Field Trip Activities on Lamma Island

Name: _____(   )   S. _____   Date: _____

## Stop 1 Yung Shue Wan Main Street

Part 1 Rubbish – what's the solution?

1. What sustainable method is used to deal with waste in Yung Shue Wan?

    _____

2. List three benefits of using the method mentioned in Question 1.

    _____

    _____

    _____

3. Work in groups and walk along the main street. Find out the collection points for recyclable materials. On the map below (Figure 1), mark and label the area where they are for each of the following products with corresponding letters.
    (a) Paper   (b) Plastics   (c) Metals   (d) Glass bottles
    (e) Rechargeable batteries   (f) Clothes   (g) Small electrical appliances

Figure 1
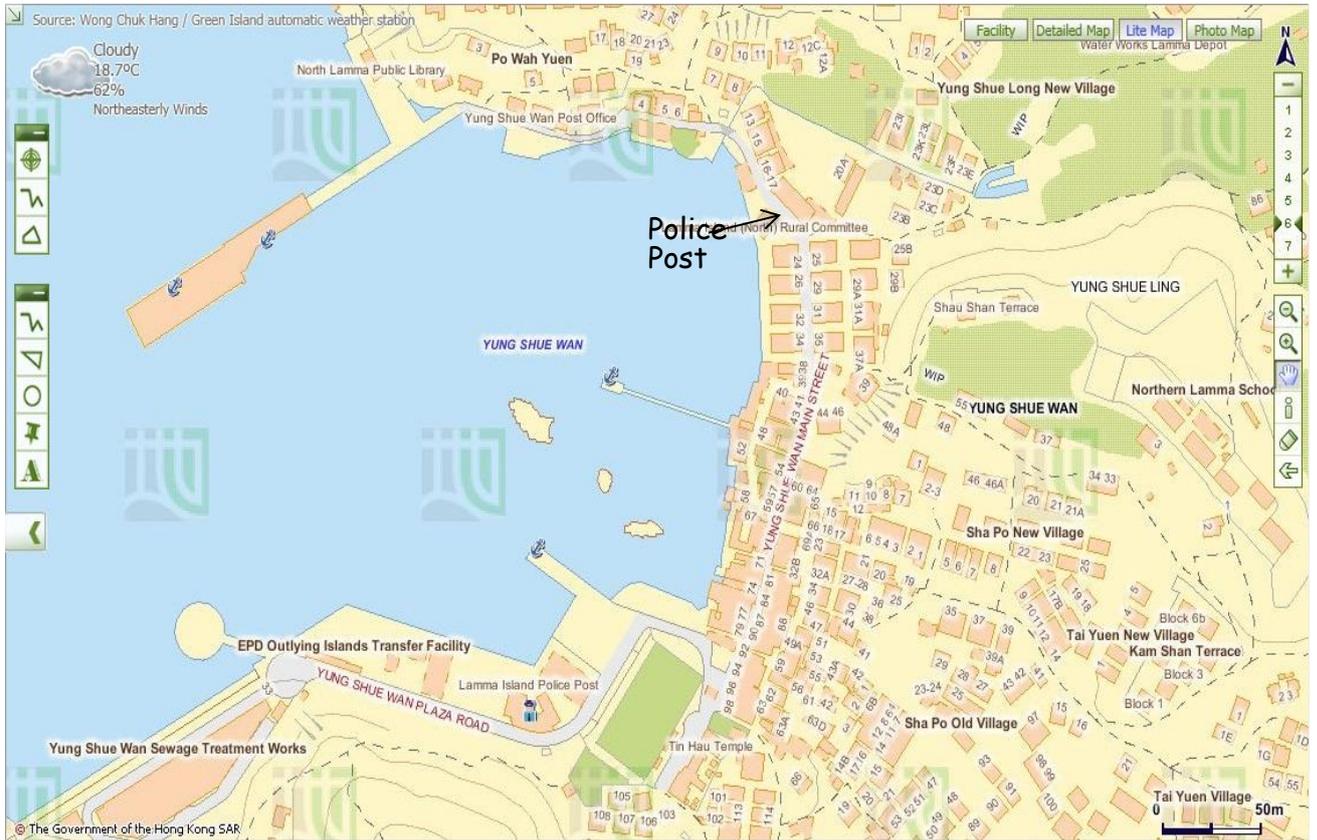
Map from Lands Department

4. Evaluate whether the waste separation and recycling scheme is successful:

   (a) Are all items mentioned in Question 3 collected for recycling? If not, which item(s) is / are not collected?

   _____

   (b) Are recycling collection points accessible?_____

   (c) Are recycling collection points enough for the public? Give evidence to support your answer.

   _____

   _____

   _____

THINK

5. Suggest two ways to improve the scheme so that more people, including visitors use it more often.

   _____

   _____

   _____

   _____

Part 2 Closed loop recycling – what is it?

Visit 'Lamma Corner'.

1. Find out what three types of recyclable materials mentioned in Part I Question 3 are used for making the items.

Recyclable materials	Uses (Give at least one example)

2. Figure 2 shows the closed loop recycling that is practised on Lamma Island.

Figure 2

The closed loop recycling involves three processes, including

(a) _____

(b) _____

(c) _____

3. How can this closed loop recycling help combat climate change?

_____

_____

_____

4. As a consumer, what roles should you play in the recycling loop to help combat climate change?

_____

_____

_____

THINK

5. Do you think that all recyclable materials collected can enter the loop of recycling? Why?

_____

_____

_____

6. (a) If the recyclable materials cannot be used for recycling, where will they go?

_____

(b) Do you think all the recyclable materials are recycled locally in Hong Kong? Why?

_____

_____

PLAN

(c) Taking into consideration of your answers in (a) and (b), do you think recycling is a good way to combat climate change? Why? What else can we do to combat climate change?

_____

_____

_____

_____

_____

Part 3 Eco shopping

Work in groups and walk along the street.

1. Go to one of the green shops and select two types of packaged food that you think they are environmentally-friendly. Complete the following table based on the information on their labels.

	Food A	Food B
(a) Name of food		
(b) Is the food homemade? If not, where is it produced?	☐ Yes ☐ No If no, ☐ Hong Kong ☐ The Mainland ☐ Other countries	☐ Yes ☐No If no, ☐ Hong Kong ☐ The Mainland ☐ Other countries
(c) Is the food made from organic farms?		
(d) Number of ingredients		
(e) Do the ingredients come from plants or animals? Give	☐ Plants ☐ Animals ☐ Both Examples: _____	☐ Plants ☐ Animals ☐ Both Examples: _____ _____

two examples.	_____	
(f) What is/are the packaging material(s)?	☐ plastic bag ☐ paper ☐ others _____	☐ plastic bag ☐ paper ☐ others: _____

2. Which food would you like to buy in order to reduce more carbon emission? Give three reasons to support your answers.

_____

_____

_____

_____

_____

_____

Stop 2 A Local Farm

1. Work in groups. Observe the operation of this farm and interview the farmer. Complete the following table.

Questions	Answers
(a) How to improve soil quality?	☐ using chemical fertiliser ☐ using compost ☐ covering soil with mulches ☐ crop rotation ☐ fallowing ☐ agroforestry: trees are grown with crops ☐ others _____
(b) How to avoid pest?	☐ using chemical pesticide ☐ using CD-ROMs ☐ using plastic balls ☐ growing different types of crops ☐ crop rotation ☐ growing companion crops ☐ using insect trap ☐ others _____
(c) How to use water resource?	☐ constructing wells ☐ building water tanks or ponds ☐ covering soil with organic matter ☐ using drip irrigation ☐ others _____
(d) What tools are used for farming?	☐ using simple tools, e.g. _____ ☐ using machines, e.g. _____
(e) What is the useful output?	☐ crops, e.g. _____ ☐ animal products, e.g. _____

2. Do you think this way of operation of farm can reduce carbon emissions? Give reasons.

	Can it help to reduce carbon emission? Put '✓' or '✗'	If yes, how can this help to reduce carbon emission?
(a) Way of improving soil quality		
(b) Way of avoiding pest		
(c) Way of using water resource		
(d) Tools used for farming		
(e) Type of output		

THINK

3. Would you like to buy agricultural produce grown in this type of farm for reducing climate change? Give reasons to support your answers.

_____

_____

_____

_____

_____

Stop 3 Viewing at Lamma Power Station

1. Write the letters in the space provided to show the components of power station in Figure 3.

Components of Power Station:

(a) Coal-fired Generating Units	(b) Gas-fired Combined-cycle Generating Units	(c) Oil-fired Generating Units
(d) Coal Yard	(e) Ash Lagoon	(f) Transport jetty

Figure 3 Components of Power Station
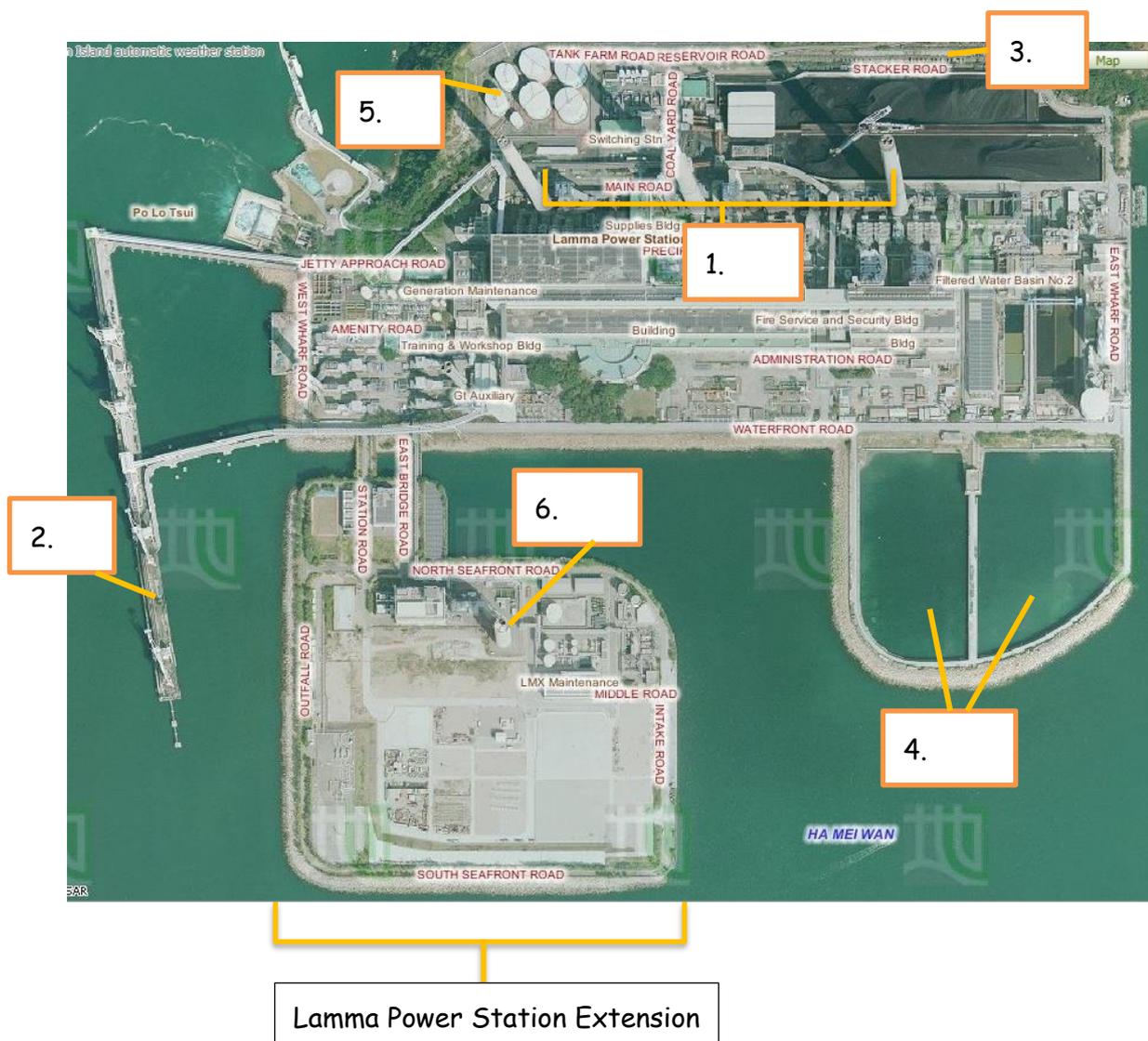
Aerial Photos from Lands Department

2. Describe and explain the locational advantages of the power station.

Locational characteristics	Reasons
Is it located near the coast?	
Is it sheltered by hills?	
Is it near the residential areas?	

3. Table 4 shows the capacity of the Lamma Power Station.

Table 4 Capacity of the Lamma Power Station in 2013

|	Number of units	Capacity of each unit (MW)	Total capacity (MW)
Coal-fired Generating units	3	250	750
	5	350	1750
Oil-fired Generating Units	4	125	500
	1	55	55
Gas-fired Combined-cycle Generating Units	1	335	335
	1	345	345
Solar Power System			1
Lamma Winds			0.8
		Total	3736.8

Source: HK Electric

https://www.hkelectric.com/en/MediaResources/Documents/LPS_2014.pdf

(a) What energy source (Hint: a type of fuels) is mainly used in the electricity generation? What do they include? Are they renewable?

_____

(b) Among the fuels mentioned in (a), which one is mainly used to generate electricity in the power station?_____

(c) What kind of fuels has been increasingly used to generate electricity recently? (Hint: Think about what kind of generating unit has been built in the newly-reclaimed area?)_____

4. Observe the power station. Does the power station cause air pollution? If yes, what kinds of air pollutants are released?

_____

5. Figure 5 shows the amount of air pollutants emitted from coal-fired and gas-fired generating units respectively when the total electricity generation in the year 2012 would increase by 2.57 times compared with that in 1990.

Figure 5 Amount of Air Pollutants Emitted from the Coal-fired and Gas-fired Units
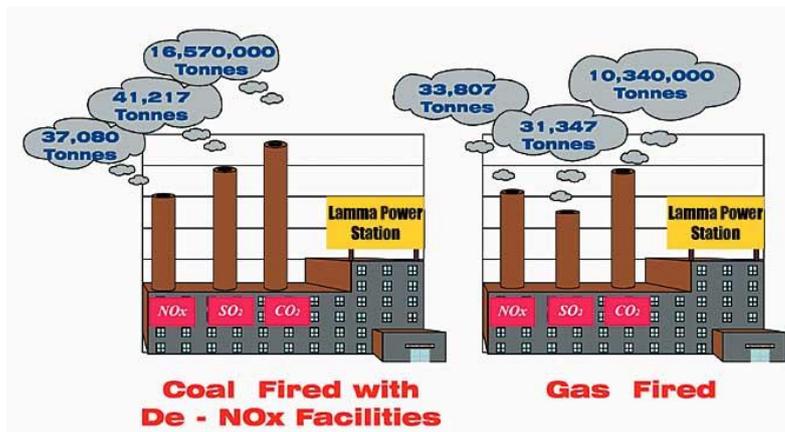
Source: Environmental Protection Department, HKSAR Government
http://www.epd.gov.hk/eia/operation/english/chapter05_4.html

(a) Why does the power station cause climate change?

_____

_____

(b) More generating units will be built to generate more electricity in future. Explain why.

_____

_____

(c) Which kind of fossil fuels, coal or natural gas, should be more widely-used in the new generating units? Explain why.

_____

_____

THINK

(d) Do you think that using a mixture of different types of fossil fuels only can help to minimise climate change in future? Why?

_____

_____

Stop 4 Lamma Winds

<u>Is the use of renewable energy a way out in Hong Kong?</u>

1. What types of renewable energy are used at this site?

   _____

2. Why is it suitable to set up the wind turbine at this site? Give five reasons.

   _____

   _____

   _____

   _____

   _____

   Is it easy to find similar site to build wind farm in Hong Kong? Why?

   _____

   _____

   _____

3. Collect the data at the tower base of the wind turbine and complete the

   following table.

Date & time	12 Jan 2017 at 10:34 p.m.	_____ _____
Present wind speed	5.9 m/s	_____m/s
Present power output	198.1 kW	_____kW
Cumulative electricity generated	9442719 kWh	_____MWh
Amount of carbon dioxide (CO_2) saved	7868932 kg	_____tonnes

   Remarks: The units of cumulative electricity generated and amount of carbon
   dioxide saved shown on HK Electric's website are different from those
   shown at the tower base of the wind turbine.

   What is the relationship between wind speed and power output?

   _____

4. In 2013, the electricity consumption was 44.21 billion kWh in Hong Kong. Do you think that this wind turbine generates a lot of electricity? Give evidence to support your answer.

_____

_____

_____

Explain why this wind turbine cannot be designed to produce a lot of electricity.

_____

_____

5. By observation, list the environmental problem(s) caused by the wind turbine.

_____

_____

THINK
6. Should different types of renewable energy, particularly solar energy and wind energy, be further developed in Hong Kong?
Each group will be assigned one of the following roles. Collect the information from the exhibition panels for discussion.

Role	Tasks
Government	Discuss why different types of renewable energy should be further developed in relation to existing environmental problems
Spokesman from a power company	Discuss whether the development of different types of renewable energy is cost-effective
Environmentalist	Discuss the negative impact of the development of different types of renewable energy on the environment
Urban planner	Discuss the problems in the selection of suitable sites for the development of different types of renewable energy
Spokesman from Department of Energy	Discuss whether different types of renewable energy can give abundant and reliable energy supply in Hong Kong and their energy efficiency

Your role:_____

Your opinion:_____

_____

_____

THINK

7. Do you agree that the renewable energy should be further developed in Hong Kong as a sustainable measure against global warming? Why?

Strongly disagree   Disagree   Agree   Strongly agree
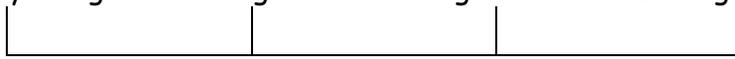
Give at least three reasons:

_____

_____

_____

PLAN

8. The use of technical measures, like fuel mix and renewable energy, seems not to be the most sustainable way to combat climate change caused by power station. Then what else can we do to solve this problem?

_____

_____

_____

_____

Stop 5 Hung Shing Yeh Beach Tree Planting Site

1. Read the information from an interpretive plate. What are the two types of trees? Give one example of each type of trees.

Type	Example

2. Which type of trees is chosen for plantation at this site? Why?

_____

_____

_____

3. How can the planting of trees help reduce climate change?

_____

_____

_____

PLAN

4. Apart from planting of trees, what else can we do to help reduce climate change at this site? Suggest at least two methods.

_____

_____

_____

Stop 6 The Home Farm

At Lo So Shing Village, observe the activity held outside the village houses

1. What activity is carried out outside the village houses?_____

2. Can you find a large piece of farmland?_____

3. What agricultural produce is grown from the farm?

    _____

4. Do you think that the produce is for self-consumption only? Give reason to

    support your answer.

    _____

    _____

5. How can the growing of our own food help reduce carbon emission in Hong Kong?

    _____

    _____

6. Could you grow your own food at home? Why or why not?

    _____

PLAN

7. What else can we do for food supply to reduce climate change?

    _____

    _____

    _____

    _____

Stop 7 Mudflat

1. What are the characteristics of mudflat?

    (a) What is its relief?_____

    (b) What is made up of the mudflat?_____

    (c) Does the depth of water vary from time to time?_____

2. What kinds of living organisms live in the mudflat?

	Examples
Plants	
Wetland Animals	

3. What does Mudflat provide for these living organisms?

    _____

4. Do all the animals live in the water all the time?_____

5. How will climate change affect the water level in the mudflat?

    _____

    _____

    _____

6. How will the change in the water level affect the living organisms?

    _____

    _____

    _____

PLAN

7. What should you do to protect these living organisms in our daily life?

    _____

    _____

    _____