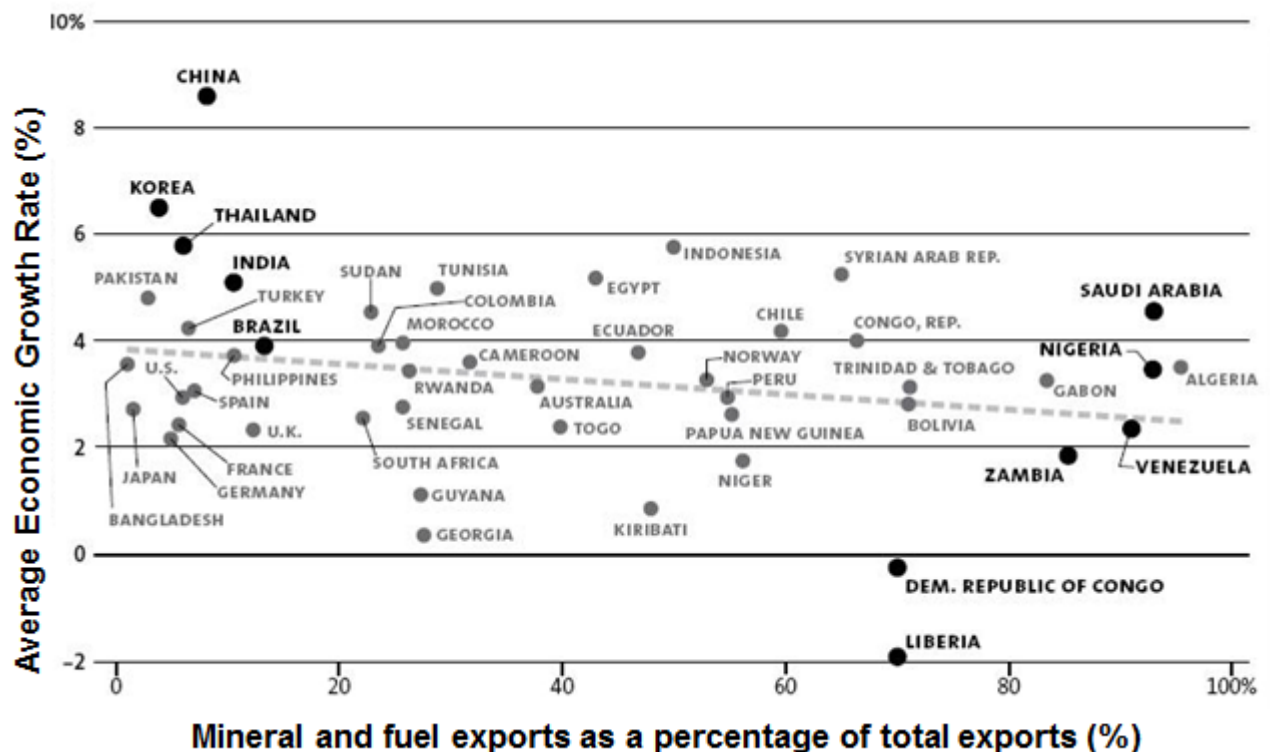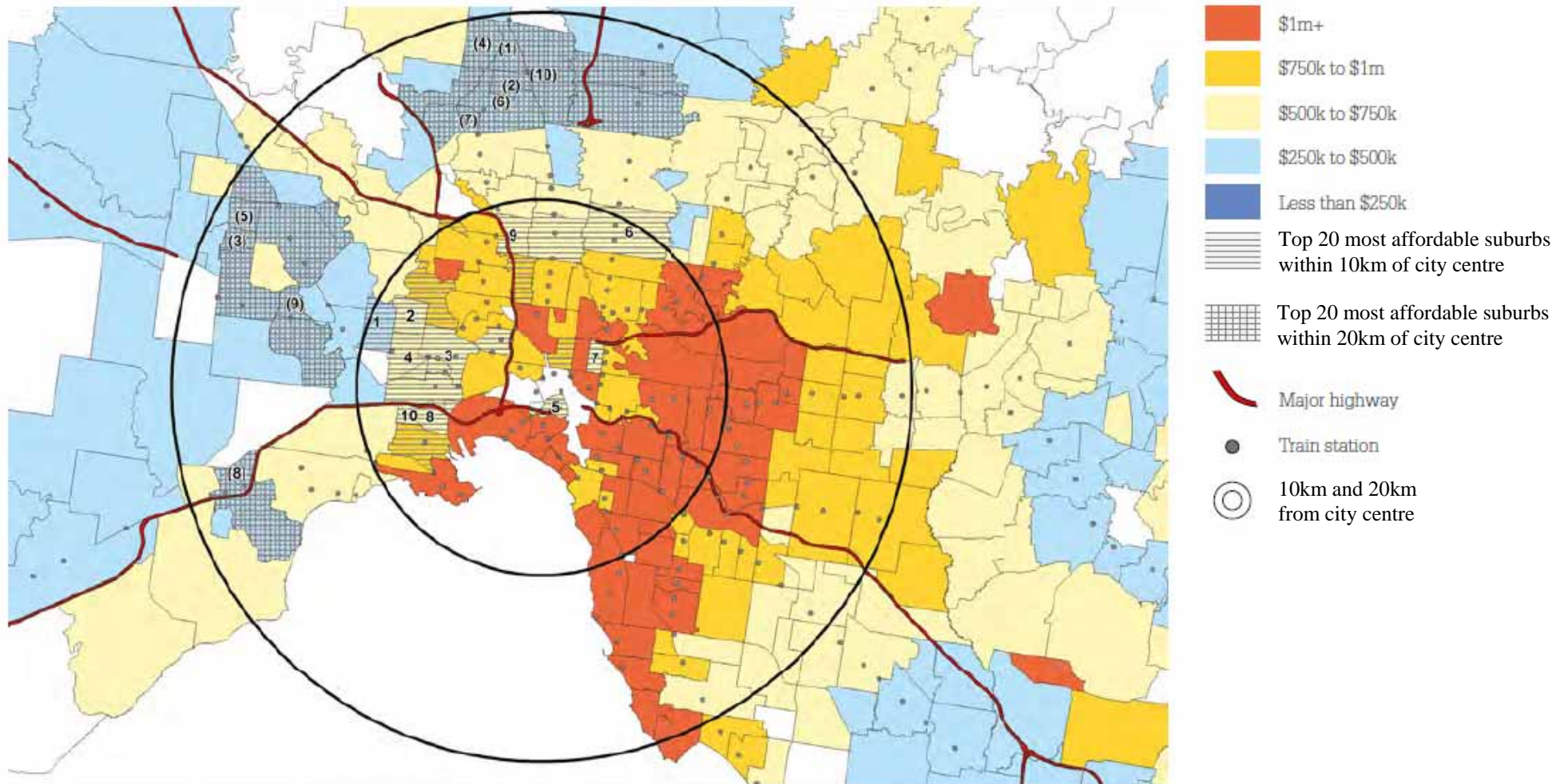
Resource 10 for Question 4

Ranking of top five cities by different measures of liveability

Rank	Economist Intelligence Unit Liveability Index (2015)	Mercer Quality of Living Ranking (2016)	Monocle Quality of Life Survey (2016)
	Number of cities surveyed: 140	*Number of cities surveyed: 230*	*Number of cities surveyed: 25*
1	Melbourne, Australia	Vienna, Austria	Tokyo, Japan
2	Vienna, Austria	Zurich, Switzerland	Berlin, Germany
3	Vancouver, Canada	Auckland, New Zealand	Vienna, Austria
4	Toronto, Canada	Munich, Germany	Copenhagen, Denmark
5	Adelaide, Australia	Vancouver, Canada	Munich, Germany

Resource 11 for Question 4

Housing prices and affordability in Melbourne, Australia

Resource 12 for Question 4

Before and after urban change in Melbourne's docklands

Before and after urban change in Melbourne's docklands